HZS
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Dedicated to Global First Responders
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# To AZ or Not to AZ? That is the Question!

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## Editor-in-Chief

**BrigGEN (ret.) Ioannis Galatas MD, MSc, MC (Army)**
**PhD cand**
Consultant in Allergy & Clinical Immunology
Medical/Hospital CBRNE Planner & Instructor
Senior Asymmetric Threats Analyst
Manager, CBRN Knowledge Center @ International CBRNE Institute (BE)
Senior CBRN Consultant @ HotZone Solutions Group (NL)
Athens, **Greece**

➲ **Contact e-mail:** igalatas@yahoo.com





## A publication of

**HotZone Solutions Group**
Prinsessegracht 6, 2514 AN, The Hague,
The Netherlands
**T:** +31 70 262 97 04,
**F:** +31 (0) 87 784 68 26
**E-mail:** info@hotzonesolutions.org

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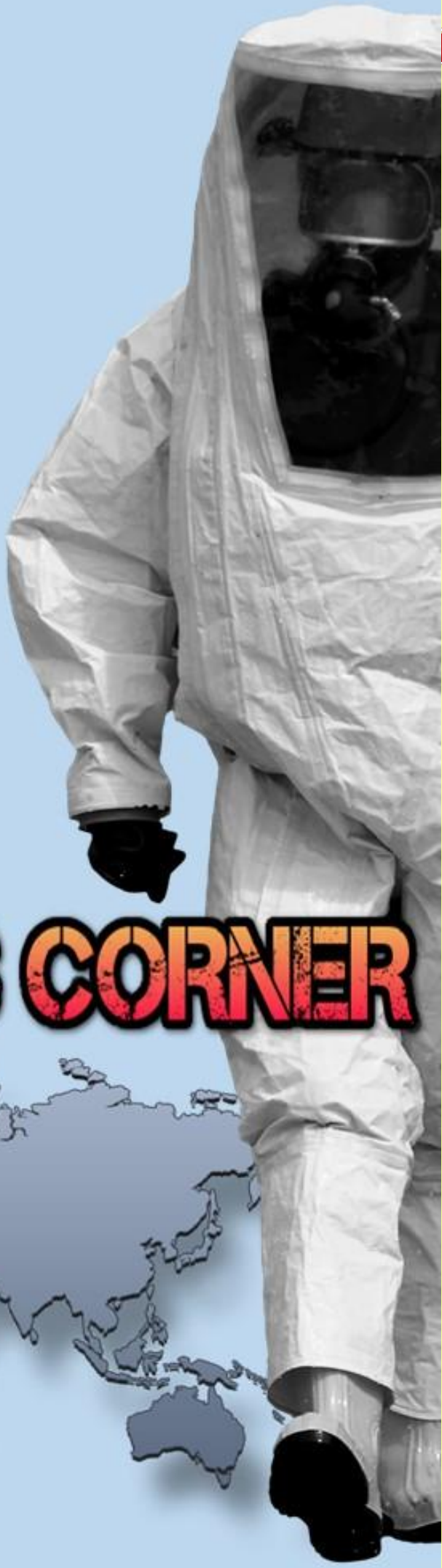


# EDITOR'S CORNER

## Editorial

**Brig Gen (ret.) Ioannis Galatas, MD, MSc, MC (Army)**

*Editor-in-Chief*
HZS C²BRNE Diary

**Dear Colleagues,**

Another pandemic month with the same recipe: death, packed hospitals, lockdowns, restriction of movement, and promises for the future. The only new thing was the debate about the AstraZeneca vaccine that was halted in many countries around the globe due to certain adverse reactions. In any other instance, have a few reactions in millions of doses given would be a normal approach and resulted in complete acceptance. Of course, it was easy to blame the producer but if we want to be honest we have to blame ourselves as well for all the pressure applied in order to have the vaccines yesterday. And now we have them we critisize their safety and all. I, have only two problems – the first one is to have access to all vaccines available in the market and the second is to be able to choose my vaccine. As a medical doctor, I am not an anti-vaxxer (how could I?) but as a citizen, I believe it is my right to choose. And it is my right to question the gov on why they do not approve Sputnik V and Light, SinoPharm vaccines the moment that they are already used in many countries and without severe adverse reactions? Perhaps it is time to get rid of the stereotype that anything that is not of Western origin is bad.

The pandemic will last until the end of 2021 for developed countries but what about the developing ones that have no access to vaccines in sufficient numbers? Vaccine diplomacy and vaccine solidarity are two new meanings that dominates the final outcome of this 21st century plague.

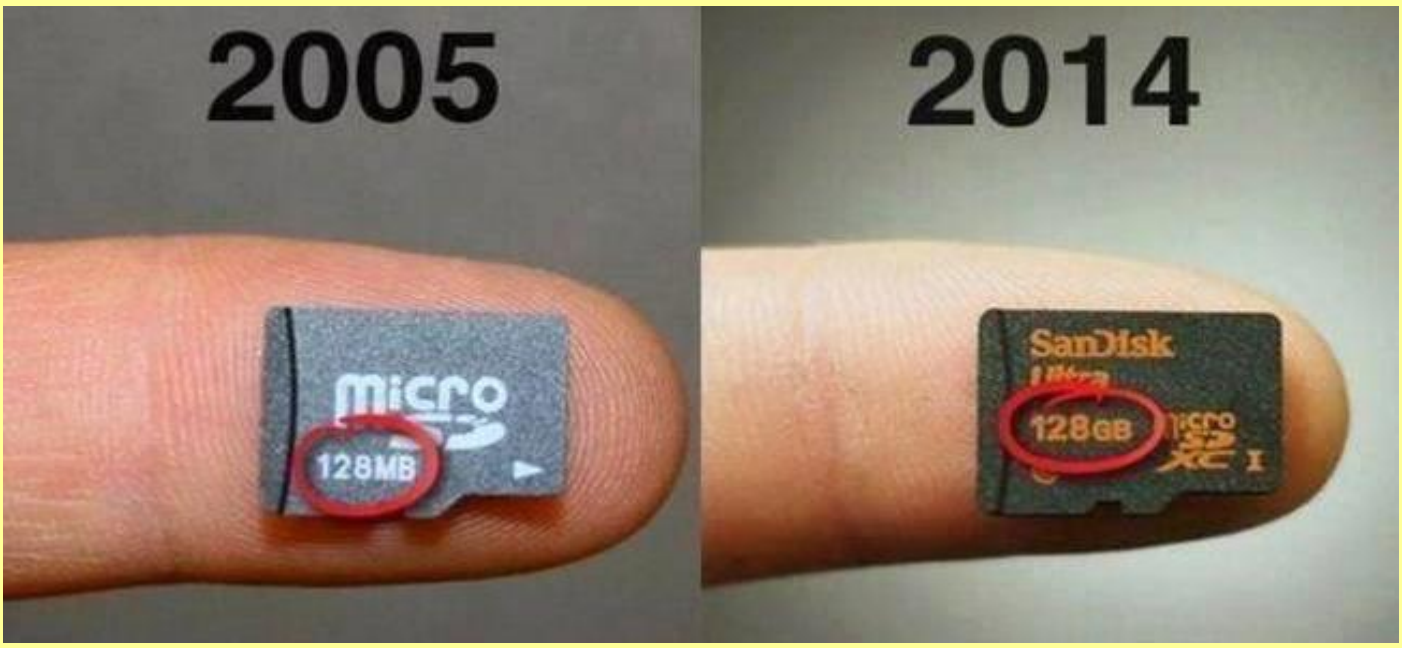
In Greece, we experienced the conscription of private physicians in order to cover the needs of the major Covid hospitals in Athens and most probably in other major cities. On the other hand, the gov reassures the populace that we are doing much better than other nations with better healthcare systems. The truth behind the above is that the government failed to adjust to the needs of the pandemic and the gaps that emerged. They also failed in the overall crisis management but also in trying to transform these gaps into lessons learned taking advantage of the improvement interval between Covid-19 waves. A few months ago, all these doctors were national heroes fighting the invisible enemy. Now they are kind of traitors refusing to support their hospitals' colleagues. This is a total disgrace!

I wrote above about stereotypes in the field of vaccine race but how can we get rid of them when we are marching towards a new Cold Era between the USA and Russia. The new US administration is very aggressive against Russia and China and for no obvious reason. I mean "real" obvious reason! This demonstration of who is stronger and more deadly is so ridiculous and out of date. We all think that the global prosperity of people should be over dominance and suppression of other people. Especially when millions of people around the globe do not have access to drinking water and food the moment we set (mechanical) foot on Mars! Exactly the same behavior on a smaller scale is what Turkey is exhibiting on the SE Mediterranean Sea area threatening to start conflicts and wars with Greece, Cyrpus, Israel, Egypt, Armenia, Iraq all the way to Ukraine and Jammu & Kashmir. It is so disappointing to observe that the mighty US is tolerating such behavior from a NATO member; same for EU from a country that is wishing to become a member the moment that half of Cyprus is occupied by Turkish forces. Some use to say that only a war can become the reset button for a country that is not progressing well. It seems that a nuclear world war is required to reset the planet and only then people will realize that we live only 70-80 years and this is a very short period to behave in such an idiotic manner.

In such a messy uncertain environment First Responders are asked to do their best in order to catch the snake or take it out from its cave. Preparedness and constant training are the only antidote to survive the current atypical war but also to prepare for the next one that could be either natural or man-made. In that respect, we are obliged to be better, much better prepared in order to avoid mistakes and repetitions of old behaviors and attitudes. Once lucky does not mean lucky forever!

*The Editor-in-Chief*

## And this happened in just 9 years...




## Extremist Minds: These Psychological Traits Might Help Identify People Vulnerable to Becoming Radicalized

**By Leor Zmigrod**

Source: http://www.homelandsecuritynewswire.com/dr20210222-extremist-minds-these-psychological-traits-might-help-identify-people-vulnerable-to-becoming-radicalized

Feb 22 – The characteristics of peoples' brains might offer clues about the political beliefs they hold dear. In a study of around 350 U.S. citizens, we examined the relationship between individuals' cognitive traits – the unconscious ways in which their brains learn and process information from the environment – and their ideological worldviews.

We found parallels between how those with extreme views perform in brain games and the kind of political, religious and dogmatic attitudes they adhere to.

**Brain Games**

Each participant in our study completed a large variety of personality tests and were then given neuropsychological tasks designed to tap into implicit individual differences in how we learn from the environment, form decisions and react to changes or challenges.

All of the tasks were neutral and objective. Participants were given instructions about visual stimuli moving on the screen and did not have any prior knowledge of what mental process the task was measuring.

In one task participants had to determine whether a group of dots was moving to the left or to the right. In another, they needed to memorize a series of visual shapes or numbers and then report the order they appeared on their screen. My colleagues and I used individuals' performance on these "brain games" to extract information about their perception, learning and ability to engage in complex and strategic mental processing.

We found that individuals with extremist attitudes tended to perform poorly on complex mental tasks – they struggled to complete psychological tests that require intricate mental steps. People who endorse violence to protect their ideological group also possess poor emotion-regulation skills – they are more impulsive and seek sensations and thrills. This makes sense when we imagine the kind of individual who is willing to harm innocent others for the sake of an ideology.

We also examined the psychological signature of different political worldviews. In some cognitive tasks, participants were asked to respond as quickly and as accurately as possible. We found that some people prioritize slow and steady mental strategies while others unconsciously opt for fast and furious strategies that sacrifice accuracy but excel at speed.

We discovered political conservatives were more cautious in these instances; their brains opted for slower and more accurate approaches. In contrast, the minds of political liberals, and those who believe the existing status quo should be revised, were more likely to adopt faster and less precise perceptual strategies.

**Dogmatic Minds**

We did not come to the data with predetermined hypotheses; we wanted to let the data points "speak" for themselves. This approach also revealed another, unexpected, psychological fingerprint – the nature of the dogmatic mind.

Dogmatic participants who were resistant to updating their beliefs in response to new and credible evidence were slower to process evidence in perceptual tasks. So, when asked to determine whether dots were moving to the left or to the right of the screen, they took longer to process the information and come to a decision.

Dogmatic individuals also had a more impulsive personality, meaning they were making premature decisions based on evidence that was imperfectly understood. This means if our brain is slower to tie together the pieces of evidence in its perceptual environment, we may inadvertently become more resistant to evidence and alternative perspectives.

Our research shows our brains hold clues – subtle metaphors, perhaps – for the ideologies we choose to live by and the beliefs we rigidly stick to. There appear to be hidden similarities in the minds of those most willing to take extreme measures to support their ideological doctrines.

The idiosyncratic ways in which our brains work may reflect the ideologies we choose to adopt. If our mind tends to react to stimuli with caution, it may also be attracted by cautious and conservative ideologies. If we struggle to process and plan complex action sequences, we may be drawn to more extreme ideologies that simplify the world and our role within it.

These cognitive traces that our ideologies leave behind may not necessarily be fixed. Psychological research also illustrates that we have the capacity to change, grow and become more open-minded and tolerant. It's early days, but understanding this could help us to support people vulnerable to extremism, and foster social understanding across ideological divides.

***Leor Zmigrod*** *is Research Fellow in the Psychology of Ideologies @ University of Cambridge.*

## Survey: Politicians Should Move Aside, Let Public Safety Talk

Source: https://www.govtech.com/em/safety/Survey-Politicians-Should-Move-Aside-Let-Public-Safety-Talk.html

Feb 18 – A recent survey by Rave Mobile Safety confirmed that people are less trusting of government officials than they are of first responders, and a good majority are not confident about their state's ability to efficiently distribute a COVID-19 vaccine.

The good news, though, is that the survey indicated people are more willing to share personal information if they feel it will help them stay safe during a disaster.

The survey polled 1,000 adults in late 2020 and early 2021. Of those polled, just 22 percent said they had complete trust in information they receive from local officials, but 62 percent said they completely trusted information received from firefighters, while 59 percent said they trusted information from paramedics or EMTs. Police were less trusted than other first responders, with 33 percent of respondents saying they trusted information provided by law enforcement.

Further, 77 percent of those surveyed said they either trust completely or trust somewhat facts shared via direct alerts, like emergency text messaging systems. More than 85 percent, however, say they are very or somewhat willing to share background information about themselves or family members to ensure proper aid during an emergency.

One of the takeaways confirms what most public safety officials and first responders already knew: It's incredibly important to a politician's career how they handle a disaster, and the public would be better served if politicians stepped aside and let first responders — or in the case of COVID-19, health officials — tell the story.

"Maybe not surprising was the feedback from the residents that they're government officials aren't as trusted as they used to be," said Todd Miller, senior vice president of strategic programs at Rave Mobile Safety.

Miller said part of the reason for the mistrust is the mixed messages that have been so prevalent from political figures and government officials during the last several years.

"When we try to make recommendations to communities about how they can engage with their resident base, one of the recommendations we're making is you might want to change that voice or that persona that these messages are coming from," Miller said. "It may not be that elected official, who by the way is running for election next year and wants to be on the camera."

Miller said instead the public would be more inclined to listen to a more trusted person wearing a uniform, or a public health official. Of course, as public safety officials know, that's easier said than done when a politician's future may depend on how he or she handles an emergency.

"My coaching would be that for the greater good of a given community elected officials should take a step back here, you don't have to be the face of all of this," Miller said. "That can be a real challenge and oftentimes it takes that local team that understands the community well and it takes strong leaders from the public safety side to be able to say, 'I'm sorry, elected official, we're going to take it from here, this is how communication is going to work.'"

The better news was the increased willingness of the public to share personal information about themselves or a family member ahead of a disaster so that public safety responders can respond in a more appropriate fashion.

"It's a factor of social media, where we see people already sharing a tremendous amount of information, and public safety is catching up with the technology of the private sector in allowing this to happen," Miller said.

Public safety has gone from being able to alert residents within a certain boundary to pinpointing alerts to residents who may be more vulnerable, and that's largely a result of the information being provided by the public.

An example is Washington state's Travis Alert Act, which enables a resident to document a condition of disability, and through the Enhanced 911 system allows dispatchers to instantly know of that condition and alert first responders who may be en route.

"The information can be delivered to 911, but we can also share that information by emergency management or public health personnel and start to really do tailored messaging because it may not make sense to broadcast a message to every resident that says vaccines are now available," Miller said. "What might be better is if we could target the 75-plus age crowd or individuals who meet the criteria for at-risk or vulnerable populations and give them specific instructions."

## Turkey's Al-Qaeda-Linked Charity Spreads its Wings in South Asia

Source: https://www.hstoday.us/subject-matter-areas/counterterrorism/turkeys-al-qaeda-linked-charity-spreads-its-wings-in-south-asia/

Feb 16 – An al-Qaeda-linked charity group in Turkey has been working with Islami Sangh Nepal (ISN), its regional partner in South Asia, to expand its logistical hub for jihadist networks, a Nordic Monitor investigation has found.

The Foundation for Human Rights and Freedoms and Humanitarian Relief (İnsan Hak ve Hürriyetleri ve İnsani Yardım Vakfı, or IHH) runs multiple projects in Nepal, especially in areas close to the Indian border, to broaden the support base among the country's minority Muslim community and expand logistical operations in support of global jihadist networks. The main facilitator for the IHH gaining a foothold in the country was the ISN, which has received funding directly from Turkey to finance various projects.

While Nepal's ISN was red flagged by the Indian intelligence services for its alleged support of jihadist militants, its Turkish partner, the IHH, was described as an arms smuggler in UN Security Council documents and was investigated for running a line of support to armed jihadist groups in Syria.

## Al-Qaeda and ISIS Use 'Great' Capitol Attack to Inspire Operatives, Incite Violence

**By Bridget Johnson**

Source: https://www.hstoday.us/subject-matter-areas/infrastructure-security/al-qaeda-and-isis-use-great-capitol-attack-to-inspire-operatives-incite-violence/

Feb 23 – In the Jan. 6 attack on the Capitol, global terror groups who took no part in the storming have found a point of admiration in the tactics of domestic extremists, a news story to hold up as justification in their claims that America is weak from within and vulnerable, and a model of inspiration for their own operatives to similarly target locations that hold deep symbolism and may not be as secure as once thought.

Domestic terror movements and Islamist terror groups have long shared similar themes and memes in the ways they recruit and incite as extremists of varying ideologies feed off each other's best practices. These include using current events to stoke grievances and appealing to existing grievances to reel in sympathizers and recruits while encouraging revenge, promoting the accelerationist belief that societal collapse will hasten their aims to construct a civilization with their ideology dominant, promising training and operations intended to appeal to recruits' feelings of inadequacy, and heavily promoting successful attacks – regardless of the perpetrators – in order to encourage both cells and lone actors to learn from the attacks' flaws and emulate the high points.

The Capitol attack has shown how these can intersect in one ideology holding aloft the operations of another, with both ISIS and al-Qaeda hailing the storming of the Capitol and expanding discussion of the events to help advance their own operational goals.
Two weeks ago, al-Qaeda in the Arabian Peninsula's al-Malahem Media released a 20-minute video, "America and the Painful Seizure," that started with two minutes of footage from the attack on the Capitol – starting with the shooting of Ashli Babbitt by Capitol Police as she tried to climb through a door's shattered window to breach the speaker's lobby. "Do not be afraid of the night; the dawn is about to loom… the puppets of injustice will fall," a nasheed intoned as AQAP showed scenes of the Capitol breach, rioters inside the Senate, and attackers searching Capitol offices.

AQAP leader Khalid Batarfi began the video with a dig at America's toll in the COVID-19 pandemic that "paralyzed the strong" in which "the politicians and doctors were in disagreement and those who claim knowledge failed to tackle it and reduce its risks."
"So, starting with the hurricanes and tornadoes that Allah sends to them, which destroy houses and displace many people from their lands, in addition Allah the exalted afflicted her people with diseases and epidemics which are concentrated on them, such as anthrax," Batarfi continued. "Also, Allah afflicted her with economic crises, which paralyzed her and baffled her politicians." He continued by listing episodes of "torment" against America in the first bombing of the World Trade Center, embassy bombings in Kenya and Tanzania, the USS Cole bombing, and the 9/11 attacks, culminating in U.S. military forces "bleeding in Iraq and Afghanistan, which forced her to negotiate with the Taliban movement." The terror leader then referenced "the continuing of individual operations in America"; at the end of the video, Naval Air Station Pensacola shooter Mohammed Saeed Alshamrani was memorialized.
Batarfi said that America's "haughtiness and arrogance" continued and "unjust and tyranny also befell her citizens," citing social justice issues, economic inequality, unemployment, crime, and suicide and mental health issues. "Today America takes the lion's share of epidemic corona and comes at the top of the list of the perished, which has reached more than 400,000," he said, putting the date of the recording after that Jan. 19 milestone.
"We are also witnessing how America's politicians started to butt one another like bulls, cursing one another, and her miserable people demolishing her pillars, shaking her entity, and cursing the politicians and the masters," the AQAP leader continued. "The incident of breaking into the Congress is only a little bit of what will happen to them, by permission of Allah. And whoever thinks that this matter will be ceased at this limit or that somebody can stop the overwhelming imminent collapse of America certainly is mistaken and deceived."

The video concluded with Al-Shabaab's drone footage of the Jan. 5, 2020, attack that killed three Americans and destroyed several aircraft at Camp Simba in Kenya. The al-Qaeda affiliate released that new video late last month.
The AQAP video joins ISIS propaganda materials in attempting to use domestic extremists' attack on the Capitol to their own advantage in multiple ways:

**Admiration**
A full-page article in ISIS' official weekly *al-Naba* newsletter released the Friday after the attack used a Reuters photo of a police flashbang illuminating the west front of the Capitol in an effort to disperse rioters. With the image of the Capitol shrouded in smoke, flames, and attackers, the terror group hailed the "great" symbolism of breaching the building "during a meeting of the tyrants," and said the history of America "over the past decades" reveals a pattern of "greater and more serious internal events."
ISIS admired the Oct. 1, 2017, massacre at the Route 91 Harvest country music festival in Las Vegas so much that the group claimed for months that shooter Stephen Paddock was "a soldier of the Islamic State who carried out the attack in response to calls for targeting coalition countries," even as it became readily apparent that Paddock had no apparent ideological motive. Their motive for the disinformation campaign was clear: Paddock and his crime were held aloft as inspiration for jihadists, from his high sniper vantage point to the choice of target. Their campaign had many months to gain traction and plant seeds in the minds of would-be jihadists before the Las Vegas Metropolitan Police Department report revealed Paddock "was not a religious person, did not believe in any higher power, and found religious people to be ridiculous."

**Recruitment**
ISIS' circulation of warnings against Las Vegas, photos depicting crosshairs on the Strip, and beseeching Western supporters to "answer the call" and attack underscored their reliance on high-profile attacks to stir lone actors to action. The Vegas mass shooting – even after ISIS stopped insistently calling Paddock "Abu Abdul Barr al-Amriki" – was used as a tactical example for would-be jihadists to emulate. The 2016 Orlando nightclub shooting is similarly held aloft by the terror group as an example of a lone supporter attacking a soft target with devastating results, and the November 2015 Paris attacks are still referenced as a blueprint for complex coordinated attacks.
In short, high-profile attacks regardless of the perpetrators serve as training for lone or cell operatives – as details of the attacks are laid bare in media reports and judicial proceedings, and open discussion about these details is abundant on the airwaves and online, ISIS and al-Qaeda adherents in addition to domestic terrorists can listen and learn both best practices and pitfalls. As what was believed to be a hard target is breached, it serves as a recruitment tool for all of these groups with a message of "if these attackers can do it, so can you." In a special *Inspire* magazine supplemental released after the Orlando attack, AQAP stressed that Omar Mateen "capitalized on the means available at his reach" and inspired "every new lone mujahid [to] try to do his best to realize and attain similar or more fatalities in his operation…especially when they see how easy it is to execute an operation."

**Incitement**
Al-Qaeda and ISIS also try to use these attacks to not just inspire their faithful but propel them into the attack stages. To incite, they highlight the cost suffered by those targeted – in the AQAP video, the scenes of attackers in the halls of the Capitol – and the relative ease with which the attack was conducted, along with hailing the act of the attack itself and underscoring what such an attack could do to buoy a movement or group. ISIS declared in *al-Naba* that rioters "being seen breaking into one of the most important centers of sovereignty in America" signaled that domestic unrest left the country vulnerable. "What matters to us in all of this is that America the crusader will be busy more with herself and that political struggle inside it will pay off," ISIS added, predicting fewer resources would be dedicated to fighting international terror groups in terms of funding and forces.
Batarfi said in the AQAP video that they could "fill the vacuum America will leave," and called for "mobilizing the mujahedeen to support the religion and sacrifice for the sake of Allah." He called for operatives to be focused and not distracted from their mission, and told followers to "beware of the repeated abortive experiments in the past."
ISIS supporters in India who publish *The Voice of Hind* magazine online each month declared last week that the Capitol attack showed that America was now in an "ever fragile state and the worst is yet to come." The article, which declared President Biden an enemy because of his legislative career and son Beau Biden's military service in Iraq, further called it "incumbent upon the Muslims to fight these devils and not to fear their might in terms of their technology, weaponry and military capabilities."

**Declaring justification for their *raison d'être***

Islamist terror groups use unrest in the United States to support their declaration that democracy is a failed endeavor and their vision of theocratic rule is the right path.

"The events that unfolded after the election of the president of the United States in 2020 exposed the western systems and reminded all of us that no matter what system the mankind comes up with against the system of Allah is hell bent to fail," the ISIS *Voice of Hind* article stated, slamming former President Trump and adding that "the attack on Capitol Hill – the temple of western democracy by his people was as disgraceful as it could ever be in their eyes."

They also use the suffering at the Capitol to feed their revenge narrative that Allah punishes their enemies while paving the way for their theocracy to emerge victorious. "What is happening today in America is a definite result and an inevitable destiny of its unjust policies and its continuous support to every criminal and enemy not only to Islam and Muslims – rather, her unjust crimes extended to whoever refuses to be completely dependent on her and on her policies," Batarfi said.

**Exploiting unrest to create or exacerbate fissures**

Batarfi's video claiming that al-Qaeda victory "will make every oppressed in this world happy" and stating that "racism and ethnic discrimination of non-whites is continuing and supported by her senior politicians" falls in line with the terror group's history of trying to exploit unrest in the United States. Over the summer al-Qaeda's general command tried to take advantage of the nationwide protests after the killing of George Floyd by encouraging rebellion within the United States as the government was "subjugating and killing poor, impoverished Christians, the helpers of Jesus." The terror group called for "all-out revolt" against the government and the "narrow class of capitalists and financiers that holds the reins of the global economy," claiming that al-Qaeda's war against the United States "is aimed at bringing an end to injustice and oppression" and is "similar to your reaction" against Floyd's killers.

ISIS' *al-Naba* issue after the Capitol attack declared that it's "not the first U.S. election whose results are contested and questioned," and "it will not be the last." They predicted that Biden would be preoccupied with domestic strife as "the conflict is between the two parties and their supporters." In a June issue of *al-Naba*, ISIS argued that the unrest arising from Floyd protests could pull America's focus away from assisting countries that were fighting ISIS.

Yet while these terror groups have tried to use unrest to paint their jihad as a struggle comparable to civil rights protests and tried to stoke greater unrest, they have also made clear that they would not be sparing civil rights advocates or anti-government protesters in their attacks: AQAP said in a 2015 issue of *Inspire* magazine that sympathies notwithstanding they were justified in killing all who didn't heed the call to "move out of big cities that represent the economy, politics or military strength of America like New York and Washington."

***Bridget Johnson** is the Managing Editor for Homeland Security Today. A veteran journalist whose news articles and analyses have run in dozens of news outlets across the globe, Bridget first came to Washington to be online editor and a foreign policy writer at The Hill.*

## What has killed more people in France since 2000? Islamic terrorism or 'la chasse'?

Source: https://www.opendemocracy.net/en/can-europe-make-it/what-has-killed-more-people-in-france-since-199-islamic-terrorism-or-la-chasse-hunting-%C3%A0-la-fran%C3%A7aise/

Feb 23 – In recent weeks France has seen much publicity about *la chasse* ("the hunt"), after a young man of 25 years old was shot dead while chopping firewood near his house in Lot, in the country's south-west, on 2 December. His killer caught sight of a "dark mass" and fired, thinking he would hit a wild boar. Instead, his over-eager trigger finger took the total of human deaths at the hands of chasseurs to 11 for 2020.

According to figures from the French National Office for Hunting and Wild Animals just after his death, more than 420 people have died at the hands of hunters so far this century. That office now no longer has an independent existence. Since the start of this year, the department has been merged into a new French Office for Biodiversity. The new title is just one of the ways in which President Emmanuel Macron has played to the gallery of the hunting community since being elected.

*La chasse* is big in France, and its followers are generally on the Right of the political spectrum and they assume that they can act as they like across the countryside. Visit the media presence created by friends of Morgan Keane, the December 2020 victim, to get a flavour of the anger this can stir up.
Walking out at night from our house in the pinewoods of Provence is not an option during much of the late summer and autumn when *la chasse* is at its height. A silent figure in camouflage fatigues with a rifle slung over his shoulder passed us noiselessly in the dark late one evening. The shots a few moments later took us quickly inside.

**Playing to the gallery**
Macron celebrated his first Christmas at Chambord, the Loire valley hunting castle of the 16th-century French king, François 1, while announcing that the licence fee for hunters would be halved and promising to restore the ritual of the "royal hunt" in the forests around the chateau.
It in no way excuses or minimises the deliberate horror inflicted by Islamist terrorists to note that they have killed fewer than 300 people since 1990, when they became a factor in modern French life. The overtly political nature of their mayhem places it in a different realm to that of the hunters whose killings become "accidents" rather than a challenge to the "French way of life".
The terrorists' actions have aggravated, though certainly not created, the atmosphere in which Islam has become a problem in France, rather than French discrimination against Muslims being a problem for Islam.
Playing to the gallery of the inheritance of anti-Muslim prejudice is something that successive presidents have sedulously engaged in since the Front National movement of Jean-Marie Le Pen began its rise in the 1980s. His daughter, Marine, now the leader of the movement under the name of Rassemblement National, has taken Islamophobic rhetoric to new heights. Politicians across the traditional Right and centre of French politics have trailed in her wake.
Higher education minister Frederique Vidal sent a St Valentine's Day card to academia in a radio and TV interview just before the Parliament in Paris passed Macron's law on "reinforcing republican principles", a euphemism for making it harder for Muslims to follow the practices of their faith.
Vidal's message picked up on an insult term increasingly bandied about in an attempt to pin on the Left an accusation that it is soft on Islamist violence: '*Islamo-gauchisme*', literally Islamo-Leftism. In practice, the term is carefully never defined by those who use it. Vidal's boss, education minister Jean-Michel Blanquer has been using it for months.
Vidal's point was that "Islamo-gauchisme is eating away at our society and universities are not immune." France's social sciences research body should prepare her a report on who was researching what when it came to racism, post-colonialism, etc, to get rid of "activism and opinion". Though the university world exploded, she did not back down – which told us all that Macron was behind her move.
As with the hunters who really are prime patrons of biodiversity, things were turned on their head. Vidal declared that all she wants to do is "protect the pluralism of ideas in the university, deconstruct the idea that there should be a single approach on certain subjects."

**Bloodhounds of the Right**
Vidal's colleague, interior minister Gérald Darmanin found another enemy during the week. The Green mayor of Lyons, Grégory Doucet, ordered local schools to serve meals without meat. "A scandalous ideology … an unacceptable insult to French butchers," Darmanin declared. Nothing of the sort, of course. Because of the COVID-19 epidemic rules, complex menus are unworkable in our schools, the municipality explained. In any case, Doucet's predecessor had done the same a year earlier. And who were they? None other than Gérard Collomb, Macron's first interior minister.
The atmosphere of hysteria, promoted by the bloodhounds of the Right, Darmanin and Blanquer, selected for that job by Macron, characterises much of French national politics.
This atmosphere of hysteria, promoted by the bloodhounds of the Right, Darmanin and Blanquer, selected for that job by Macron, characterises much of French national politics at the moment. It will get worse as Macron moves to make life harder for the Left, as he steals policies from the far Right in the run-up to the presidential poll, which is just 18 months away.
Macron is playing to, and so helping augment, a staged backlash against the past year's outburst of public anger and activity over sexism and racism in France.

**Springtime**
Down in Marseilles, other voices were to be heard. With a new Left and Green majority, 'Marseilles' Spring' elected to the city council last summer and the previous mayor, Jean-Claude Gaudin, now under investigation for alleged corruption, a poignant ceremony took

place on 21 February. At the spot where, 26 years earlier to the day, 17-year-old Ibrahim Ali had been shot in the back and killed by a Le Pen activist, his name was finally fixed to the wall, with the street renamed 'Avenue Ibrahim-Ali'.
Renaming the road so that the crime would never be forgotten was a demand of his family and the anti-racist movement in the city for the whole quarter of a century that Gaudin ruled the roost in the city hall. The new majority alliance hopes that its demonstration of successful popular unity will both be an answer to racist prejudice and violence and to Macron's manoeuvres.
Another anniversary was marked in Marseilles that weekend with the commemoration of the execution by a Nazi firing squad of the 23 members of the group of Resistance fighters led by Missak Manouchian on 21 February 1944. Ibrahim Ali came from the Comores Islands in the Indian Ocean. Missak Manouchian was from Armenia. Both died at the hands of racists in France.
At the Manouchian remembrance, a poem from the surrealist, later Communist, poet Paul Eluard was cited: "*Si nous les oublions, leur combat est perdu*" (If we forget them, their combat will be lost). Which is why, in the past fortnight, so many were so deeply angered by Vidal's, sorry, Macron's assault on those who try to unpick racism, to explore the scars left by colonial oppression and to analyse the workings of the discrimination and prejudice which still cause so much pain across France.
Oborne's new book covers "Boris Johnson, Donald Trump and the emergence of a new moral barbarism". Get the inside story on the state of the art of lying-in politics and the media from three journalists who have seen it all.

## Cognitive Biotechnology: opportunities and considerations for the NATO Alliance

**By Johns Hopkins University & Imperial College London Teams**
Source: https://www.nato.int/docu/review/articles/2021/02/26/cognitive-biotechnology-opportunities-and-considerations-for-the-nato-alliance/index.html

Feb 26 – Advances in biophysical, biochemical and behavioural technologies are beginning to turn science fiction into reality. These developments offer exciting possibilities, while also raising issues with regard to ethics and responsible use.
The Alliance faces a range of significant opportunities in emerging and disruptive technologies. The field of Cognitive Biotechnology (CBT) is an emerging domain with wide ranging implications for Alliance members' economic and military competitiveness. And, as was discussed in the case of Artificial Intelligence, developments in this field will require both a dynamic adoption of new technologies and a focus on their responsible governance.
CBT is the ability for technology to enhance and improve human thinking, sensing, coordinating, and acting upon the physical and societal environment. With CBT, our effectiveness—normally constrained by the limits of human physiology – can now be extended and augmented by biophysical, biochemical, or bioengineered means.
The field is in its infancy, but its implications are vast. For instance, in the last decade scientists have accurately melded brain signals with machine interfaces to create mind-controlled prosthetics. More recently they have made this flow of information bi-directional, creating prosthetics that can now feel sensation and send these feelings back to the brain.
If humans can actuate (i.e. put into motion or action) machines, and these machines can in turn actuate humans, then we have moved beyond the confines of our own physiology. Moreover, if these machines are mobile and can interact with our minds at a distance, then we have extended our reach beyond our own physical limits.
Conversely, our inner minds are no longer off limits either: while emerging brain-computer interfaces allow us to train and direct computers, computers are increasingly able to peer into our minds and to train and enhance us. Or, to put it another way, while we have been working to improve and enhance our machines, we now realise that our machines can enhance, improve – and possibly control – us.
When considering the wide-ranging uses of CBT, it helps to distinguish among three broad application areas, which can be called "the 3 R's" – Recover, Raise, and Replace.

- **Recover** includes the repair or rehabilitation of cognitive and biological impairments that prevent the mind and body from functioning effectively. The goal is to return abilities back to baseline functionality. Applications include helping injured soldiers recover their physical capabilities; healing traumatic brain injury; treating post-traumatic stress disorder (PTSD); recovering or (in cases of traumatic stress) suppressing memories; and restoring decision-making and executive functions.
- **Raise** includes the augmentation and enhancement of cognitive and physiological function past an individual's natural baseline, thereby effecting dramatic changes in operational effectiveness, preparedness, and training. Applications include sensory enhancement (such as seeing farther or hearing more acutely); faster information processing; quicker and more effective decision-making; more efficient learning and language acquisition; and greater physical exertion and endurance. What is true for individual capabilities could similarly be true for groups.

CBT could be used to raise unit capabilities through distributed intelligence – that is, all members of the unit see and know what each individual member sees and knows, thus reducing the "fog of war" and improving rapid decision-making, as well as enabling more rapid acquisition and assimilation of new fighting techniques and technologies.

- **Replace** includes the enhancement (and possibly substitution) of mental and physical functions past the bounds of human potential. Sensory connections could be replaced with computer interfaces, making human capabilities independent of their five natural senses. Verbal communication could be replaced by computer-aided telepathy or data downloads. Physical action could be replaced by remote robots or "loyal wingman" drones directed by the mind of the operator. This is perhaps the most futuristic form of enhancement, with most research and development nascent in nature. It is important to note that this form of enhancement does not completely remove human interaction, or else it would be simply another form of automation; it is really about the merger of human biology and mechanical actuation.

These distinctions may prove helpful in setting priorities for further research, investment in technological development, and adoption for operational use. And they could also help in setting principles of responsible use, considering the three categories' differing levels of technical risk and ethical uncertainty.

**The current state and future potential of CBT**

Cognitive Biotechnologies are at present focused on three main areas of research: biophysical, biochemical and behavioural. The future direction of these technologies is difficult to predict, particularly as many are still emerging. But they have the potential to significantly disrupt existing assumptions about the evolution of civil society, the economy, and military affairs. It is therefore in the interest of the Alliance to closely monitor the rise of those technologies and applications that are most likely to affect or disrupt current defence constructs and doctrine. Moreover, it will be important to direct early-stage investment into those areas that are particularly promising for the Alliance, or to those which will most likely impact its competitiveness.

**Biophysical technologies**

Advances in the biophysical area centre on brain computer interfaces (BCI), which can be directly inserted into the human body or via transcranial direct-current stimulation (tDCS). tDCS is a form of neuromodulation that uses constant, direct currents delivered via electrodes on the head, and can be worn or removed at will. While BCI was originally developed to provide assistive technologies (such as prosthetic arms and mentally controlled wheelchairs), recent developments in bi-directionality have allowed for enhanced sensing, for example, bionic eyes or other enhancements to situational awareness. Further applications of these technologies could lead to mental control of aircraft or ground vehicle systems; mind-guided drones or missiles; or the mechanisation of soldiers via exoskeletons and advanced sensors.

Exoskeletons can improve a soldier's physical capabilities, allowing them to run faster, lift heavier objects and relieve strain on the body. credit image 1: © Lockheed Martin credit image 2: © Army Technology

At the same time, tDCS applications have been shown to regulate the human brain itself, affecting the brain's executive functions, learning mechanisms, memory, language processing, sensory perception, and motor functions. Current work with tDCS focuses on recovery from PTSD and treatment of mental ailments like obsessive compulsive disorder. But the technology also provides for the possibility of raising soldiers' cognitive and physical capabilities: to analyse scenarios more easily and quickly; to retain and retrieve memories with greater acuity; to modulate perceptions of pain; to improve psychological self-protection; and to embed muscle memory and motor skills more quickly. Another controversial aspect of tDCS is the potential to look inside the mind of the user, to display and play back past memories on an external monitor, or even to insert synthetic memories and images into the mind.

**Biochemical technologies**

Biochemical research has focused on enhancements to human physiology and cognitive function via drugs, genetic modification and biological derivatives. Combinations of nootropic

compounds, both natural and synthetic, have been shown to rebalance and optimise neurochemistry for improved brain and nervous system function and efficiency. These have the potential for raising alertness and attention; speeding up reaction times; enhancing endurance and mental resilience; reducing apprehension and fear; and improving group dynamics and coordination. Recovery aspects include the treatment of depression, PTSD, memory loss, and dementia.

**Behavioural technologies**

Behavioural research is focused on the modification and improvement of cognitive and motor function through learning algorithms, virtual reality and biofeedback methods. Virtual reality environments have already demonstrated their use in the training of pilots, tank crews and infantry. Mental acuity can be enhanced by training and gamification algorithms. Behaviour and personal habits can be altered by reinforcement learning methods. Applications focus on both improvement and recovery, with recent advances in the treatment of PTSD and behavioural disorders.

A demonstration of a combat simulator, a form of PTSD treatment, is conducted at Walter Reed National Military Medical Center in Bethesda, Maryland, United States.

The integration of real-time cognitive and physiological user data (e.g., measures of attention, heart rate, etc.) opens a new vista for raising physical and cognitive performance. Motivational stimuli can be delivered back to the user based on his current physiological and mental state via machine learning-derived algorithms. The future of a personal coach on an intelligent FitBit that motivates and guides you to peak performance may not be too far away. The aggregation of anonymised data from individual performance outcomes into big datasets could further improve these algorithms. The result may be a FitBit that knows you better than you know yourself.

**Ethical issues and responsible use**

There are several ethical considerations for CBT that may transcend even AI in their complexity. First is the issue of personal agency. If CBT is able to motivate, enable, and even control human decision making and action, where does individual responsibility end? Are soldiers responsible for their actions when under the influence of advanced CBT, and under what conditions?

Relatedly, how does the Alliance ensure that there is sufficient consent for the use of CBT for individuals tasked to use the technology? These technologies can be invasive, both physiologically and mentally, and have the potential to cause harm, particularly as we do not fully understand their unintended cognitive and biological consequences.

In addition, significant privacy concerns will be raised once these technologies can enter our minds and see our most private thoughts and memories. What are the limits of such searches? And what are the protections for physiological and cognitive data, and who may store and control their dissemination or cause their deletion? More generally, what protections will we have against the potential of mind control, cognitive erasure, and reprogramming?

The Alliance's success with CBT will depend upon well-designed principles and practices relating to these ethical considerations, since the adoption and integration of these technologies will be based on the consent and acceptance of Allied governments and their societies at large. As in the case of AI, the Alliance and member governments will need to develop principles of responsible use, addressing such issues as privacy, consent, lawfulness, responsibility and governability.

## START resumes Global Terrorism Database collection; 1970 - 2019 data file now available to researchers

Source: https://www.start.umd.edu/news/start-resumes-global-terrorism-database-collection-1970-2019-data-file-now-available

Feb 26 – The Global Terrorism Database (GTD)™ team has resumed collection of the GTD, following a hiatus of several months in 2020 due to a funding lapse. Short-term funding agreements finalized with the German Federal Foreign Office (FFO) and United Kingdom Foreign, Commonwealth, & Development Office (FCDO) will allow researchers to complete

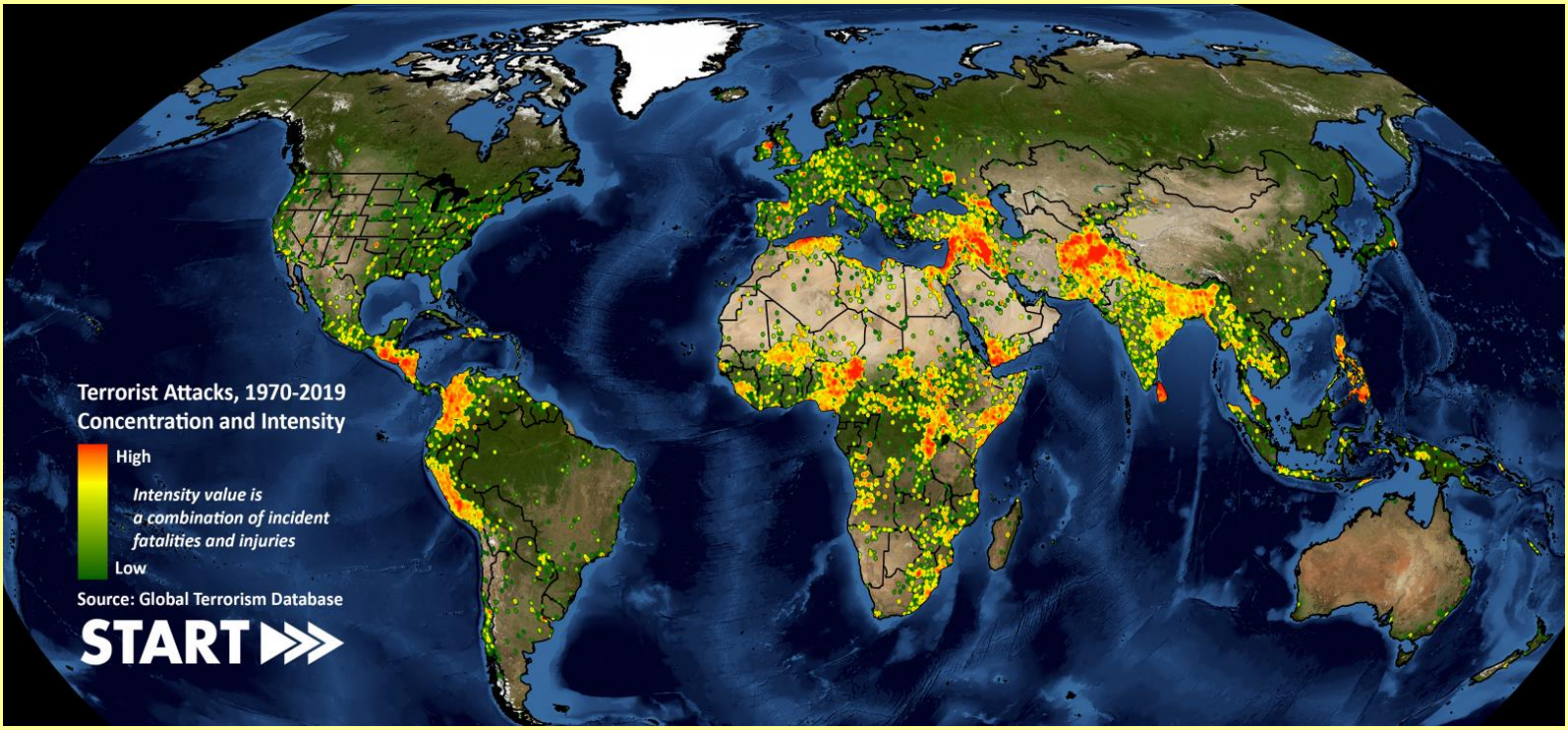
the data on terrorist attacks that took place during the first six months of 2020, and will also support a pilot project investigating the reliability of near-real-time data. This current partnership with the FFO follows a previous agreement that helped sustain GTD collection in 2019.

Along with this development, START has made the latest data file--which spans 1970 to 2019 and includes more than 200,000 records of terrorist attacks--freely available to individual researchers and scholars. The GTD team anticipates publishing partial 2020 data later this year.

"We are very pleased to support the continued operation of the Global Terrorism Database," said Dame Karen Pierce DCMG, Her Majesty's Ambassador to the United States, commenting on the value of sustaining the GTD. "It is an exceptionally useful source of information for the analysis of terrorist incidents, and is unequalled in its ability to examine long-term trends. We look forward to being a part of START's work, both now and in the future."

Heike Thiele, Director for Civilian Crisis Prevention and Stabilization at the German FFO, emphasized the importance of reliable data for timely foreign and security policy given complex challenges:

> Global foreign and security policy is increasingly marked by crisis and conflict-ridden developments. Diverse issues such as the impact of climate change, domestic terrorism, internal displacement and forced migration as well as the Covid-19 pandemic are compounding complex situations.
>
> With the 2017 "Guidelines on Preventing Crises, Resolving Conflicts, Building Peace", the German federal government agreed on the framework on how to tackle such situations. Among other aspects, it decided to strengthen Early Warning processes and instruments. Our goal is to get ahead of critical developments and to provide situation-specific recommendations for policy action.
>
> To achieve this goal, Early Warning instruments need to have the most reliable and relevant data on conflict, crisis and terrorism available. This is why the German Federal Foreign Office together with a number of international partners continuously supports the Global Terrorism Database project and other international data providers.




GTD principal investigator Erin Miller noted the GTD team's commitment to continuing to improve the data collection process.

"We appreciate the opportunity to not only continue data collection, but also conduct a pilot project that will allow us to learn more about the reliability of real-time data collection," Miller said. "With this analysis, we will better understand what types of information are generally reliable in the immediate aftermath of an attack, and what types of information are best captured after events have unfolded."

The GTD was developed at the University of Maryland beginning in 2002 under the leadership of principal investigator Gary LaFree, and co-principal investigator Laura Dugan, and became START's flagship database. The collection and dissemination of the GTD has

previously been funded by the US Department of Defense, the US Department of State, and the US Department of Homeland Security. In an effort to better align the funding of the GTD with the diversity of user communities that rely on it, the University of Maryland partnered with CHC Global in 2019 to offer commercial licenses for organizational users. Those interested in a commercial license can submit an inquiry for organizational use on the GTD website, and CHC Global will provide additional information.
"As always, it is our goal to maintain the GTD as a public good to be used around the world by those who aim to understand the causes and consequences of terrorism," Miller said. "We are excited about expanding our partnerships with agencies that value robust, data-driven analysis to continue to make the GTD available to the research community."

## Belgium MP Unloads on Top Officials for Allying with Turkey

Source: https://europe.infowars.com/belgium-mp-hoists-greek-flag-blasts-top-officials-for-allying-with-turkey/

March 2020 – A Flemish MP raised a Greek flag during a fiery speech at Belgium's parliament in which he blasted top officials for allowing Turkey to 'blackmail' Europe with threats to unleash millions of migrants onto the continent.
MP Dries van Langenhove, who serves as the youngest member of parliament, targeted Belgium's current and former prime ministers in a rousing address he punctuated by hoisting a Greek flag in a show of solidarity.
Greece is currently holding back a massive migrant invasion launched by Turkish President Erdogan.
"Prime Minister, if I told you that I would have given the keys of my house to a burglar and that I would now pay him not to break into my house, you might have declared me crazy," van Langenhove said. "Well, this is exactly what CD&V, VLD and also the N-VA [Belgian political parties] did in 2016 when you signed a blackmail deal with Erdogan. You gave him the keys to our European borders and then paid him many billions of euros, not to make an abuse of these keys."
"But Erdogan, of course, is a whole lot smarter than you 'establishment politicians' are. The Turks have a leader who - unlike you - know what 'Realpolitik' is. Erdogan knew from the beginning that he could very easily blackmail Europe with this deal."
Van Langenhove touted his own party, the nationalist-populist Vlaams Belang faction, as the only party that has not supported sending billions to Ankara in exchange for defense of the EU's borders from mass migration.
Calling Erdogan's move an "act of war," van Langenhove unfurled a Greek flag and aimed his final statements directly at Belgian Prime Minister Sophie Wilmès.

"Do you know this flag, Prime Minister? Do you know this people?" van Langenhove asked. "They are the Greeks, and they also guard our border. They also watch over our future. My question is therefore simple, Mrs. Wilmès: do you now realize who our true ally is?"

**"It is not Erdogan, madame Minister. It is our fellow Europeans, the Greek people."**

## Indian intelligence agencies keep an eye on Al-Qaeda linked Turkish group expanding in Nepal

Source: https://www.livemint.com/


Feb 28 – The Turkish group has been running multiple projects in Nepal, especially in areas close to the Indian border, to broaden the support base among the country's minority Muslim community and expand logistical operations in support of global jihadist networks

An al-Qaeda linked-charity group from Turkey has been working with Islamai Sangh Nepal (ISN), which is under the scanner of Indian intelligence agencies for allegedly providing sanctuary to terrorists, to expand its logistical hub for jihadist networks, according to an investigation by Nordic Monitor.

The Foundation for Human Rights and Freedoms and Humanitarian Relief or IHH has been running multiple projects in Nepal, especially in areas close to the Indian border, to broaden the support base among the country's minority Muslim community and expand logistical operations in support of global jihadist networks.

The main facilitator for the IHH gaining a foothold in the Himalayan country was the ISN, which has received funding directly from Turkey to finance various projects.

The IHH has been named in the UN Security Council documents and was investigated for running a line of support to armed terrorist groups in Syria.

The IHH is known as a tool of the Turkish intelligence agency MIT and has been supported by the government of Islamist President Recep Tayyip Erdogan, which granted the organization special privileges for raising funds.

The activities of the IHH focus on several provinces of Nepal, especially in Province No. 1, Province No. 2 and Lumbini province. It has established mosques, madrasas, orphanages and Islamic centers in several cities including the capital city Kathmandu. It seems the IHH has taken a special interest in places like Sunsari that are close to the Indian border.

The Islami Sangh Nepal (ISN), a Kathmandu-based organisation, came under the scanner of Indian intelligence agencies for allegedly providing sanctuary to fugitive Indian terrorists in 2018.

The ISN's connection to Turkey's radical Islamists is not only limited to the IHH. It was also listed as a member of an organization called the Union of NGOs of the Islamic World (Islam Dunyasi Sivil Toplum Kuruluslari Birligi, or IDSB), a front outfit for Turkish paramilitary group SADAT.

Turkish government's development agency TIKA is also one of the sponsors of ISN activities in Nepal.

Ali Fuat Yilmazer, former head of the Turkish police intelligence section that specializes in radical religious groups, testified in court on August 16, 2016 that "the IHH campaigns are designed to provide aid for jihadists engaged in terrorism around the world and supply medical aid, funding, logistics and human resources for jihadists."

## Active-Shooter Incidents: Basic Strategies for Hospitals

**By Patrick LaBuff, MA**

Source: https://www.emsworld.com/article/1225574/active-shooter-incidents-basic-strategies-hospitals

Feb 27 – In recent years the United States has witnessed a surge of active-shooter incidents. Incidents such as the Columbine high school and Aurora theater shootings in Colorado have shown the complexities that can stress emergency management and public safety personnel. The shooters in these incidents have used multiple and diverse firearms as well as weapons of mass destruction such as incendiary devices and improvised explosive devices.

Many of these shooters are extremely young and have intensely studied firearms and explosives.

The Aurora shooter, for instance, used secondary devices to booby-trap his apartment.

These complex incidents clearly illustrate that first responders, emergency managers, and counterterrorism representatives must always be prepared to adapt their strategies.

Coordinating strategies and tactics before, during, and after incidents will help protect first responders and first receivers.
Active-shooter incidents have targeted all forms of soft and hard targets. Among soft targets, hospitals are among the hardest to defend against armed-intruder incidents. Unlike most other soft-target facilities, hospitals have lifesaving operations that cannot stop. Most have operating rooms, maternity wards, and critical care units where lifesaving or life-stabilizing activities are continual. Alternatively, you may have emergency departments, critical care units, or ancillary/satellite facilities like nursing homes with patients/residents who lack vision, hearing, mobility, or have extreme issues with basic life support functions. This makes it nearly impossible for such facilities to effectively evacuate during active-shooter incidents.
Hospital leadership and personnel must employ effective conflict-resolution strategies before, during, and after times of crisis. Leaders such as fire chiefs, police chiefs, emergency managers, EMS coordinators, and local health directors also play a large role in the preparedness/response to these incidents. This article offers strategies to guide hospital emergency managers and other healthcare personnel to combat active-shooter situations effectively.

**Coalitions**

Creating and maintaining external coalitions, such as a local emergency planning committee, works like a hospital emergency management committee expanded to include additional governmental and private organizations. These can facilitate coordination among responding agencies and promote effective communication.
Communication is always a top issue in active-shooter situations and many other disasters. Meeting with community chiefs quarterly will dramatically expand awareness of community and regional problems, increase training opportunities, strengthen mutual aid relationships, and even improve access to grants. Hospital leadership should reach out to surrounding fire and EMS departments, law enforcement, county and state emergency/disaster offices, health departments, the Red Cross and similar private organizations, elected officials, and neighboring hospital emergency managers. The goal is to have a diverse membership of chiefs and specialists that mirrors the framework of the internal emergency management committee but promotes the same objectives on a larger scale.
Partnering with the FBI or attending its weapons of mass destruction community work group meetings can enhance your awareness of trending issues in terrorism and criminal activity. Healthcare representatives can also act as specialists to provide specialized knowledge and intelligence to law enforcement. Topics such as potential threats, vulnerabilities, and case studies are shared at these quarterly meetings.

**Threat/Vulnerability Assessments**

Threat assessments are extremely important for healthcare facilities. When conducting hazard/vulnerability assessments, it is important to synthesize the complexities of the healthcare sector. Prioritize departments by their vulnerabilities.
These assessments will expose weaknesses and strengths. Take this information and apply it to preplanning, grant research, policy reform, and emergency response. Be sure to incorporate all satellite offices or related facilities. Ideally you should conduct an assessment for each facility for optimal security for your patients, employees, and visitors.
For example, say several surgeries are taking place in the operating wing of your healthcare facility, and an active shooter occurs in the cafeteria. It is important your surgical staff know the proper protocols. Many hospitals will continue to perform the surgery while locking down and isolating the room.
After the hazard/vulnerability assessment, you realize this is a complex issue for emergency managers to solve. Moving forward you should increase training and exercises for this situation, incorporating external public safety agencies. Many chiefs may not have thought about this problem. Law enforcement and other leaders can work with the hospital emergency manager to provide secondary or tertiary task forces to engage in defensive operations for these critical units. These task forces should consist of law enforcement, firefighters, EMT/paramedics, and potentially facility security officers. The latter can assist law enforcement with navigation, unlocking doors, access to the surveillance and communication systems, and access to critical infrastructure areas like mechanical rooms. Law enforcement and emergency management can also send strike teams to protect these critical units while surgeries, deliveries, and other vulnerable operations continue.
Remember, this can only occur with efficient resources and effective planning. If your hospital is in an area that's not extremely populated, you may lack additional resources and personnel, because the first priority of law enforcement will be to neutralize the shooter(s). Conflict-resolution strategies all begin with identifying the problem area(s) and matching resources to goals to combat these issues.

**Security Architecture**

To improve the security architecture of your facility, you must either have budget funds or grant funding. Once your threat assessments are complete, the hospital's emergency

management team must prioritize security architecture needs. Maybe it's most prudent to add bollards near entry points that are vulnerable to threats such as vehicle ramming. Maybe you should increase the number of cameras throughout the hospital or allow law enforcement wireless access to video feeds, allowing them to trace the shooter as an incident develops. Some critical areas could implement ballistic-resistant glass. All these measures can be costly, so it is important to conduct efficient research and provide data to your executive team to illustrate their importance.

Each facility has different budget hurdles as well as different threats/vulnerabilities, which makes it important to engage in a thorough assessment and discuss emergency management priorities before adding security architecture. Some improvements are not necessarily costly, such as numbering the outsides of patient/resident windows for emergency responders. This allows law enforcement and fire service personnel to identify room locations from the outside of the structure for a swift and safe extrication of victims.

**Communications**

Lack of effective communications is often one of the largest problems in emergency incidents. From a hospital perspective, the focus should be improving interdepartmental and interagency communications.

Many hospitals or healthcare facilities use emergency code systems—for example, a "code pink" could be a child abduction, or a "code silver" an active-shooter situation. Initially hospitals began using color code systems because they did not want to cause panic. However, when teaching active-shooter training courses, I always tell hospital staff to put themselves in the visitor's shoes: If you were waiting in a hospital waiting room or lobby for a family member receiving treatment, most likely you would want to hear a direct verbal communication that there was an active shooter and their location so you could effectively flee or shelter in place. "Code silver in the PACU" would leave you with no idea what to do.

Another problem with color code systems occurs when multiple agencies work a major incident together. Those from outside the hospital system—EMTs/paramedics, firefighters, and police officers—may not understand unique notifications. Emergency color code systems are not standardized throughout the United States, and some personnel may work for multiple institutions. Promoting common terminology limited to the threat and its location will combat these issues.

**Conclusion**

Emergency managers must remain adaptable. Threats such as active shooters always evolve in response to our defenses and preparations. Following these approaches will promote the fundamental first phase of combating active-shooter situations for hospitals and healthcare facilities.

***Patrick LaBuff, MA**, is emergency management director at Hartford (Conn.) Hospital. A former homeland security and emergency management advisor to the U.S. Congress, he has dual master's degrees in homeland security and emergency and disaster management from American Military University. He is a doctoral candidate in emergency management and a member of Connecticut USAR Task Force 1.*

## Insider Threat: GAO Weighs in on Airport Worker Screening

**By Kylie Bielby**

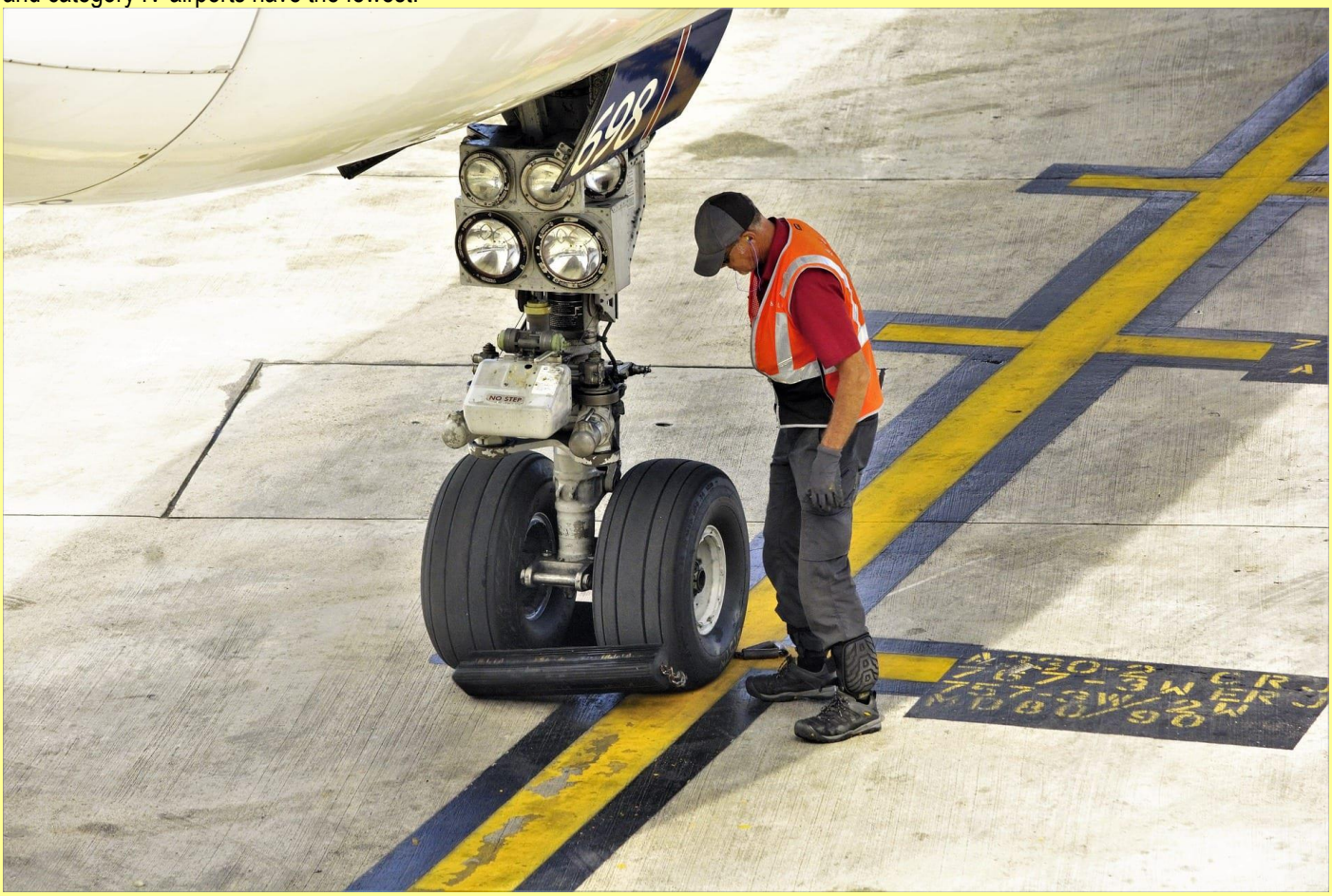
Source: https://www.hstoday.us/subject-matter-areas/airport-aviation-security/gao-weighs-in-on-airport-worker-screening/

Feb 27 – 1.8 million U.S. airport workers have unescorted access to restricted areas, posing a potential insider threat. In July 2019, for example, an aircraft mechanic was charged with willfully attempting to damage an aircraft. Additionally, in August 2018, a ground services agent commandeered a small aircraft, which subsequently crashed. The Transportation Security Administration (TSA) has sought to mitigate such insider threats by conducting random physical screening of airport workers at mostly larger airports from 2007 to 2020, and at all TSA-regulated airports since 2020, and by requiring most airport operators to perform random worker screening, among other efforts.

TSA recently studied the cost and feasibility of enhanced worker screening that would be similar to passenger screening. In September 2020, TSA estimated it would cost at least $2.9 billion up front and at least $2.5 billion annually.

But the Government Accountability Office's (GAO) February 25 report says TSA didn't fully follow the best practices in GAO's Cost Estimating and Assessment Guide. GAO also found that TSA's feasibility information was incomplete, for example, it did not consider airports' space constraints.

TSA classifies the nation's approximately 420 TSA-regulated airports with year-round operations into one of five categories (X, I, II, III, and IV) based on various factors, such as the number of take-offs and landings annually, the extent of passenger screening at the airport, and other security considerations. In general, category X airports have the highest number of passenger enplanements and category IV airports have the fewest.



Category X, I, II, and III airports are required to implement measures to control access and prevent unauthorized entry to security-restricted areas of the airport. Airports choose their specific access control system and technology, such as cipher or keyed locks, proximity swipe cards, Personal Identification Number (PIN) readers, or biometric (e.g., fingerprint) authentication, provided such technology meets the standards of their TSA-approved security program. Category IV airports—which are typically the smallest TSA-regulated airports—are generally not required to identify security-restricted areas within their security programs and thus may not have mechanisms in place to control access to such areas. However, like the larger TSA-regulated airports, security programs for category IV airports must provide for adequate law enforcement support, and these airport operators may choose to implement access control technologies or other measures at their discretion and incorporate those measures into their security programs.

When assessing best practices, GAO found that while TSA documented its assumptions, it did not include a standard work breakdown structure or dictionary. Without these, the watchdog says TSA cannot ensure its estimates do not omit or double count any elements. TSA officials responsible for developing the estimate said they were unaware of GAO's cost estimating guide. Instead, they followed guidance from the Office of Management and Budget (OMB) on regulatory impact analysis, because enhanced worker screening is a conceptual rather than established program. GAO countered that OMB guidance on cost estimates recommends following GAO's cost estimating guide in order to meet most cost estimating requirements. TSA officials said that the GAO cost estimating guide could be helpful to consider when developing future cost estimates.

GAO's review also determined that TSA's 2020 study used incomplete information to assess the feasibility of implementing enhanced airport worker screening. First, TSA did not include local airport constraints—such as availability of space for screening operations—that it stated could influence feasibility. Second, TSA's assessment relied on the perspectives of and experiences at large airports, which may not be applicable to smaller airports. TSA

officials said they believed the feasibility assessment was sufficient and there was no other formal agency guidance for how to conduct feasibility studies. Despite this, officials said that such guidance could be useful for future assessments.
In order to ensure best practices are followed in future, GAO recommends that TSA considers following the best practices set out in GAO's cost estimating guide when developing approaches for future cost estimates. In addition, GAO recommends that TSA issue guidance to help ensure that the agency consistently incorporates complete information in its future feasibility assessments.
The Department of Homeland Security (DHS) has concurred with the recommendations. It stated that TSA plans to develop and disseminate guidance for relevant TSA offices to consider following GAO's cost estimating guide when developing cost estimates for established transportation security programs. TSA also plans to issue guidance to help ensure the agency consistently incorporates complete information in its future feasibility assessments. TSA will develop this guidance by researching best practices and identifying essential elements of a complete feasibility assessment. DHS estimates these actions will be complete by February 28, 2022.

▶▶ Read the full report at GAO

## Supreme Court Rules IS Bride Shamima Begum Cannot Return to the U.K.

**By Kylie Bielby**
Source: https://www.hstoday.us/subject-matter-areas/counterterrorism/supreme-court-rules-is-bride-shamima-begum-cannot-return-to-the-u-k/

Feb 26 – The U.K. Supreme Court has ruled that Shamima Begum, who left the U.K. for Syria along with two other schoolgirls to join the Islamic State (IS) group as a teenager, will not be allowed to return and fight her citizenship case. She is currently living in a camp in northern Syria, controlled by the Syrian Democratic Forces.


Begum was born and brought up in the U.K., and was a British citizen at birth. When she was 15 years old, she travelled to Syria with two friends. Shortly after she arrived, she married an IS fighter. Begum has remained in Syria since 2015 and has aligned with IS.
Now 21, she had her citizenship removed by the U.K. government on security grounds in early 2019, after she was discovered living in a refugee camp in northern Syria by Anthony Lloyd, a war correspondent for *The Times*. When Lloyd found her, Begum was heavily pregnant.
She argued that she had been left stateless, but in February 2020 a tribunal said that because she held dual British-Bangladeshi nationality, the move to strip her of her British citizenship was lawful. Then, in July, the Court of Appeal ruled that the only fair way forward was to allow her into the U.K. because she could not effectively appeal against the decision from the camp in northern Syria. Subsequently, the Home Office appealed to the Supreme Court who ruled on February 26 that the government had been entitled to prevent Begum from returning to the U.K.
In its judgement, the Supreme Court said: "The Court of Appeal mistakenly believed that, when an individual's right to have a fair hearing of an appeal came into conflict with the requirements of national security, her right to a fair hearing must prevail. But the right to a fair hearing does not trump all other considerations, such as the safety of the public."
In addition, "the Court of Appeal made its own assessment of the requirements of national security, and preferred it to that of the Secretary of State, despite the absence of any relevant evidence before it, or any relevant findings of fact."

▶▶ Read the case details and judgement at the Supreme Court

***Kylie Bielby** has more than 20 years' experience in reporting and editing a wide range of security topics, covering geopolitical and policy analysis to international and country-specific trends and events. Before joining GTSC's Homeland Security Today staff, she was an editor and contributor for Jane's, and a columnist and managing editor for security and counter-terror publications.*


Freedom or Death
OUR
ANCESTORS
OUR
COUNTRY
OUR
DEMOCRACY
OUR
FREEDOM
1821-2021
200 YEARS
OF GREEK
INDEPENDENCE
FROM
OTHOMAN
EMPIRE

## U.K. Prisons Must Not Become 'Terrorist Training Grounds' as Sentences Increased, Government Warned

Lizzie Dearden (*Independent*)

British prisons must not be allowed to become "terrorist training grounds" as the number of extremist inmates rise, the government has been warned. The number of terrorist prisoners hit a record high last year, and a package of new laws currently going through parliament aims to make them serve longer inside jail by increasing sentences and changing release rules. During a debate in the House of Lords on Wednesday, several peers demanded assurances that security inside prisons will be maintained and extremists can be deradicalised. It comes more than a year after the first Isis-inspired attack inside a UK jail, where a terrorist inmate and radicalised violent criminal attempted to kill a prison officer at HMP Whitemoor. Proposing a series of amendments to the new Counter-Terrorism and Sentencing Bill, Liberal Democrat peer Lord Marks said: "We are also concerned to consider the effect on other prisoners of having serious terrorist offenders in their midst. "It is of great importance to avoid the risk that the most serious offenders are seen as some kind of kingpins within prisons to be looked up to and emulated. If our prisons become terrorist training grounds, the effect of long sentences will have been utterly counterproductive.

## COVID-19 and Terrorism in the West: Has Raicalization Really Gone Viral?

Michael King and Sam Mullins, (*Just Security*)

According to a recent report published by the United Nations, violent right-wing extremists and jihadists "have successfully exploited vulnerabilities in the social media ecosystem to manipulate people and disseminate conspiracy theories" designed to reinforce their narratives and incite terrorism. From the outset of the coronavirus outbreak it was evident that violent extremists were seeking to take advantage of the growing calamity by working the virus into their existing narratives and increasing the volume of online propaganda. Concurrently, terrorism experts and government officials have warned that "captive audiences," stuck at home during lockdown, bored and lonely, with little to do but surf the internet, are particularly vulnerable to such efforts. As the assistant commissioner of Britain's Metropolitan police, Neil Basu, told members of parliament: his "greatest single fear" was that this confluence of factors would result in a rising tide of COVID-driven violent extremism and terrorism. Indeed, practitioners and terrorism scholars alike seem to agree, "COVID-19 and extremism are the perfect storm." At the heart of this supposed rise in extremism—at least in the West—is the internet.

## How the Media Can Define Terrorism

**By Nora McGreevy**

Source: https://daily.jstor.org/how-the-media-can-define-terrorism/

Mar 03 – Among the debates that continue to swirl around the events of January 6 is a question of definitions: Does the storming of the U.S. Capitol count as an act of terrorism?

Although the events of January 6 are recent, the debate is an old one. "Whenever a major violent action takes place in the United States, a public debate erupts as to whether it should be classified as terrorism or not," note Connor Huff and Joshua D. Kertzer. The scholars were writing in 2018, a few years removed from the mass shooting in Charleston, South Carolina; the mass shooting in the Orlando Pulse nightclub; and the Boston Marathon bombings, among other highly publicized acts of violence.

As Huff and Kertzer's work suggests, the media narratives Americans consume may shape their opinions about whether the events of January 6 constitute terrorism, to a startling degree.

In an experiment with 1,400 adults, the researchers manipulated key facts about hypothetical acts of violence, such as the tactic (a protest, a shooting, or a bombing, for example), the target (such as a Christian community center or a mosque), and the location (with options such as "in the United States" or "in a foreign dictatorship"). Huff and Kertzer found that many subjective qualities, such as the perceived political agenda of the attackers, have a significant impact on the likelihood that an event will be classified as terrorism.

Acts carried out by collectives, particularly groups from foreign countries, were around 15 percent more likely to be labeled as terrorism. On the other hand, individual perpetrators with histories of mental illness are significantly less likely to be considered terrorists.

The public also exposed its biases: Participants were significantly more likely to describe a Muslim actor as a terrorist and less likely to attribute the same term to an actor described as Christian. Additionally, attacks in which the political motivations for the violence are unclear are more likely to be understood as terrorism: "when in doubt, our respondents are more likely to assume an incident is political rather than personal," the authors write.

Huff and Kertzer then took their collected data and modeled how real-world events might have been perceived differently by the public, assuming different narrative constructions about the same set of facts. For instance, their models showed that narrative constructions about the San Bernardino attackers could sway Americans' likelihood of labeling the events "terrorism" by wide margins. If the perpetrators were labeled as having ties to foreign powers and a goal of changing policy, participants were 82 percent likely to label the attackers as terrorists. On the other hand, if a media outlet did not mention the attackers' religion (Islam) but *did* raise the specter of mental illness (one of the perpetrators, Syed Rizwan Farook, had an abusive father), the probability that the public might define the attacks as terrorism dropped to 31 percent.

All told, the authors showed empirically how the definition of terrorism can be socially constructed. In choosing how to frame and relate acts of violence to the public, the media wields "considerable power" in this process, Huff and Kertzer write.

Crucially, they add, reporters' decisions about narrative construction will have real and immediate consequences. Defining a violent act as terrorism to the public will influence how perpetrators are prosecuted, how the country responds, how Americans cast their votes in upcoming elections, and more.

***Nora McGreevy** is a freelance journalist based in Chicago, Illinois. She has written for Smithsonian magazine, Washingtonian, the Boston Globe, the South Bend Tribune and more.*

## Officer, please arrest me!


Dubai Police has recently acquired a Toyota Supra to add its super car fleet. Courtesy, Dubai Police

## Israel Reveals Secret Map of 'Hizbullah' Sites in Lebanon

Source: http://www.naharnet.com/stories/en/279947-israel-reveals-secret-map-of-hizbullah-sites-in-lebanon

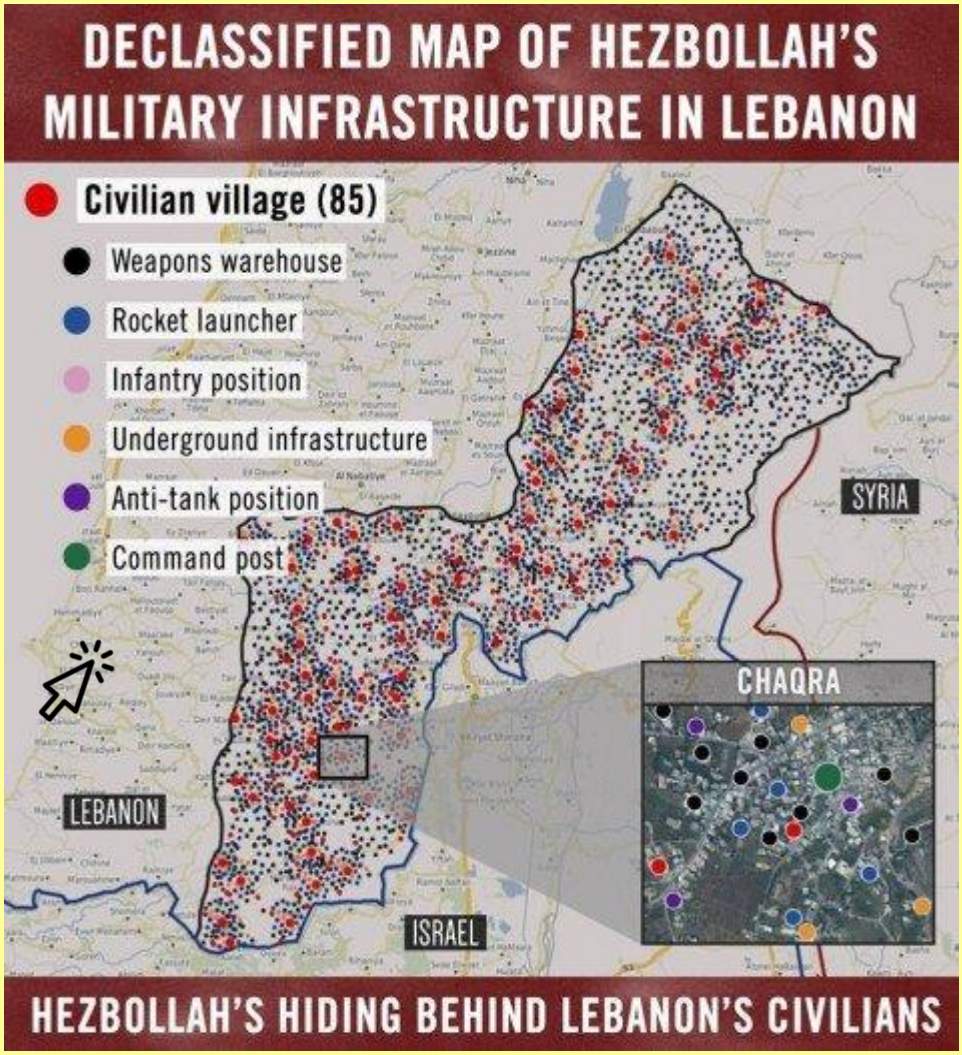
Mar 05 – Israeli Defense Minister Benny Gantz revealed on Friday a target map of "Hizbullah" missiles amid civilian infrastructure in Lebanon.

Gantz made an interview with the Americ an "Fox News" channel, during which he claimed that "Hizbullah" has hundreds of


thousands of missiles, claiming that the map shows "the locations of Hizbullah ground forces, storage sites, command offices, and missile launch sites."

On Friday, al-Sharq newspaper quoted the American channel as saying that Gantz gave the map to Fox News journalist, Terry Yingst, in order to see it, when he asked him about the number of missiles that Hizbullah had, but the channel hid the map details when the interview was aired.

A 2016 map




When the journalist asked whether the map represented a "list of targets for the Israeli army in Lebanon," the Israeli Defense Minister said: "This is a target map. Each one of them has been checked legally, operationally, intelligence-wise and we are ready to fight."

Previously, Israel's military chief of staff, Lt. Gen. Aviv Kohavi, warned that in future conflicts, Israel would use heavy force in residential areas where Hibullah rockets are stored and launched. He has said Israeli troops would warn civilians to evacuate their homes before launching such strikes.

## KrimDok

Source: https://krimdok.uni-tuebingen.de/Content/krimdok#content

The Criminological Information Service (Fachinformationsdienst Kriminologie, FID) is mainly focused on the task to provide the scientific community with literature and other subject-relevant information on criminology as comprehensively as possible. Currently, around

- 125,000 monographs
- 240 active journal subscriptions
- 320 digital documents in DigiKrimDok as well as

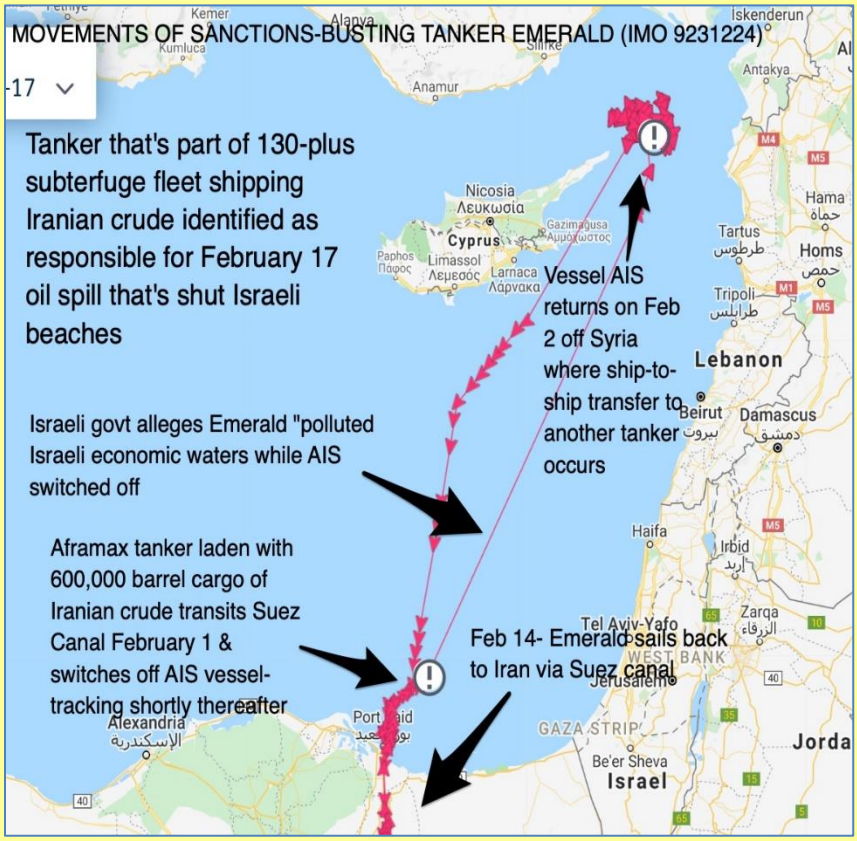
- 1,500 digital documents in the criminological repository

are part of the FID.
The most important research tool for the literature inventory as well as for bibliographical references, is the database KrimDok. In this database are currently about 252,000 references (status: May 2020).
KrimDok is a bibliographical reference system for criminological literature. The database consists of various literature and book stocks and also contains references of journals and collections, digital documents as well as grey literature. All references can be researched by utilizing just one search interface.
For decades the Institute of Criminology at the University of Tübingen (formerly under Prof. Dr. Hans-Jürgen Kerner, currently under his successor Prof. Dr. Jörg Kinzig) as well as the Institute of Criminology at the University of Heidelberg (Prof. Dr. Dieter Dölling) collaborated to index journals for KrimDok. Until 1998, the Police College in Villingen-Schwenningen (Prof. Dr. Thomas Feltes) was involved as well in cataloging literature for KrimDok.

## Detecting Hidden Threats by Using New Technology

Source: https://i-hls.com/archives/107416

Mar 06 – The U.S. military command charged with watching and protecting North American airspace is now using artificial intelligence to detect the threats that previously slipped its notice.
The new capability, named Pathfinder, fuses data from military, commercial and government sensors to create a common operating picture for North American Aerospace Defense Command and U.S. Northern Command.
The platform aggregates data from multiple systems, data that would in the past have been left on the cutting room floor and not analyzed or assessed in a timely manner. Using machine learning, the Pathfinder helps analyze that data from multiple militaries, commercial and governmental systems.
Previously that data stayed in separate systems, preventing NORAD from seeing the whole picture and allowing potential threats to slip through unnoticed.
Pathfinder takes the data from each of those systems and fuses it into a common operating picture, as reported by c4isrnet.com.




## Could Iran Really Be Linked to 'Eco-terrorism' against Israel?

**By Seth J. Frantzman**
Source: https://www.meforum.org/62091/iran-eco-terrorism-against-israel

Mar 04 – A shocking claim by Israel's environmental protection minister on Wednesday that a Libyan ship dumped containers of crude oil off Israel's coast, causing one of the country's worst environmental disasters, is making waves. This is because Environment Protection Minister Gila Gamliel said that Iran was responsible for the environmental harm.
The story of the ship that allegedly caused the spill is convoluted – like many things at sea that involve the shipping industry. This is because ownership of ships is often murky and involves shell companies and ships registered in one place, flying the flag of a different place, owned by a third party and captained by people from a fourth nation.
This is especially true of ships involved in illicit

activity linked to countries that are under international sanctions, such as Iran. Israel says that the ship is the Libyan-owned *Emerald* tanker.

"This is a crude oil tanker called *Emerald*, owned and operated by a Libyan company," Gamliel said. "It was illegally carrying cargo from Iran to Syria. The ship was flying Panama's flag. Iran is waging terrorism not only by trying to arm itself with nuclear weapons or trying to establish a base near our borders. Iran is waging terrorism by harming the environment.

"Our battle on behalf of nature and animals must be a cross-border one," she said. "Together, we will bring to justice those responsible for the environmental terrorism, those who committed this crime against humanity. We will continue to rehabilitate the damaged beaches and the animals that were harmed. Together, we will win, and we'll remove the pollution from our country's shores."

The ship was allegedly going from Iran to Syria where it was smuggling crude oil, Israel claims. Ships trying to get to Syria from Iran in the past have been interdicted so the transit can be illicit. The vessel also turned off its automatic identification system, a kind of transponder.


This is common in the shadow world of ships that conduct illicit business. According to reports, the Emerald came within tens of kilometers of Israel's shores, within the exclusive economic zone. It spilled its oil on February 1 and 2 before continuing on to Syria. It took two weeks for the tar oil to reach Israel's shores.

Tar from an oil spill in the Mediterranean washed up on a beach near Michmoret, Israel, March 1, 2021.

Can a ship purposely dump containers of crude oil to harm Israel's environment? Can countries begin to use environmental terror?

It is not out of the realm of possibility. In the past, Israel has had friction with Syria over water issues, including fishing, and the Jordan River was a cause for conflict in the early years of the state. Disputes over a dam in Ethiopia have led to a war of words in northeast Africa.

However, the ability of a ship to purposely dump oil so that, two weeks later, it harms a country's coastline appears very complex. That would require study of the currents off the coast and knowledge of where cargo needs to be dumped and at what time to end up in a certain place.

It leads to further questions about why such activity wasn't judged to be suspicious when it was happening, rather than almost a month later.

The chance that Iran would risk damaging the coastline of Gaza or its Hezbollah friends in Lebanon – who all share a coastline with Israel – would appear to be a major risk for Tehran.

Nevertheless, recent incidents like the reported Iranian cyberattack against Israel last year, could mean that the Islamic Republic is using every asymmetric means of attack at its disposal, including the environment.

***Seth J. Frantzman** is a Ginsburg-Milstein Writing Fellow at the Middle East Forum and senior Middle East correspondent at The Jerusalem Post.*

**EDITOR'S COMMENT:** Everything is possible in this life and for terrorism scenarios the sky is not the limit. Remember an old story (2008) with the Iranian MV Deyanat captured by pirated in the Gulf of Aden? 16 pirates died from the ship's contents (???).

# Women's Day: an opportunity to commemorate female victims of terrorism

Source: https://www.tehrantimes.com/news/458982/Women-s-Day-an-opportunity-to-commemorate-female-victims-of

Mar 09 – The Second Meeting of "Empowerment of Women Victims of Terrorism; the Necessity for Future of Human" was held at Allameh Tabatabai University in-person and via webinar on Monday, paying tribute to women victims of terrorism.


By the effort of the Association for the Defense of Victims of Terrorism in collaboration with Allameh Tabatabai University and the International Law Student Association, the event was held on Monday with scholars and women activists in human rights affairs in Iran and West Asia and the families of war veterans and martyrs of the terrorism in attendance.

Aramesh Shahbazi, a professor at Allameh Tabatabai University, said at the beginning of the meeting, "Terrorism is an ominous and unfortunate phenomenon and becomes more distasteful when it is organized. If the targets of terrorism are those who are supported by the international community, such as children and women, then these measures violate not only international values but also the human rules of societies.

"Unfortunately, there is no comprehensive definition of terrorism, and this adds to the complexity of the issue that the existing capacities and facilities in international organizations should be used and steps should be taken to empower women victims in various social and economic dimensions.", she stated.

Shahbazi went on to say that "Women's Day is an opportunity to raise public awareness of women victims of terrorism and emphasis on the commitment to provide ample facilities for this segment of society and improve their conditions and develop national and international networks to realize their rights and follow up on necessary actions for them."

Shoaa Kazemi, an associate professor and faculty member at Al-Zahra University, for his part, discussed the mental health of women affected by terrorism, saying that people who were exposed to terrorist acts were suffering from disorders and noted, "Depression, anxiety, fear, diminished self-esteem, sleep disturbance, decreased tolerance and anger, locked up at home and quitting jobs and suicide are some of the symptoms that indicate that people, especially women, have been harmed by terrorism." The university professor went on to make suggestions for improving the condition of the injured. Reducing discrimination, emphasizing capabilities despite shortcomings, paying attention to victims' concerns, and creating opportunities in employment and education were some of her suggestions for women.

Dr. Ahangar, a researcher at the Institute for Social Studies and Research at the University of Tehran, said in another part of the meeting about the experience of women disabled in terrorist acts that there were cases where single women victims of terrorism remained permanently single and thus faced many problems. "Also, some women in nursing homes do not receive effective nursing services, and some of these women suffer from unknown diseases."

Ahangar mentioned equipping sanatoriums and hiring efficient nurses and timely payment of services provided to the disabled as factors in improving their conditions.

Zohreh Elahian, a member of the Iranian Parliament and a member of the National Security Commission, in her speech on the issue of women as a common aspect of terrorism, stated: "The issue of women affected by wars and terrorist events is an important issue. We face security and terrorist acts in the region and in various countries, from Afghanistan and Pakistan to Iraq and Palestine. Many women in different countries have suffered a lot due to the terrorist acts, and such incidents indicate that human rights and human rights are merely on the word and not in practice."

"The international community must take actions regarding this deplorable situation and use the capacity of human rights organizations to address these harms. The United Nations and the Human Rights Council and other institutions must fulfill their obligations and call on the governments of the world to take necessary steps in protecting the rights of women victims of terrorism."

She also stressed that "From the very beginning of the revolution, we faced Saddam's attack and witnessed that other countries and great Western powers supported Saddam. These attacks left many women wounded and martyred, and today many women are injured of the Iraqi chemicals attacks."

Referring to the terrorist incident in the parliament and the injury of women in the incident, Elahian added, "We have not forgotten the memory of the ISIS terrorist attack on the parliament. If the non-governmental organizations do not think about it now and do not have the necessary follow-up, such crimes will continue in the future and serious harm will be inflicted on the society."

In the course of the meeting, the women victims of Saddam Hussein's terrorist acts, the MKO, al-Qaeda and Komala, and ISIS extended their views about the terrorist incident that led to their disability.

"I was eight months pregnant when the terrorists placed an explosive device in front of my house, " said Fatemeh Mujbal, a victim of ISIS terrorism in Iraq, noting, "The blast wave destroyed my house. After the accident, the doctors said that my daughter would live only three days, but thank God my baby survived, but my daughter suffered from cerebral palsy."

"I think about that incident every day and when I look at my daughter, I remember that terrorist incident. I hope that one-day terrorism will be eradicated from Iraq and the world", she said.

Zohreh Haghpanahi for her part stated, "I was injured in a bombing in Tehran in 1982. I can now feel all the symptoms of PTSD disease with all my soul. I could not enter the community after the incident and I was afraid of encountering people. Gradually, with the help of my family, I was able to return to the community, go to university, and now serve as a teacher.

She underlined that women were the guardians of society and its real architects and they were so valuable that God had given them a mother role. "We must join hands and unite and work for freedom and justice, apart from differences between nationalities and ethnicities, and eliminate terrorism from societies. We can achieve this goal by unity among the women victims of terrorism."

Golrokh Mehri, a Zoroastrian, said, "I was the target of a terrorist explosion by the MKO terrorists at the age of thirty. I have been struggling with the effects of that day for 42 years. I still do not know why this happened and I will leave the perpetrators of that crime to divine justice. "

Habiba Golestani, a women's rights activist in Afghanistan, said that unfortunately, since March 4, 2020, when the issue of peace in Afghanistan and the Taliban-US agreement was raised, not only has the fire of war not diminished, but it has become so hot that it has spread from street to houses. Assassinations began which took victims from different walks of life. Accordingly, we bought fourteen meters of white fabric and gave it to the active women of the Women's Social Association until they collected signatures and announced their opposition to the war, and asked the warring parties to stop fighting and respond to the call for peace."

In another part of the meeting, Farideh Shafei described her injuries from Saddam's chemical attack on Sardasht: "Sardasht was first chemically attacked by the Ba'athist regime of Iraq in 1987. Mustard and nerve bombs landed on crowded and defenseless people in congested areas of the city, killing hundreds of people and leaving thousands more injured when they exposed to these toxic and dangerous gases."

"The devastating effects and consequences of this tragedy were so great that after thirty-three years, it still casts a shadow over the sick and disabled people, especially children, and they are grappling with problems. It is noteworthy that the international community and the UN have never condemned Iraq for this crime.", Shafei highlighted.

She stated, "I had to be sent abroad due to the severity of my injuries. One of my children was martyred in that incident and two other children became disabled, and I was the mother who lost one of her children and the nurse of two chemical disabled during those years."

Shafei said the assassinations were condemned wherever and in any form they were. "We hope that the international community will recognize the victims of terrorism. Hopefully, one-day peace, tranquility, uniformity, and justice will prevail in all societies and we will not witness so many crimes and injustices."

At the end of the meeting, the statement of the Association for the Defense of Victims of Terrorism on the occasion of International Women's Day was read.

In a part of this statement, it states that women are the most important element of human society, which has the highest role in regulating society as a mother, and the strengthening of the world depends on this exceptional creature of creation.

## How Poland Just Lost to Russia in a Massive Wargame (And What It Means)

**By John Rossomando**

Source: https://nationalinterest.org/blog/buzz/how-poland-just-lost-russia-massive-wargame-and-what-it-means-178578


Feb 20 – Poland's Ministry of Defense sought to see how its forces would fare in the event of an all-out Russian invasion. It didn't go well.

Last month, Polish forces suffered a crushing defeat in a wargame called "Winter-20." It sought answers to what could happen were Russia to throw all of the military might it has in its Western Military District against Poland.

By the fifth day of the mock conflict, Russian troops had reached the Polish defensive line along the Vistula River, while fighting to take Warsaw.

Poland's navy and air force faced complete obliteration and ceased to exist. Front-line Polish army units faced the loss of between 60 and 80 percent of their equipment. Russia obtained complete victory within five days.

▶▶ **Read the full article at source's URL.**

***John Rossomando** is a Senior Analyst for Defense Policy and served as Senior Analyst for Counterterrorism at The Investigative Project on Terrorism for eight years. His work has been featured in numerous publications such as The American Thinker, Daily Wire, Red Alert Politics, CNSNews.com, The Daily Caller, Human Events, Newsmax, The American Spectator, TownHall.com and Crisis Magazine. He also served as senior managing editor of The Bulletin, a 100,000-circulation daily newspaper in Philadelphia and received the Pennsylvania Associated Press Managing Editors first-place award in 2008 for his reporting.*

## European think-tank urges UN to hold Pakistan accountable for promoting terrorism

Source:https://www.aninews.in/news/world/europe/european-think-tank-urges-un-to-hold-pakistan-accountable-for-promoting-terrorism20210310184309/

Mar 10 – A European think-tank has urged the United Nations to hold Pakistan accountable for promoting terrorism and failing to live up to its legal and moral obligations towards its own people and the international community.

During an intervention at the ongoing 46th session of UN Human Rights Council in Geneva, Prime Minister Johnson unveils ambitious plan to boost transport connectivity across UK said, "In 2019 and 2020, following growing diplomatic pressure from the FATF and seemingly not driven by a genuine attempt to combat terrorism, Pakistan arrested Hafiz Saeed and Zakiur Rehman Lakhvi, two UN-designated terrorists. These sham arrests exemplify Pakistan's double-edged approach towards terrorist activities: terrorism is patronized when strategically useful but opposed when it targets Pakistani interests."

He added, "This is most apparent in Afghanistan, where Pakistan will now have to adapt to an at least partially Taliban-led government."

Global terror watchdog Financial Action Task Force (FATF) recently announced that Pakistan will continue to remain on its grey list due to failure to comply with all the points of a plan of action set by it to combat terror financing.

The FATF said there had been serious deficiency on the part of Pakistan in checking terror financing and hence it will continue to remain on the "increased monitoring list", another name for the "Grey List".

Magunna said an end to violence is unlikely to materialise through the Afghan Peace Agreement.

Rather, the US-Taliban deal has shifted the focus towards Pakistan as a safe haven for even more terrorists and terrorist organisations. The regained strength of the Pakistani Taliban and recent attacks by ISKP in Pakistan illustrate this.

He added, "The current situation is a natural outcome of the well-oiled infrastructure for terror created over decades by the Pakistani Army and its intelligence agencies and Islamabad's consistent distinction between good and bad terrorists."
"To be clear: this strategy has yielded no benefits for the political and economic wellbeing of Pakistan and the wider region. Until the Pakistani Army abandons this deeply entrenched way of operating, however, this situation will not change," said the research analyst.
He concluded that terrorism inherently undermines the promotion and protection of human rights while urging the Council to hold Islamabad accountable for failing to live up to its legal and moral obligations towards its own people and the international community.

**EDITOR'S COMMENT:** Guess who is Pakistan's best friend who dreams to join the European Union?

## When Imagination Failed: Revisiting Intelligence Failures

**By Melvin Goodman**
Source: https://www.counterpunch.org/2021/03/10/when-imagination-failed-revisiting-intelligence-failures/

Photograph Source: National Security Agency – Public Domain

Mar 10 – Yogi Berra opined that "it's tough to make predictions, especially about the future," but over the past 80 years there has been more than enough intelligence collected to prevent costly failures. From Pearl Harbor in 1941 to this year's invasion of the Capitol, there were strong intelligence indicators of the tumultuous events that were to ensue. Currently, there is a dearth of information from congressional sources regarding the insurrection of January 6, and no indication of a comprehensive investigation to find reasons for the breakdown. The failure of our trillion-dollar national security community to provide warning of a violent threat to the seat of governance remains troubling. The culprits in virtually every previous intelligence failure were wrong assumptions and the absence of applying imagination to the evidence at hand. In addition to Pearl Harbor and the insurrection of January 6, we can cite the October War of 1973; the Khomeini Revolution

of 1979; the Polish crackdown on the Solidarity labor movement in 1981; the Chinese crackdown in Tiananmen Square in 1989; the collapse of the Soviet Union in 1991; and the terrorist attacks of 9/11.

The key to flawed assumptions was often cultural superiority and outright racism. The indicators of the Japanese attack in 1941 were based on deciphering Japanese diplomatic codes, but they were downplayed because U.S. intelligence officers strongly believed that Japan lacked the grit and the technological ability to attack U.S. forces. Similarly, U.S. and Israeli intelligence dismissed ample evidence of a joint Egyptian-Syrian attack in 1973 despite a highly placed Egyptian source because U.S. and Israeli intelligence officers dismissed Arab ability to forge a coalition, mount a successful attack, and even consider taking on a "superior" Israeli force.

The Egyptian spy who could have saved Israel in 1973 was Ashraf Marwin, the son-in-law of Egyptian president Gamal Abdel Nasser and a close adviser to his successor, Anwar Sadat. He was know to his Israeli handlers as "The Angel," but the chief of Israeli military intelligence, General Eli Zeira, believed Marwin was a double agent trying to divert Israel's attention. Defense Minister Moshe Dayan believed Zeira, and Prime Minister Golda Meir relied on Dayan, so their political careers were thus ended.

The assumption that Polish and Chinese military forces would never turn their weapons on their own people drove the failures of Solidarity and Tiananmen, respectively, in the 1980s. In addition to the certainty within the intelligence and policy communities, the expert "talking heads" from the academic and think tank communities were on cable news networks regularly with similar analysis. Like the October War, the failure to predict the Polish tragedy should never have occurred because of a high-level Polish military source, Ryszard Kuklinski, who provided the Central Intelligence Agency with Warsaw's plans for martial law.

Preconceived notions played a major role in failing to anticipate the Iranian revolution of 1979 that deposed the Shah. The intelligence community missed the religious nature of the charismatic revolutionary, the Ayatollah Khomeini, and assumed the durability of an Iranian leader who was both anti-Soviet and anti-communist. The increased participation of the urban working class in the protests should have caused a reassessment, and there should have been a recognition of the anti-Americanism stemming from the CIA-backed coup that installed the Shah in 1953. I don't recall pressure on the CIA from the White House regarding support for the Shah, but there was a "house line" favoring the Shah that was corrosive. Israeli and French intelligence circles called attention to the Shah's vulnerability, but the CIA was unmoved.

Intelligence analysts who held their inadequate and unexamined assumptions typically were unmoved by new information that should have been incorporated into the estimative process. The failure to monitor the decline and dissolution of the Soviet Unions was due in part to the politicization of the intelligence product by CIA director William Casey and his loyal acolyte, Robert Gates, but there were too many military and civilian intelligence analysts who believed in the overall military prowess and political stability of the Soviet Union. The Pentagon's Defense Intelligence Agency was burdened by its worst-case views of the Soviets; the CIA's military analysts depended on their bean-counting to substantiate overestimates of the Soviet military and the Warsaw Pact.

The 9/11 failure was particularly costly in view of the two decades of futile warfare that have ensued against Iraq, a country that had nothing to do with the attack, and Afghanistan, a country without national security concerns for the United States. The CIA did not believe that al Qaeda would attack the United States at home, and the Federal Bureau of Investigation did not believe that al Qaeda had the organization in the United States to do so. The 9/11 failure also involved an element of cultural bias, with too many policymaker and intelligence analysts convinced that non-state actors required support from nation states to conduct significant acts of terrorism.

There is still much to learn regarding the intelligence failure of January 6. We still can't explain the long delay in calling out the National Guard in response to the riots. We are dealing with conflicting accounts of efforts to request assistance from the National Guard. The lack of preparedness is particularly stunning in view of the information that was available. It's hard to believe that key civilian and military officials refused to act because they were worried about "optics" regarding the presence of the military. We need to hear from the Pentagon's military and civilian leadership regarding the crucial delay in getting the National Guard to the Capitol.

There was significant evidence on social media, but the domestic intelligence agencies—the FBI and the Department of Homeland Security—failed to adequately alert key officials on the Hill. Ten years ago, our key foreign intelligence agency—the CIA—ignored social media and failed to provide warning of the Arab Spring. Excessive adherence to conventional thinking dominated the intelligence process on both occasions.

Intelligence analysts are typically vulnerable to "thinking in time" and apply past experience to future judgments. Iran analysts at CIA were constantly beating back rumors of problems for the Shah so that it become almost reflexive to dismiss the ranting of an aging Ayatollah who was in Paris, not Tehran. FBI and DHS analysts had experienced pro-Trump rallies in November and December 2020 so they saw no reason to expect anything different in January 2021. No intelligence was forwarded with any urgency that would have required a reassessment of prior planning; an important FBI alert was routinely emailed to Washington.

In every case cited thus far, from Pearl Harbor to January 6, the excellent collection of intelligence could have prevented failure. Political and cultural bias played a major role in

many of these failures, although there are too many examples of high-level intelligence officers who were willing to meet the demands of policymakers for politicizing intelligence. In my 24 years as a CIA analyst, I had to contend with far too many senior intelligence officers who truckled to their political mentors on Vietnam; Afghanistan; arms control; the Middle East; the Soviet Union; and the Iraq War. DHS analysts in the Trump administration covered up the serious problem of white supremacy and domestic terrorism.
In the wake of the October War failure, national security adviser Henry Kissinger argued that "anyone concerned with national policy must have a profound interest in making sure that intelligence guides and does not follow national policy." CIA's intelligence in the Gorbachev era and the run-up to the Iraq War certainly followed the corrupt policies of the White House, representing the total failure of its moral compass. In view of the numerous media accounts of Donald Trump's efforts to "incite street protests" and the efforts of his supporters to smuggle guns into the capital and create "armed encampments" along the National Mall, we need to know why there was no warning, no urgency, from intelligence and law enforcement.

***Melvin A. Goodman*** *is a senior fellow at the Center for International Policy and a professor of government at Johns Hopkins University. A former CIA analyst, Goodman is the author of Failure of Intelligence: The Decline and Fall of the CIA and National Insecurity: The Cost of American Militarism. and A Whistleblower at the CIA. His most recent book is "American Carnage: The Wars of Donald Trump" (Opus Publishing), and he is the author of the forthcoming "The Dangerous National Security State" (2020)."*

## Turkey's Gara Affair: How Not to Rescue Hostages

**By Burak Bekdil**
Source: https://www.meforum.org/62097/turkeys-gara-affair-how-not-to-rescue-hostages

Mar 10 – The "Gara Affair" will be recalled by both Turks and Kurds as a dark moment in their histories. It entailed a disastrous rescue operation meant to free 13 hostages held by the Kurdistan Workers' Party (PKK) in northern Iraq. The operation was poorly planned, possibly because of pressure from politicians to supply a triumph to impress the public. The operation resulted in the cold-blooded murder of all 13 hostages as well as the loss of three Turkish officers.
In 2015 and 2016, the PKK abducted 13 Turkish soldiers, police officers, and other government personnel. The government imposed a media blackout on the hostage-taking in order to avoid looking weak during election years. The Turkish people only learned that the abductions had taken place when an opposition MP inquired about the hostages' fate in a parliamentary motion. By February 2021, the hostages were largely forgotten, except to their families and loved ones.
But on February 8, President Recep Tayyip Erdoğan made a speech in which he told the nation that God willing, they would soon hear wonderful news. There was already speculation about a happy ending to the hostage crisis after Defense Minister Hulusi Akar visited the Kurdistan Regional Government in Erbil, the capital of Iraqi Kurdistan. Was he lobbying for the hostages' release via Turkey-friendly Iraqi Kurds who have leverage over the PKK?

But the news that emerged was far from wonderful.
At 2:55 am on February 10, the Turkish Air Force launched airstrikes on designated targets in Gara, in northern Iraq, where intelligence had confirmed the hostages were being held in caves. That was the beginning of Operation Claw Eagle-2.

The February 12 funeral in Ankara of three Turkish soldiers killed in a botched attempt to rescue 13 hostages held by the PKK in northern Iraq. (AFP)

At 4:55 am, after two hours of heavy airstrikes, Turkish helicopters dispatched scores of special forces to the ground. These elite units are called Combat, Search and Rescue, or MAK in the Turkish acronym.
The difficulty was that Gara is uncharted territory. The operation had to be carried out on rocky ground, over mountains and cliffs and through deep valleys that were all unfamiliar to the Turkish troops.

In the first clashes after landing, two Turkish officers and one non-commissioned officer were killed. By that time, DM Akar and four force commanders had arrived at an operations center on the Turkish-Iraqi border. On February 11, Akar told the press that 48 of a total of 50 targets had been hit during the airstrikes and that 53 terrorists had been neutralized (i.e., killed, injured or captured). There was no mention of the hostages.


At that stage, the Turkish people thought Claw Eagle-2 was just another cross-border operation against the PKK. They did not learn it was a hostage rescue operation until February 14, when Akar described the operation's goals as "the destruction of terrorists, ensuring border security and intervening in favor of hostages."

At a briefing by Yaşar Güler, Turkey's top commander and head of the military chiefs of staff, Turkey finally learned the full details of the ill-fated operation.

There was reliable intelligence that the hostages were being kept in caves in Gara. The special forces troops were trained via simulations and models based on the geography of the target area. Clashes between Turkish troops and PKK militants continued on February 10 and 11.

On February 12, Turkish troops arrived at the cave where the hostages were being held. That evening, the terrorist Osman Acer (codename Şervan Korkmaz) surrendered to Turkish soldiers and informed them that all 13 hostages had been executed (and that there were seven PKK militants inside the cave). A second terrorist who also surrendered later confirmed that the hostages had been executed at point blank range when Turkish helicopters arrived in Gara. The order for their execution came from PKK unit leader Kamuran Ataman (codename Sorej).

The official account confirmed that the Turkish troops learned that all the hostages had been killed about 36 hours after the executions had taken place. At that moment, the operation's goal was revised from hostage rescue to evacuation of bodies and assault on terrorist units. Gen. Güler described the rest of the operation as "extremely difficult ... in dark caves where there were iron fortifications and IED traps." Eventually the bodies were successfully retrieved.

This was the first tragically concluded hostage crisis in Turkey's recent history. In 1996, Fethullah Erbaş, an MP, negotiated and brought back eight Turkish soldiers who had been kidnapped by the PKK. In 2015, a humanitarian relief organization, IHD, successfully negotiated the release of 20 customs officers kidnapped by the PKK. In 2013, a pro-Kurdish party, BDP, ensured the safe release of two soldiers from PKK captivity. And in 2014, the Turkish government negotiated the successful release of 49 officials who had been kidnapped by ISIS at the Turkish consulate in Mosul, in northern Iraq.

Tough questions must be asked after the loss of the 13 hostages and the three officers. Was the Turkish military under pressure from Erdoğan, who wanted to sell the Turks a miraculous victory story? Was there sufficient intelligence and enough time to prepare for an extremely risky operation?

"The Turkish military had not carried out such an operation before," said Ahmet Yavuz, a retired major general. "After waiting for six years for their release the government could have waited a little longer to see less risky operational conditions or a different methodology for their release."

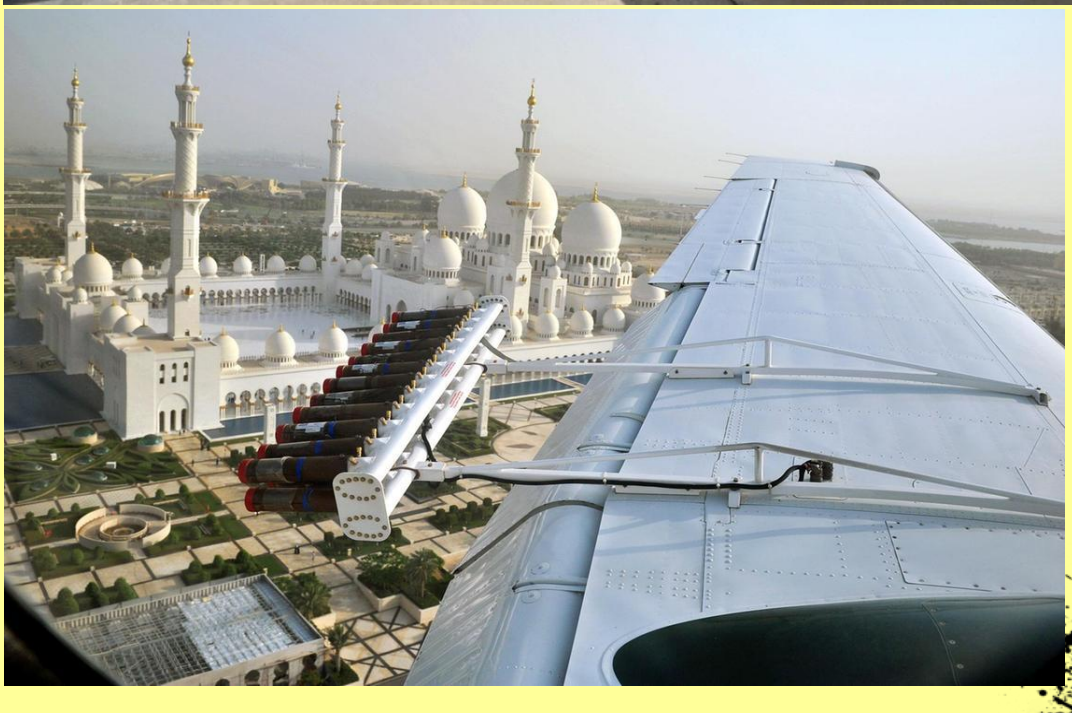
There seems to be a fundamental, perhaps existential impediment to operational planning. Apparently, the special forces units arrived at the right cave 38 hours after the operation had begun with airstrikes. Those units therefore lacked an essential element in any hostage rescue operation: the factor of surprise. The PKK men had nearly two full days in which to decide what to do with the hostages.

At the conclusion of the drama, Erdoğan set about accusing a host of entities for the failure: Turkish opposition parties, the pro-Kurdish party, Kurdish politicians—even the Biden administration, which Erdoğan criticizes for maintaining military cooperation with Syrian Kurds. Had the story had a happy ending, all credit would certainly have been his.

***Burak Bekdil*** *is an Ankara-based political analyst and a fellow at the Middle East Forum.*

# Cloud seeding in the UAE

Aircrafts equipped with flares send silver iodide particles into the atmosphere to encourage the formation of water droplets, which leads to rain.

**EDITOR'S COMMENT:**
Various clouds' seeding techniques are used in an effort to generate rain but at the same time extra caution is needed in order to avoid the **malicious use** of the specialized spraying equipment shown in the photos above.

# Europe's Migrant Crisis, Still Yielding Terror, Foretells the Effects of Biden's Border-Crossing Boom

**By Todd Bensman**

Source: https://thenationalpulse.com/analysis/europes-migrant-crisis-still-yielding-terror-foretells-the-effects-of-bidens-border-crossing-boom/

*With the flash of knife, the latest border-jumping, migrant asylum seeker has wrought yet another trail of blood, hospitalizations, shots fired, and street memorials in a European nation. This time, a 22-year-old Afghan migrant asylum allegedly **slashed** seven pedestrians in the Swedish town of Vetlanda before police could disable and arrest him.*

Mar 09 – Although reporting is developing, the Afghan undoubtedly crossed the European Union's external borders among several thousand young Afghan asylum applicants who traveled to Sweden in recent years via an Iran-Iraq-Turkey-Greece-Italy route and who are now being repatriated as ineligible.

How and why border-crossing migrants from Muslim-majority nations keep conducting such attacks pose lessons applicable to the American southern border, where thousands from the same Muslim-majority nations annually cross.

***Jihad at the Border.***

As discussed at length in *America's Covert Border War, The Untold Story of the Nation's Struggle to Prevent Jihadist Infiltration*, Europe's experience showcases a new terrorism travel phenomenon on the world stage: that malevolent long-haul migrants from countries rife with Islamist terrorist organizations now routinely cross land borders of western nations and do so far less noticeably when high volumes of benevolent economic migrants have overwhelmed border management systems.

Security officials first realized the new terrorist border proliferation method after ISIS deployed operatives camouflaged among massive migrant caravans to attack Paris in November 2015 and Brussels in March 2016. Lone offender migrants and small cells have since neatly exploited the inability of western security services to vet hearts and minds as border control and asylum systems stagger under high volumes.

Now that record volumes plague the U.S.-Mexico border, American leaders should know that stressed receiving nations waved through people like the Afghan knife slasher of Vetlanda, the Tunisian who in October 2020 slashed three people in a Nice, France church, the Iraqi who in August 2020 purposefully hunted and killed German motorcyclists in an Opel Astra sedan, Europe's most-wanted jihadist (captured in Italy in May 2020), the Sudanese migrant who in April 2020 killed two and wounded five more during a knife-slashing spree in the south of France, the five Tajik migrants caught planning to murder American military personnel in Germany, and many others besides.

Indeed, the best available data by researcher Sam Mullins in his book *Jihadist Infiltration of Migrant Flows to Europe* shows that at least 140 border-crossing refugees and migrants—likely an undercount—gamed asylum systems and killed and maimed over a thousand Europeans from 2011 to 2018. My research for "America's Covert Border War" identified a likely undercounted 104 border-crossing migrant terrorists from 2014 to 2018. The numbers have since moved only higher.

***Opening Europe to Catastrophe.***

Europe's crisis began in 2014 when the Syrian war spurred large-scale migration to the 27-member European Union's common external borders. Tension built around the question: Will Europe let them in?

On August 24, 2015, German Chancellor Angela Merkel answered yes, we'll take a million. Embedded in her message was a liberal progressive ideology of multiculturalism, that this was a virtuous, new kind of Germany that, pointedly unlike the old one, would happily import religious and racial diversity over the borders into Europe's most prosperous economy. The Muslim world heard her message. Millions more immediately entered the pipeline and never really stopped coming.

In naming Merkel Person of the Year in December 2015, Time Magazine regaled her decision as "astounding" in that "the most generous, openhearted gesture of recent history blossomed from Germany, the country that within living memory blew apart the European continent and then the world by taking to gruesome extremes all the forces its Chancellor strives to hold in check: nationalism, nativism, self-righteousness, reversion to arms."

Progressive liberal leaders and parties quickly brushed off scattered warnings about importing a terrorism threat over the borders as the xenophobia Merkel meant to vanquish. Reporters put other European leaders to the virtuosity test: Would they, too, demonstrate a commitment to humanitarian multiculturalism?

The answer was yes to that and no to the cruel, white tribalism of Old World Europe.

"Everyone must understand: you can't ask for solidarity when there's a problem and then exempt yourself from doing your duty when there' a solution," French President Hollande said a few months before the coordinated November 2015 suicide bombings that left 130 Parisians dead and 500 wounded at the hands of ISIS operatives deployed among the war refugee migrants.
Finnish Prime Minister Juha Sipila even offered one of his own houses to migrants.
"We should all take a look in the mirror and ask how we can help," the prime minister told an interviewer. As those who favored multiculturalism marched for the migrants in Finnish cities, Sipila tweeted that he wanted to "develop Finland as an open, linguistically and culturally international country."
Soon enough, 22-year-old Moroccan Abderrahman Bouanane Mechka mounted a running stabbing spree that killed two women and wounded eight more in Finland's first jihadist attack.
Sweden's Stefan Lofven tried to shame resisting eastern European governments for what he termed a "selfish approach," calling their refusals of refugees "incompatible with humane European values."
"I can understand if you say this crisis is a worry," the prime minister said in an interview shortly before the Paris attacks. "But to say: 'This isn't my problem, we can't accept Muslims,' no, I don't think this is part of our European values, and I can't understand this kind of attitude."
He and all of the others came to rue those statements as, for instance, Uzbekistan-born asylum-seeker Rakhmat Akilov, who'd migrated through Poland, plowed a hijacked a beer truck through a downtown Stockholm department store, crushing five shoppers to death and injuring ten others.
Nowadays, Lofven must be getting used to issuing familiar post-attack refrains that have become a sad new kind of genre for all of the European leaders: "Fear and horror should never be allowed to become part of our daily lives," Lofven said of the Afghan border-crossing knifer.

***From Merkel to Biden.***

The parallels between European leadership views then and American Democrats now are as striking as the predictable results. Throughout the 2019 Democratic presidential primary campaign, Joe Biden and the other candidates sounded European-style refrains, vying for who would *most* warmly embrace illegal immigrants—who would *most* decriminalize illegal border entry, end detentions, halt deportations, and provide fastest paths to citizenship and government health care.
If Democratic Party messaging was pre-2015 Germany, Sweden, France, and Scandinavia, so was the response. Naturally, migrants around the world heard and acted on their talk. A mass migration has followed the Biden win, a tidal wave that has grown exponentially each month since November to 100,000 Border Patrol apprehensions in February. It is now collapsing the system.
Though most are Spanish-speaking, migrants from Muslim-majority nations are among them.
The Biden administration has the precious advantage of forewarning in Europe's experience. But all signs so far indicate the new administration is going to squander it.

***Todd Bensman** is the author America's Covert Border War:* The Untold Story of the Nation's Battle to Prevent Jihadist Infiltration.

## Santa Palabra - Son Pa Atenas

Source: https://www.youtube.com/watch?v=s1pOXJyn-Jc
Athens' history through the music of a Greek-Cuban group

## The Middle East's Next Conflicts Won't Be Between Arab States and Iran

**By Vali Nasr**
Source: https://foreignpolicy.com/2021/03/02/the-middle-easts-next-conflicts-wont-be-between-arab-states-and-iran/

Mar 02 – For more than two decades, the United States has seen the politics of the Middle East as a tug of war between moderation and radicalism—Arabs against Iran. But for the four years of Donald Trump's presidency, it was blind to different, more profound fissures growing among the region's three non-Arab powers: Iran, Israel, and Turkey.
For the quarter century after the Suez crisis of 1956, Iran, Israel, and Turkey joined forces to strike a balance against the Arab world with U.S. help. But Arab states have been sliding

deeper into paralysis and chaos since the U.S. invasion of Iraq in 2003, followed by the failed Arab Spring, leading to new fault lines. Indeed, the competition most likely to shape the Middle East is no longer between Arab states and Israel or Sunnis and Shiites—but among the three non-Arab rivals.

The emerging competitions for power and influence have become severe enough to disrupt the post-World War I order, when the Ottoman Empire was split into shards that European powers picked up as they sought to control the region. Although fractured and under Europe's thumb, the Arab world was the political heart of the Middle East. European rule deepened cleavages of ethnicity and sects and shaped rivalries and battle lines that have survived to this day. The colonial experience also animated Arab nationalism, which swept across the region after World War II and placed the Arab world at the heart of U.S. strategy in the Middle East.

All of that is now changing. The Arab moment has passed. It is now the non-Arab powers that are ascendant, and it is the Arabs who are feeling threatened as Iran expands its reach into the region and the United States reduces its commitment. Last year, after Iran was identified as responsible for attacks on tankers and oil installations in Saudi Arabia and the United Arab Emirates, Abu Dhabi cited the Iranian threat as a reason to forge a historic peace deal with Israel.

But that peace deal is as much a bulwark against Turkey as it is against Iran. Rather than set the region on a new course toward peace, as the Trump administration claimed, the deal signals an intensification of rivalry among Arabs, Iranians, Israelis, and Turks that the previous administration failed to take into consideration. In fact, it could lead to larger and more dangerous regional arms races and wars that the United States neither wants nor can afford to get entangled in. So, it behooves U.S. foreign policy to try to contain rather than stoke this new regional power rivalry.

The Arab moment has passed. It is now the non-Arab powers that are ascendant, and it is the Arabs who are feeling threatened as Iran expands its reach into the region and the United States reduces its commitment.

Iran's pursuit of a nuclear capability and its use of clients and proxies to influence the Arab world and attack U.S. interests and Israel are now familiar. What is new is Turkey's emergence as an unpredictable disrupter of stability across a much larger region. No longer envisioning a future in the West, Turkey is now more decidedly embracing its Islamic past, looking past lines and borders drawn a century ago. Its claim to the influence it had in the onetime domains of the Ottoman Empire can no longer be dismissed as rhetoric. Turkish ambition is now a force to be reckoned with.

For example, Turkey now occupies parts of Syria, has influence in Iraq, and is pushing back against Iran's influence in both Damascus and Baghdad. Turkey has increased military operations against Kurds in Iraq and accused Iran of giving refuge to Turkey's Kurdish nemesis, the Kurdistan Workers' Party (PKK).

Turkey has inserted itself in Libya's civil war and most recently intervened decisively in the dispute in the Caucasus between Armenia and Azerbaijan over Nagorno-Karabakh. Officials in Ankara are also eyeing expanded roles in the Horn of Africa, and in Lebanon, while Arab rulers worry about Turkish support for the Muslim Brotherhood and its claim to have a say in Arab politics.

Each of the three non-Arab states has justified such encroachments as necessary for security, but there are also economic motivations—for example, access to the Iraqi market for Iran or pole positions for Israel and Turkey in harnessing the rich gas fields in the Mediterranean seabed.

Predictably, Turkish expansionism runs up against Iranian regional interests in the Levant and the Caucasus in ways that evoke Turkey's imperial past. Turkish President Recep Tayyip Erdogan's recent recitation of a poem lamenting the division of historic Azerbaijan—the southern part of which now lies inside Iran—during a triumphant visit to Baku invited a sharp rebuke from Iran's leaders. This was not an isolated misstep.

Erdogan has been for some time suggesting that Mustafa Kemal Ataturk was wrong to give up Ottoman Arab territories as far south as Mosul. In reviving Turkish interest in those territories, Erdogan is claiming greater patriotism than that of the founder of modern Turkey and making clear that he is breaking with the Kemalist legacy in asserting Turkish prerogatives in the Middle East.

In the Caucasus, as in Syria, Turkish and Iranian interests are interwoven with those of Russia. The Kremlin's interest in the Middle East is expanding, not only in conflicts in Libya, Syria, and Nagorno-Karabakh but also on the diplomatic scene from OPEC to Afghanistan. Moscow maintains close ties with all of the region's key actors, sometimes tilting in favor of one and then the other. It has used this balancing act to expand its advantage. What it wants from the Middle East remains unclear, but with U.S. attention on the wane, Moscow's complex web of ties is poised to play an outsized role in shaping the region's future.

Israel, too, has expanded its footprint in the Arab world. In 2019, Trump recognized Israel's half-century-old claim to the Golan Heights, which it seized from Syria in 1967, and now Israeli leaders are planning out loud to expand their borders by formally annexing parts of the West Bank. But the Abraham Accords suggest that the Arabs are looking past all of that to shore up their own position. They want to compensate for America's dwindling interest in the Middle East with an alliance with Israel against Iran and Turkey. They see in Israel a crutch to keep them in the great game for regional influence.

The tensions between Iran and Israel have escalated markedly in recent years as Iran has reached farther into the Arab world. The two are now engaged in a war of attrition, in Syria and in cyberspace. Israel has also targeted Iran's nuclear and missile programs directly and has been blamed most recently for the assassination of Iran's top nuclear scientist.

Turkey's current regional posture—extending into Iraq, Lebanon, Syria, and the Horn of Africa—is in direct conflict with policies pursued by Saudi Arabia, the UAE, and Egypt.

But the scramble for the Middle East is not just about Iran. Turkey's relations with Israel, Saudi Arabia, the UAE, and Egypt have been deteriorating for a decade. Just as Iran supports Hamas against Israel, Turkey has followed suit but has also angered Arab rulers by supporting the Muslim Brotherhood. Turkey's current regional posture—extending into Iraq, Lebanon, Syria, and the Horn of Africa while staunchly defending Qatar and the Tripoli government in Libya's civil war—is in direct conflict with policies pursued by Saudi Arabia, the UAE, and Egypt.

This all suggests that the driving force in the Middle East is no longer ideology or religion but old-fashioned realpolitik. If Israel boosts the Saudi-Emirati position, those who feel threatened by it, like Qatar or Oman, can be expected to rely on Iran and Turkey for protection. But if the Israeli-Arab alignment will give Iran and Turkey reason to make common cause, Turkey's aggressive posture in the Caucasus and Iraq could become a worry for Iran. Turkey's military support for Azerbaijan now aligns with Israel's support for Baku, and Iran, Saudi Arabia, and the UAE have found themselves in agreement worrying about the implications of Turkey's successful maneuver in that conflict.

As these overlapping rivalries crisscross the region, competitions are likely to become more unpredictable, as will the pattern of tactical alliances. In turn, that might invite meddling by Russia, which has already proved adept at exploiting the region's fissures to its advantage. China, too, may follow suit; its talk of strategic partnership with Iran and nuclear deal with Saudi Arabia may well be just the opening act. The United States thinks of China in terms of the Pacific, but the Middle East abuts China's western frontier, and it is through that gateway that Beijing's will pursue its vision for a Eurasian zone of influence.

The Biden administration could play a key role in reducing tensions by encouraging regional dialogue and—when possible—use its influence to end conflicts and repair relations. In response to change in Washington, feuding adversaries are signaling a truce, and that provides the new administration with an opportunity.

Although relations with Turkey have frayed, it remains a NATO ally. Washington should focus on improving ties between not just Israel and Turkey but also among Turkey and Saudi Arabia and UAE—and that means pushing Riyadh and Abu Dhabi to truly mend ties with Qatar. The Gulf rivals have declared a truce, but fundamental issues that divided them persist, and unless those are fully resolved, their differences could cause another breach.

Iran is a harder problem. U.S. officials will have to first contend with the future of the nuclear deal, but sooner rather than later Tehran and Washington will have to talk about Iran's expansionist push in the broader region and its ballistic missiles. Washington should encourage its Arab allies, too, to embrace this approach and also engage Iran. Ultimately reining in Iran's proxies and limiting its missiles can be achieved through regional arms control and building a regional security architecture. The United States should facilitate and support that process, but regional actors have to embrace it.

The Middle East is at the edge of a precipice, and whether the future is peaceful hinges on what course the United States follows. If the Biden administration wants to avoid endless U.S. engagements in the Middle East, it must counterintuitively invest more time and diplomatic resources in the region now. If Washington wants to do less in the Middle East in the future, it has to first do more to achieve a modicum of stability. It has to start by taking a broader view of regional dynamics and making the lessening of new regional power rivalries its priority.

***Vali Nasr*** *is the Majid Khadduri professor of Middle East studies and international affairs at Johns Hopkins University's School of Advanced International Studies. He served in the U.S. State Department from 2009 to 2011 and is author of* The Dispensable Nation: American Foreign Policy in Retreat.

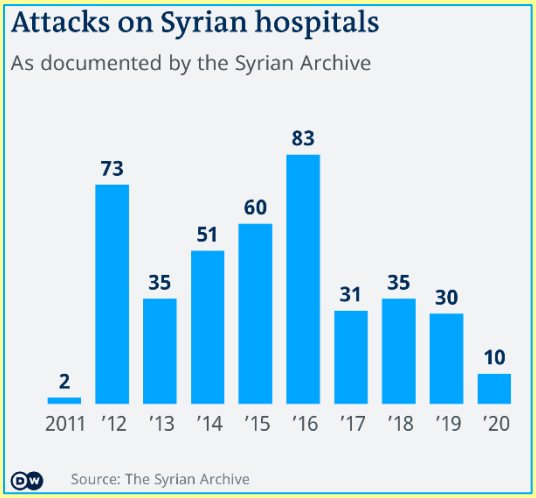
## Syria's Hospitals Face Systematic Attacks: Report

Source: http://www.homelandsecuritynewswire.com/dr20210312-syrias-hospitals-face-systematic-attacks-report

Mar 12 – **Over the past decade, hospitals across Syria have been attacked more than 400 times.**

Data obtained by DW suggests the attacks formed part of a larger strategy to cripple access to medical facilities in rebel-held areas.

The Kafr Zita Cave Hospital was built nearly 20 meters (65 feet) into a mountainside in the hope of escaping aerial bombardment.




It was established in 2015 far from military facilities and residential areas north of the city of Hama, the fourth-largest city in Syria, in order to ensure continuity of medical services to civilians after the main hospital was destroyed.

Yet, the cave-dwelling medical facility was attacked several times in the following years until the rebels were pushed out of the area.

Earlier this month, the hospital was completely destroyed by Russian forces, with Russian media outlets saying it was to prevent its use by terrorists, a word often used by the regime to describe rebels.

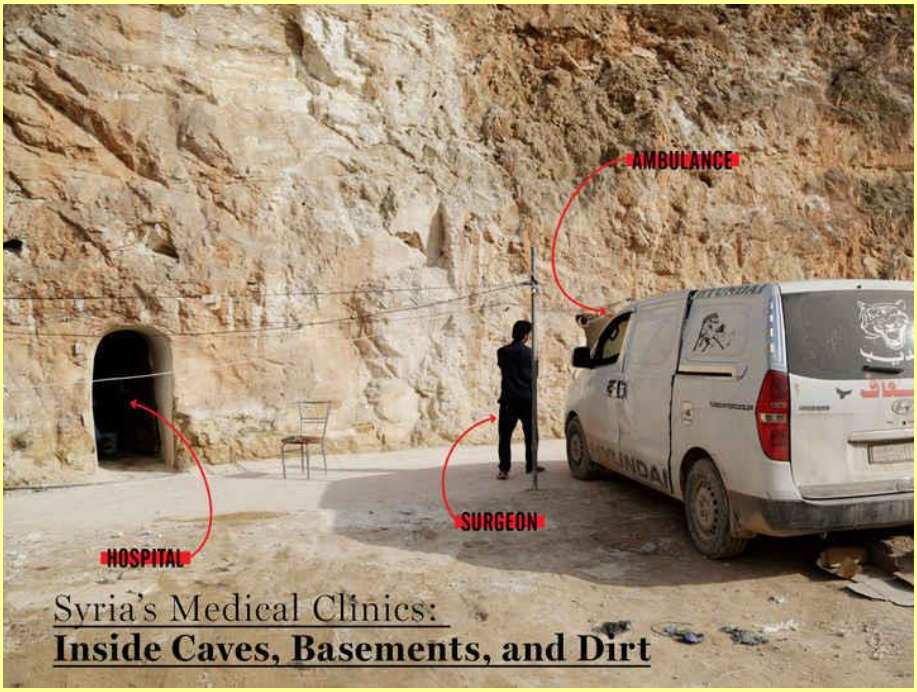
But humanitarian groups, such as the Syrian Network for Human Rights, considered it an attempt to remove proof that the hospital had come under attack multiple times over the past six years.

"The Russian government aims … to erase the terrible consequences and evidence of the atrocities and crimes carried out by Russian forces in their barbaric bombing of this hospital," the group said in a statement.

But the Kafr Zita Cave Hospital isn't the only medical facility to have been attacked throughout the decadelong conflict in Syria.

**'Intentional' Campaign by Syrian, Russian Forces**

Hospitals have been attacked more than 400 times over the past decade, according to data provided to DW by the Berlin-headquartered Syrian Archive, an organization that aims to curate visual documentation of human rights violations in the Syrian conflict.




The Berlin-based organization published a database on Tuesday suggesting that more than 90% of the documented attacks on hospitals had characteristics of deliberate targeting.

Furthermore, destroying medical facilities had formed part of a strategic campaign against rebel-held areas by the Syrian regime and Russian forces, according to the Syrian Archive.

In its report, those parties were identified as the "predominant perpetrators" of such attacks, which included airstrikes, barrel bombs and shelling.

"This database is really important to make sure that we are showing the intentionality, impact and strategy of attacks against medical facilities," Hadi al Khatib, founder and director of the Syrian Archive, told DW. "The majority of these attacks and the majority of this pattern was between the Syrian and Russian forces."

The Russian Defense Ministry and the Syrian Embassy in Berlin did not respond to a request for comment prior to publication. However, Russian and Syrian authorities have consistently denied their involvement in such attacks.

**Burden of Proof**

Libby McAvoy, a legal fellow who worked on the project, noted that the data was intentionally organized with international law in mind. For example, the database highlights information about the method of an attack by marking when a hospital was hit by a precision-guided missile or subject to a double-tap in which a strike is followed by another one minutes or even hours later.

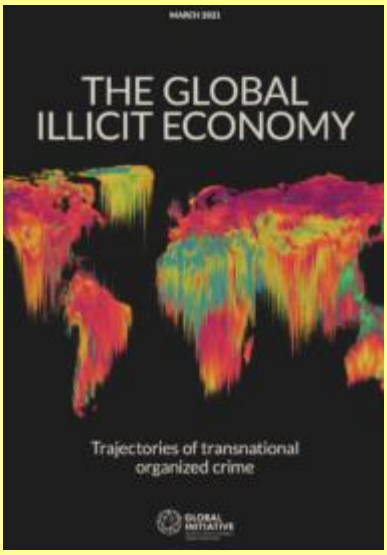
At least 216 of the attacks were repeated strikes on medical facilities, amounting to nearly half of those documented. Data regarding repeated strikes could be used as an indicator of intentional targeting, which is considered a war crime under international law.
McAvoy hopes the material her and her colleagues have compiled may one day be used by legal teams and investigators to hold the perpetrators accountable.
But challenges remain. Although the data was organized for use in a legal setting, any attempts to hold perpetrators accountable would require more than just visual documentation.
"Video can only ever claim to be one piece of the puzzle," said McAvoy. "But because Syria is so well documented, it is an important piece of the puzzle."

**Lives on the Line**
Observers believe that eventually the Syrian regime, backed by Russian forces, will turn its attention toward retaking Idlib province in northern Syria, considered the last bastion of rebel forces.
Al Khatib is concerned that Syrian and Russian forces will continue to target hospitals in a bid to deny medical access to opposition-held areas, especially in light of the archive's data, which suggests that hospitals are increasingly attacked during major battles.
"Whatever happens to Idlib in the future, medical facilities will be the first targets," he told DW. "And we would like to be able to show that in the hope of deterring it in the future."

## The global illicit economy – Trajectories of transnationalorganized crime

**Global Initiative Against Transnational Organized Crime**
March 2021
Source: https://globalinitiative.net/wp-content/uploads/2021/03/The-Global-Illicit-Economy-GITOC-Low.pdf

Through stark images and charts, this report gives a graphic illustration of how the global illicit economy has boomed in the past 20 years and how it poses a serious threat to security, development and justice. With so many major challenges in our world today, it may seem that tackling transnational organized crime is a lower priority than addressing climate change, pandemics, inequality or migration. But organized crime is a common denominator to all of these challenges: it enables them, and it profits from them. As a result, organized crime is a driver of unsustainable development. This report is impressionistic. It is designed to show the inter-relationships and interdependence between global mega-trends and the trajectories of organized crime since 2000, the year the UN Convention against Transnational Organized Crime (UNTOC) was adopted. It is written from the perspective of civil society, drawing on consultations with the Global Initiative Against Transnational Organized Crime's secretariat, its Network of Experts, and recipients of the Global Initiative Resilience Fund, including nine consultations held in five regions. It is based on data that is in the public domain that has been gathered through research and analysis. We hope this report can bring fresh approaches and different perspectives to intergovernmental processes. Furthermore, we hope it can stimulate new thinking and be a catalytic resource for more effective responses to organized crime. We appreciate the opportunities available for us to do this, for example through the review mechanism of the UNTOC Conference of Parties as well as the UN Crime Congress. As this report shows, organized crime is harming so many aspects of life on our planet. Left unchecked, the shadows of the future look even more sinister. We need to change the trajectory. We hope this report can raise awareness and provoke debate. Most importantly, we hope that it can stimulate action to strengthen local resilience and lead to a global strategy against organized crime.

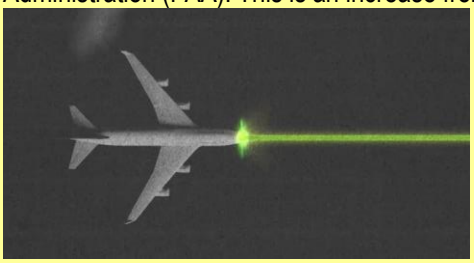



## Laser Strikes Against Pilots Increase Despite Fewer Air Traffic Movements

Source: https://www.hstoday.us/subject-matter-areas/airport-aviation-security/laser-strikes-against-pilots-increase-despite-fewer-air-traffic-movements/

Mar 09 – Laser strikes against pilots increased in 2020 even with the overall decrease in air traffic operations. In 2020, pilots reported 6,852 laser strikes to the Federal Aviation

Administration (FAA). This is an increase from 6,136 laser strikes reported in 2019 and is the highest number reported to the agency since 2016.



Intentionally aiming lasers at an aircraft poses a safety threat to pilots and violates federal law. Many high-powered lasers can incapacitate pilots flying aircraft that may be carrying hundreds of passengers.

The FAA works closely with federal, state and local law enforcement agencies to pursue civil and criminal penalties against people who purposely aim a laser at an aircraft. The agency takes enforcement action against people who violate Federal Aviation Regulations by shining lasers at aircraft and can impose civil penalties of up to $11,000 per violation. The FAA has imposed civil penalties up to $30,800 against people for multiple laser incidents.

▶▶ **Details of reported incidents in 2020 can be found at** the FAA's Laser Report 2020

## Germany, a new safe haven for Islamist terrorists

Source: https://northafricapost.com/48255-germany-a-new-haven-for-islamist-terrorists.html

Mar 14 – After the defeat of Daesh by the international coalition, no less than 500 fighters of the Islamic State managed to flee via Turkey, Syria and Iraq, towards Europe, according to the investigative program de the French TV channel M6 Enquête exclusive.

These seasoned terrorists have settled in some European countries with a predilection particularly for Germany.

After they were arrested for a short time by the German security services, several Jihadists of the Islamic State are today living in Germany unbothered.

They managed to pose as asylum seekers, and the multiple overwhelming evidence of their barbaric acts has not stirred any curiosity nor emotion among the German police, who persist in considering them as mere refugees, unrelated to terrorism.

This is the case of an extremist named Samir who joined ISIS in 2014. His hobby was to play football with the heads of his victims which he used to display like trophies in overwhelmingly awful videos.

Currently, this bloodthirsty individual is settled with his wife in a Land near the border with France, and is trying to get a truck driving license. A type of vehicle that brings back to mind sad memories, as a truck had been used by Tunisian terrorist El Amri, in December 2016 in the attack against the Christmas market in Berlin.

The attack had killed 12 people of different nationalities and seriously injured more than 50.

History will remember that despite the accurate information provided 4 months earlier by Morocco about the perpetrator of this attack, the German security services knowingly chose to ignore them.

The other active ISIS member mentioned in Enquête exclusive is named Majid. He was active in the Islamic State's pseudo finance ministry.

Just like Samir, Majid was never bothered despite the substantiated testimonies provided to the German authorities on his documented relationship with the ISIS staff.

Moreover, both Jihadists benefit from the protection of these very German authorities.

The situation raises a number of questions, mainly whether German authorities do not realize the extreme danger posed by these terrorists, adept of infiltration and clandestine methods, to the security of their own country and that of other states.

Or whether the German federal services are attempting to strike deals with these terrorists on some operational collaboration.

Actually, it was on German territory that the genesis of the attacks of September 11, 2001 began within the framework of the infamous Hamburg cell. Two of its suicide bombers, Mohammed Atta As-Sayed and Marwan Yousef al-Shehhi, threw planes on American soil causing the death of several thousand victims.

The fact remains that German officials' strange attitude leaves their international allies a bit puzzled. These allies, among the most reliable in the fight against terrorism, do not understand Berlin's manifest rupture with the multilateral framework of security cooperation.

Another concrete example of this rupture is embodied by the divergence between Germany and Morocco over the Moroccan terrorist, Mohammed Hajib, who has never renounced his allegiance to Al-Qaeda.

**The current situation in Germany is reminiscent of that of Londonistan before the bloody attacks that struck the British capital on July 7, 2005, with a death toll of 52.**

Germany, because of its security strategy, could become Germanistan, endangering the security of the countries of the European Union and of the region as a whole.

## Islamists in Germany fraudulently received €1 MILLION in Covid-19 aid, some funds used to

Source: https://www.rt.com/news/518066-germany-covid-aid-terrorism/

Mar 14 – Around €1 million in Covid-19 relief funds aimed at businesses might have ended up in the pockets of hardline Islamists, German media reported, citing sources in the Berlin police who opened more than 100 probes into the fraud.
The misuse of coronavirus aid to finance terrorist activities was reported by German newspaper Welt am Sonntag.
*"In individual cases there is a suspicion of direct terrorism financing,"* a source within Berlin law enforcement told the newspaper.
According to the report, law enforcement in Germany's capital is currently conducting over 100 investigations into potential misuse of coronavirus aid for terrorism funding. Some 60 individuals, as well as mosques and other Muslim associations, are being targeted by the inquiries.
The fraud may yield lengthy prison terms for perpetrators, ranging from five to 10 years behind bars in the most aggravated cases. The funds were originally intended to support businesses struggling with the pandemic and it was not immediately clear how the cash ended up in the hands of Islamist groups.
**The misused funds are estimated to total around €1 million, while some €250,000 was seized by police during searches. In at least three cases the fraudulently procured funds were used to directly support terrorist groups active in the Middle East.**
Members of the recently-outlawed hardline Islamist group **Jama'atu Berlin** are believed to have been among the recipients of the coronavirus relief funds. The group was targeted during a large-scale operation by Berlin police in late February.
Some 850 police officers were involved, raiding homes of the group members and other properties. The group was actively spreading hardline Salafist ideology online and was said to be especially hateful toward Jews.

## How Norway Is Folding Civilians into National Defense

**By Elisabeth Braw**
Source: https://www.defenseone.com/ideas/2021/03/how-norway-folding-civilians-national-defense/172630/

Mar 12 – Even if you've never heard of the region of Finnmark, you know it's important: it's the part of Norway that borders Russia. Norway's armed forces are exercising there this week — and not just its professional armed forces but conscripts and civilians as well. The exercise, which focuses on the defense of local infrastructure, demonstrates an ever-more-important reality: everyone has a role to play in keeping their country safe.
"The exercise is an important part of strengthening our capacity in general, but Finnmark is also a crucial part of Norway with vital infrastructure," Maj. Gen. Lars Lervik, the Chief of the Norwegian Army, told me one day into the exercise. "The other aspect is speed. We're exercising a rapidly evolving situation where we have to react extremely quickly."
The Norwegian government is rebuilding its forces in Finnmark after scrapping the army units based there in the 1990s and early 2000s. The region is home to sensitive installations including Banak Air Base in the town of Lakselv, from which the Norwegian Air Force conducts, among other things, search-and-rescue operations in Finnmark, the Svalbard islands, and other parts of the Arctic. In 2017, the government reinstated territorial defense of the area, and last year the Norwegian Army launched Porsanger Battalion, which like most Norwegian military units includes both active-duty personnel and conscripts.
Banak Air Base, unsurprisingly, played a role this week's exercise – and offered another opportunity for 19-year-old Even Gaarder to hone his skills as a conscripted soldier in a mortar platoon. And in Norway, "conscripted" means "having successfully passed the highly competitive selection for national service." Only about 15 percent of Norwegian 19-year-olds are accepted. In the armed forces of yesteryear, conscripts were often a burden, especially because some of them didn't want to be there and others were ill-suited for their tasks. Not so in Norway's selective system. "The conscripts are a decisive resource for us, an operative asset," Lervik said.
Gaarder prepared for the assessment tests through mental and physical training – and to his delight he didn't just pass but was selected for the new Porsanger Battalion.
During this week's exercise, Gaarder helped other conscripts and active-duty personnel to secure Banak Air Base. "We were having breakfast when the alarm went off and we had to pack everything up," he recounted. "We were told that the enemy had been localized in

Lakselv and were told to secure Banak to prevent the enemy from bringing in forces by air." Elsewhere in Finnmark, other conscripts and active-duty forces and ultimately commanded by General Lervik himself, exercised securing other key infrastructure.
The exercise demonstrates Norway's renewed commitment to defending this vast region, whose towns include Lakselv on the coast of Barents Sea, Kirkenes near the Russian border, and lots of hamlets in between. But not even with Porsanger Battalion in place can the Norwegian armed forces cover every part of Finnmark all the time. Nor would the U.S. Marine Corps be of much help in a fast-moving crisis: its impressive collection of pre-positioned equipment is housed in Trondheim in the south of Norway, 20 hours' drive from Lakselv.

Norwegian troops exercise in the far northern region of Norway in early March 2021. *Ole-Sverre Haugli/ Norwegian Armed Forces*

That makes civilians a vital resource. In this week's exercise, the Army worked with the Home Guard – which in Norway is a separate branch of the armed forces — and with local authorities as well. "Exercising with the Home Guard and civilian authorities is incredibly important," Lervik told me. "During the exercise we've practiced exactly such situations where cooperation has to happen smoothly and rapidly, including notifying the civilian authorities and the Home Guard."
In Norway, national service graduates who joint choose active duty join the Home Guard in their home region, which guarantees the armed forces a steady supply of young, well-prepared citizens who can keep a trained eye and ear on their surroundings and, of course, be called up in case of a contingency. Such contingencies can range from snowstorms to, yes, invasions.
This, in fact, is the sticking point of most national security challenges today: no country's military, not even the mighty U.S. armed forces, can be everywhere, all the time. With exercises like this week's rendition in Finnmark, armed forces can teach locals, whether they've had military training or not, to be that resource, to notice if something is amiss in their surroundings and know what to do in case of a serious crisis. In 1981, the intruding Soviet submarine in Sweden's Whiskey on the Rocks incident was first spotted not by the Swedish Navy but by a member of the public.
Gaarder will soon complete his year of national service. It has been hard work, he told me, heavy duties and taxing. But: "It's a fantastic experience being able to have this amount of responsibility, to be given the right to carry weapons to defend not just myself but others too."

***Elisabeth Braw*** *is a Visiting Fellow at AEI, specializing in defense against gray-zone aggression. She previously directed the Modern Deterrence program at the Royal United Services Institute. She's a columnist for* Foreign Policy *and regularly also writes about European security for publications including the* Financial Times, Politico, *and* The Times (of London).

## Psychological "Signature" for the Extremist Mind Uncovered

Source: http://www.homelandsecuritynewswire.com/dr20210315-psychological-signature-for-the-extremist-mind-uncovered

Mar 15 – **A new study suggests that a particular mix of personality traits and types of unconscious cognition – the ways our brain takes in basic information – is a strong predictor for extremist views across a range of beliefs, including nationalism and religious fervor.**
These mental characteristics include poorer working memory and slower "perceptual strategies" – the unconscious processing of changing stimuli, such as shape and colour – as well as tendencies towards impulsivity and sensation seeking.
This combination of cognitive and emotional attributes predicts the endorsement of violence in support of a person's ideological "group", according to findings published in the journal *Philosophical Transactions of the Royal Society B*.
The study also maps the psychological signatures that underpin fierce political conservatism, as well as "dogmatism": people who have a fixed worldview and are resistant to evidence.

Psychologists found that conservatism is linked to cognitive "caution": slow-and-accurate unconscious decision-making, compared to the fast-and-imprecise "perceptual strategies" found in more liberal minds.
Brains of dogmatic people are slower to process perceptual evidence, but they are more impulsive personality-wise. The mental signature for extremism across the board is a blend of conservative and dogmatic psychologies.
Researchers from the University of Cambridge say that, while still in early stages, this research could help to better identify and support people most vulnerable to radicalization across the political and religious spectrum.
Approaches to radicalization policy mainly rely on basic demographic information such as age, race and gender. By adding cognitive and personality assessments, the psychologists created a statistical model that is between four and fifteen times more powerful at predicting ideological worldviews than demographics alone.
"Many people will know those in their communities who have become radicalized or adopted increasingly extreme political views, whether on the left or right," said Dr Leor Zmigrod, lead author from Cambridge's Department of Psychology.
"We want to know why particular individuals are more susceptible."
"By examining 'hot' emotional cognition alongside the 'cold' unconscious cognition of basic information processing we can see a psychological signature for those at risk of engaging with an ideology in an extreme way," Zmigrod said.
"Subtle difficulties with complex mental processing may subconsciously push people towards extreme doctrines that provide clearer, more defined explanations of the world, making them susceptible to toxic forms of dogmatic and authoritarian ideologies."
The research is published as part of a special issue of the Royal Society journal dedicated to "the political brain" compiled and co-edited by Zmigrod, who recently won the Women of the Future Science award.
She has also been working with the UK Government as part of an academic and practitioner network set up to help tackle extremism.
The new study is the latest in a series by Zmigrod investigating the relationship between ideology and cognition. She has previously published findings on links between cognitive "inflexibility" and religious extremism, willingness to self-sacrifice for a cause, and a vote for Brexit.
A 2019 study by Zmigrod showed that this cognitive inflexibility is found in those with extreme attitudes on both the far right and far left of the political divide.
The latest research builds on work from Stanford University in which hundreds of study participants performed 37 different cognitive tasks and took 22 different personality surveys in 2016 and 2017.
Zmigrod and colleagues, including Cambridge psychologist Professor Trevor Robbins, conducted a series of follow-up tests in 2018 on 334 of the original participants, using a further 16 surveys to determine attitudes and strength of feeling towards various ideologies.
Study participants were all from the United States, 49.4% were female, and ages ranged from 22-63.
Part of the study used tests of the "executive functions" that help us to plan, organize and execute tasks e.g. restacking colored disks to match guidelines, and keeping a series of categorized words in mind as new ones are added.
Additionally, results from various rapid decision-making tests – switching between visual stimuli based on evolving instructions, for example – were fed into computational models, allowing analyses of small differences in perceptual processing.
Researchers took the results of the in-depth, self-reported personality tests and boiled them down to 12 key factors ranging from goal-directedness and emotional control to financial risk-taking.
The examination of social and political attitudes took in a host of ideological positions including patriotism, religiosity and levels of authoritarianism on the left and right.
The Cambridge team used data modeling techniques such as Bayesian analyses to extract correlations. They then measured the extent to which blends of cognition and personality could help predict ideological attitudes.
Political conservatism and nationalism was related to "caution" in unconscious decision-making, as well as "temporal discounting" – when rewards are seen to lose value if delayed – and slightly reduced strategic information processing in the cognitive domain.
Personality traits for conservatism and nationalism included greater goal-directedness, impulsivity and reward sensitivity, and reduced social risk-taking. Demographics alone had a predictive power of less than 8% for these ideologies, but adding the psychological signature boosted it to 32.5 percent.
Dogmatism was linked to reduced speed of perceptual "evidence accumulation", and reduced social risk-taking and agreeableness but heightened impulsivity and ethical risk-taking in the personality domain. Religiosity was cognitively similar to conservatism, but with higher levels of agreeableness and "risk perception".
Adding the psychological signatures to demographics increased the predictive power for dogmatism from 1.53 percent to 23.6 percent, and religiosity from 2.9 percent to 23.4 percent.

Across all ideologies investigated by the researchers, people who endorsed "extreme pro-group action", including ideologically-motivated violence against others, had a surprisingly consistent psychological profile.
The extremist mind – a mixture of conservative and dogmatic psychological signatures – is cognitively cautious, slower at perceptual processing and has a weaker working memory. This is combined with impulsive personality traits that seek sensation and risky experiences.
Added Zmigrod: "There appear to be hidden similarities in the minds of those most willing to take extreme measures to support their ideological doctrines. Understanding this could help us to support those individuals vulnerable to extremism, and foster social understanding across ideological divides."

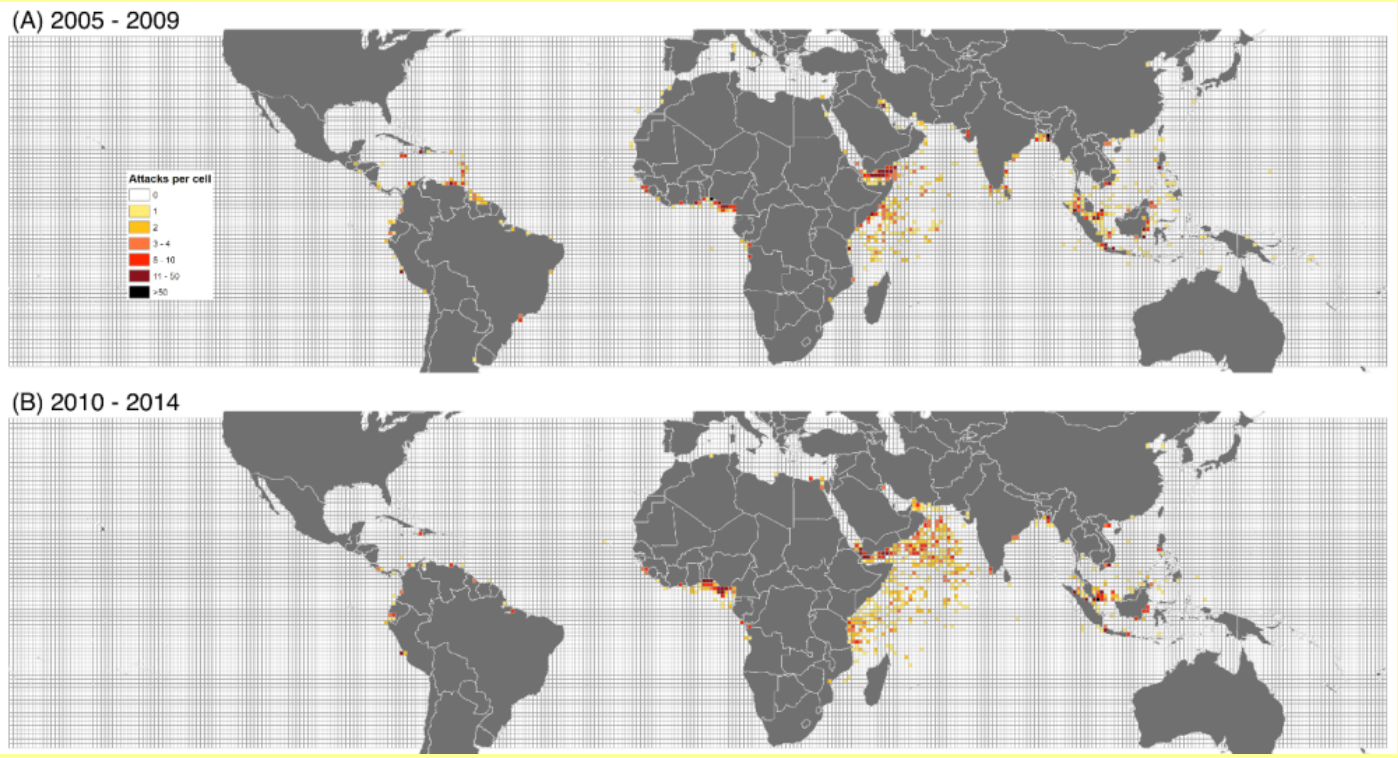
**EDITOR'S COMMENT:** It would be nice to read a few lines about field applications of the above research but there is none. Research is useful in order to understand things in depth but it should also help responders in the streets to identify possible offenders and even prevent bloody surprises.

## Why pirates attack: Geospatial evidence

**By Raj M. Desai and George E. Shambaugh**
Source: https://www.brookings.edu/blog/future-development/2021/03/15/why-pirates-attack-geospatial-evidence/

*"I believe the title of pirate should be given to those who come to our waters illegally."*
**– Farah Ismail Eid**, Interview with a Pirate

Mar 15 – In early 1991 a few miles off of the coast of Somalia—just as Mohamed Siad Barre's dictatorship was collapsing—the merchant vessel Naviluck was attacked by three boatloads of men who killed some of the ship's crew members, set it on fire, and sank it. The attackers did not try to steal cargo, hold hostages, or collect ransom. More than likely, coastal residents who had grown hostile towards foreign vessels decided to take matters into their own hands.
Prior to 1991, piracy off the Horn of Africa was more or less unknown, with far more incidents occurring in the Strait of Malacca or the Gulf of Guinea. In the 1980s the Somali government resettled thousands of nomads from the drought-stricken interior to work in coastal fishing cooperatives, vastly expanding both artisanal fish production and the number of people dependent on small-scale fisheries. As Somalia plunged into civil war, foreign fishing fleets began operating inside Somalia's Exclusive Economic Zone (EEZ), sometimes illegally. Many of these ships employed habitat-destroying methods such as bottom trawling and blast fishing, or methods that routinely caught large volumes of non-target species, which would then be discarded. Egypt, Greece, South Korea, and Taiwan were among the nations that trawled in Somali waters in the 2000s. Around the same time, EU-flagged vessels and EU-owned vessels flagged to other nations began purse seining in the Somalia EEZ. In response, Somalis took to the seas to fight them off. Between the 1990s and 2010—as some ships began to arm themselves, and some shipping companies made deals with warlords for protection—piracy in the western Indian Ocean became far more organized, sophisticated, and lethal.
International organizations have long argued that poverty and unemployment in coastal communities are underlying causes of piracy. Others are skeptical that problems facing local fisheries are connected to piracy, based on reports that many pirates are actually members of inland nomadic clans or criminal gangs. In new research, we explore these links—not only in the context of Indian Ocean piracy, but globally. We segment the world's oceans into 1 degree-by-1-degree cells, and analyze the spatial links between harmful fishing practices and piracy incidents between 2005 and 2014 (see map). Previous research has tended to focus on country-specific variables (e.g., poverty, per-capita income, conflict, etc.) and has not adequately addressed the location-specific factors that influence piracy. By contrast, our data-driven spatial analysis is based on the geographic locations of actual pirate incidents. What did we find?
First, failed and fragile states create environments ripe for piracy. Lawlessness and weak governance create underlying conditions that enable pirate gangs to operate with minimal risk. These conditions also increase the appeal of pirate gangs that can offer alternate sources of livelihood and help to deter encroachment by industrial fishing fleets.
Second, we find that piracy is not more likely to be close to impoverished coastal areas, nor near countries affected by drought and associated agricultural losses. On the contrary, piracy tends to be more prevalent in areas with greater levels of economic activity.
Third, and most critically, pirates are more likely to attack in maritime cells in which there is high bycatch or where there are high rates of fish catch using habitat-destroying practices (e.g., bottom trawling, blast fishing). Similarly, piracy spikes in areas where higher levels of illegal, unreported, and unregulated (IUU) fishing are prevalent.
*Source: Desai and Shambaugh, PLOS ONE 2021 (CC-BY 4.0)*




*Source: Desai and Shambaugh, PLOS ONE 2021 (CC-BY 4.0)*

These findings suggest a different interpretation of the fishing-piracy nexus. It may not be poverty or unemployment itself driving piracy, as much as the *expectation* that industrial fishing by foreign fleets will deplete fish stocks and harm livelihoods that depend on small-scale fisheries. Most vulnerable fishing communities in the developing world have seen significant encroachment by fleets using destructive or illegal methods, by ships flying "flags of convenience." In response, some fishermen—having navigational and sea-faring skills—turn to piracy when they expect income losses in the future. Moreover, some villages in affected coastal areas have hired organized pirate gangs to drive away or deter foreign fishing fleets in the absence of coast-guard enforcement. In short, piracy thrives where harmful fishing practices prevail.

Piracy map 2020 (ICC-CCS) – red; hijacked; blue: fired upon; orange: boarded.

Our research shows that anti-piracy actions matter but are insufficient in curbing piracy. The number of pirate attacks drops by 10 percent for each naval base located in a maritime cell. Naval patrols have been remarkably effective in reducing piracy near the Gulf of Aden; their absence in the Gulf of Guinea is considered one reason why pirate attacks have persisted there. Somali piracy likely succeeded in temporarily driving foreign fishing fleets out of Somali waters, thus allowing fish stocks that were under stress to recover. But if these stocks recover without protections against illegal and destructive fishing practices, we can expect piracy to return. Indeed, since 2017 piracy has picked up off the coast of Somalia.

It has become clear that IUU fishing not only endangers food security and damages vulnerable ecosystems, but its fleets are linked to: human trafficking, chattel slavery, drug smuggling, and terrorism. In regions where threats to small-scale fisheries and their dependents persist, piracy thrives in an ecosystem of organized criminal activity.

***George E. Shambaugh*** *is Associate Professor, School of Foreign Service and Department of Government @ Georgetown University*
***Raj M. Desai*** *is Nonresident Senior Fellow, Global Economy and Development*

## Mozambique militants beheading children as young as 11: Save the Children

Source: https://www.wionews.com/world/mozambique-militants-beheading-children-as-young-as-11-save-the-children-370902

Mar 16 – Children as young as 11 are being beheaded in Mozambique, UK-based aid group Save the Children said on Tuesday, as part of an Islamist insurgency that has killed thousands and forced many more from their homes.

Save the Children said it had spoken to displaced families who described 'horrifying scenes' of murder, including mothers whose young sons were killed. In one case, the woman hid, helpless, with her three other children as her 12-year-old was murdered nearby.


"We tried to escape to the woods, but they took my eldest son and beheaded him," the 28-year-old, who Save the Children called Elsa, was quoted as saying.

"We couldn't do anything because we would be killed too."

Another mother, a 29-year-old Save the Children calls Amelia, said her son was just 11 when he was killed by armed men.

Reporters could not immediately reach Mozambique police or government spokespeople for comment.

**Mozambique's northernmost province of Cabo Delgado has since 2017 been home to a festering insurgency, linked to Islamic State, that has escalated dramatically in the past year.**

While beheadings have always been a hallmark of the attacks, throughout 2020 the insurgents began regularly engaging the military to capture and hold key towns. Brutality also continued, with mass killings including the murder of around 52 people at once in the village of Xitaxi in April.
Altogether almost 2,700 people on all sides have died in the violence, according to the Armed Conflict Location & Event Data Project (ACLED), a consultancy that tracks political violence. Almost 670,000 people have been displaced, 'Save the Children' said.
The United States last week declared the Mozambique group a foreign terrorist organisation over its links to Islamic State, saying the group reportedly pledged allegiance to it as early as 2018. Islamic State claimed its first attack in Cabo Delgado in June 2019.

**EDITOR'S COMMENT:** Something really nasty is happening in this country for the last 5 years and nobody is taking this seriously. It seems that this planet developed an addiction to bloody surprises!

## Surge in Migrants at U.S.-Mexico Border Reignites Washington Debate

**By Ken Bredemeier**
Source: http://www.homelandsecuritynewswire.com/surge-migrants-us-mexico-border-reignites-washington-debate

Mar 16 – Thousands of unaccompanied children crossing the Mexican border into the United States have quickly reignited the contentious immigration debate in Washington, with Republicans and Democrats at odds over who is to blame.
House Minority Leader Kevin McCarthy led a group of Republican lawmakers to the border Monday to condemn policies of Democratic President Joe Biden that McCarthy said have opened the border to unfettered illegal migration.
"The security of our nation and our border is first and foremost the responsibility of our president," McCarthy told reporters in El Paso, Texas, at the border. "It didn't have to happen. This crisis is created by the presidential policies of this new administration. There's no other way to claim it than a Biden border crisis."
Upon taking office in January, Biden stopped construction of the border wall championed by former President Donald Trump and has advanced what he says are more humanitarian immigration policies.
But Biden has kept in place some of Trump's policies, including the ability to expel adult immigrants and families, citing public health pandemic rules.

The Biden administration has stopped short of calling the influx of migrants, including nearly 30,000 unaccompanied children that arrived from Central America between October and the end of February, a crisis, preferring to call it a challenge.
But Biden and his aides have been hard-pressed to keep thousands of impoverished Guatemalan, Honduran and Salvadoran migrants from making the dangerous trek through Mexico to what they believe will be a safer, more prosperous life in the United States.

**FEMA to Help**

Over the weekend, the U.S. Department of Homeland Security said that for the next 90 days, the Federal Emergency Management Agency (FEMA) would help process the large number of unaccompanied migrant children.
"Our goal is to ensure that unaccompanied children are transferred to Health and Human Services (HHS) as quickly as possible, consistent with legal requirements and in the best interest of the children," Homeland Security Secretary Alejandro Mayorkas said in a statement.
The children are being kept in makeshift facilities at the border — already at 94% capacity — before they can be sent to relatives living in the U.S. or to vetted families willing to take care of or adopt them.
In Dallas, the Kay Bailey Hutchison Convention Center will be used to house as many as 3,000 migrant boys, ages 15-17, for up to 90 days starting next week, according to a memo obtained Monday by the Associated Press. HHS and FEMA will provide food, security, cleaning and medical care, the memo said.
Dallas City Manager T.C. Broadnax said in a statement that "collective action is necessary, and we will do our best to support this humanitarian effort."
HHS will also house youths in Midland, Texas, at a converted oil field workers camp with help from the humanitarian organization American Red Cross, which sent 60 volunteers.
On Sunday, House Speaker Nancy Pelosi told reporters "the Biden administration is trying to fix the broken system that was left to them by the Trump administration. The Biden administration will have a system based on doing the best possible job, understanding this is a humanitarian crisis."
Trump weighed in with his immigration thoughts at the recent Conservative Political Action Conference, contending that Biden "wants it all to go to hell."
"When I left office just six weeks ago, we had created the most secure border in U.S. history," Trump claimed, ignoring the increased number of illegal crossings during his last months in office.
"It took the new administration only a few weeks to turn this unprecedented accomplishment into a self-inflicted humanitarian and national security disaster by recklessly eliminating our border, security measures, controls, all of the things that we put into place," Trump argued.

**McCarthy Asks for Meeting**

In early March, McCarthy asked Biden for a meeting on immigration at the border, saying he felt "compelled to express great concern with the manner in which your administration is approaching this crisis, but with hope that we can work together to solve it."
McCarthy said he had not heard back from the president.
White House press secretary Jen Psaki rejected Republicans' contention that the new administration had adopted an "open border" policy.
"That is absolutely incorrect," she said last week. "The border is not open."
Roberta Jacobson, White House coordinator for the southern border, acknowledged last week that the surge in migrants may have been fueled by the belief that it would be easier to get into the United States under Biden.
"I certainly think that the idea of a more humane policy would be in place, may have driven people to make that decision," she told reporters. "But perhaps more importantly, it definitely drove smugglers to express disinformation about what is now possible."
Lawmakers in Washington have been stalemated for years over immigration policies. Aside from dealing with the current quandary at the border, House Democrats this week are trying to advance two pieces of immigration legislation.
One would establish a pathway to citizenship for undocumented immigrants who were brought to the United States as children and have lived, attended school and worked in the country since then.
The House is also considering a measure in which a migrant worker in the agricultural industry could earn temporary status to stay in the U.S. with an eventual option to become a permanent resident.
Democrats strongly support both bills and also passed them in 2019. Even if they are approved again, however, their fate in the politically divided Senate is uncertain, at best.

*Ken Bredemeier is is a national and international writer for Voice of America.*

**EDITOR'S COMMENT:** The overall short history of the United States indicated that it is a nation of immigrants. So, a few thousands more it should not be a problem unless native Indians have an objection. Politics vs. security? Of course, politics!

# International Alert Message about COVID-19.

## United Health Professionals

**The lockdown « a global scientific fraud of unprecedented proportions »**

## Covid-19 and Global Food Security: One Year Later

**By Chase Sova**

Source: https://www.csis.org/analysis/covid-19-and-global-food-security-one-year-later

Mar 15 – It's been just over a year since the International Food Policy Research Institute (IFPRI) first warned that "Covid-19 could lead to a food security crisis if proper measures are not taken." The author, former IFPRI director general Shenggen Fan, was following developments in Wuhan, China at the time, ground zero for the novel coronavirus. He watched the government there lift roadblocks for food deliveries amidst a looming hunger threat in the country.

At the time of Fan's writing, only a dozen countries in sub-Saharan Africa had confirmed cases of the virus; the first in Nigeria was reported on February 28. The worst had yet to play out, with World Health Organization director-general Tedros Adhanom Ghebreyesus warning, "Our greatest concern is the potential for the virus to spread to countries with weaker health systems."

Fast forward to today and the world has passed through two grim milestones: 100 million Covid-19 cases and 2 million deaths. At the same time, at least four countries around the world—Yemen, South Sudan, Nigeria, and Burkina Faso—are facing the looming prospect of famine, with no less than 13 countries close behind. As a result, the UN secretary-general has announced a High-Level Task Force on Preventing Famine.

Nearly a year ago, UN World Food Programme (WFP) executive director David Beasely stood before the United Nations Security Council and warned of "famines of biblical proportion" and a near doubling of people experiencing crisis levels of hunger from 135 million to 270 million as a result of pandemic. Just this past week he returned to that same body and announced that "we are once again sliding toward the brink of the abyss" and reported that that terrible milestone had been achieved—272 million people face acute hunger today.

Make no mistake: Covid-19 has made the hungry hungrier and the poor poorer. But by what means exactly? What lessons have we learned, and how are the world's food security prospects shaping up a year later, particularly in the world's most food insecure places?

**Global Food Supply**

Empty supermarket shelves, panic buying, and hoarding have become among the most enduring images of the pandemic here at home. Intuition would suggest that global hunger resulting from Covid-19 would be the result of similar food shortages and supply chain breaks. Generally speaking, that hasn't been the story.

A global food shortage or widespread price spikes have not accompanied Covid-19. In fact, the Food and Agriculture Organization of the United Nations (FAO) estimates that a new global record for grain production was hit in 2020—some 2.7 billion tons of rice, wheat, corn, and barley. Despite the recent introduction of wheat export restrictions in Russia, global grain trade has remained remarkably robust in the face of the pandemic.

During the Great Recession in 2007–2008, in contrast, weather-related supply shocks, high energy prices, and the application of export restrictions in more than 30 countries led to record high food prices globally. That protectionist behavior was largely avoided during the pandemic, in part because of calls from international organizations warning against such actions.

The pandemic has reminded us, though, that global food production and trade flows are often insufficient proxies for an individual family's food security. By those measures alone, the global food system's response to Covid-19 may have been considered a tremendous success; we know, in reality, millions more have been left hungry by the virus.

**Local Markets**

That's because not all food supply chains have functioned without interruption. Only 20 percent of food supply chains in Africa and South Asia operate like they do in the United States, with commercial farmers providing food through sophisticated channels destined for modern supermarkets. Instead, food is provided by small-scale farmers moving food through informal markets, relying on a complex network of small businesses.

Action at major border crossings and ports all around the world slowed as distancing and sanitation measures were put into effect, but it never stopped for formal markets. Quarantines, mobility restrictions, and other complete lockdown measures, meanwhile, disproportionally affected small-scale actors in informal markets—sellers, traders, shop owners, and the like. These localized disruptions restricted supplies and caused food prices to spike.

In the latest analysis of local market conditions from WFP, at least 11 countries have experienced severe increases in the prices of staple foods in the last quarter, with Lebanon the worst affected. Global food prices, meanwhile, according to the FAO food price index have hit a six-year high, increasing slowly over the past six months due to weather-related supply shocks and threat of further protectionism. Still, they remain well below levels recorded during the Great Recession.

So far, it hasn't been the direct impact of the virus on global food production that has brought the developing world to its knees and caused global hunger to spike, as some predicted early on in the pandemic. Instead, Covid-19 has disabled the already sputtering economic engines of many low- and middle-income countries, eroding the incomes of many poor families already living hand-to-mouth.

**An Economic Crisis**

Covid-19 is, overwhelmingly, a crisis of food access, not availability. In what some call "the Great Lockdown," a year after the pandemic's outbreak, approximately half of the world is still participating in some form of distancing or other physical containment measure. These are necessary steps to curb the transmission of the virus, but have nonetheless cost the

equivalent of some 500 million full-time jobs, according to the International Labor Organization, especially for those in low- and middle-income countries and those working in the informal economy.
The global recession caused by Covid-19 is considerably deeper than that experienced in the aftermath of the 2008–2009 global financial crisis and is the largest since World War II. The global economy contracted by between 4.3 and 5.2 percent in 2020, with many developing countries facing losses in tourism and foreign reserve from sales in extractive industries. According to the United Nations Development Program, the average income lost for a developing country because of Covid-19 will exceed $200 billion.
The loss of remittances—money transfers between foreign workers and their families back home—has proven especially devastating for many. The World Bank estimates that remittances—a half-a-trillion dollar "industry"—have fallen by 7 percent in 2020 (albeit, down from an original 20 percent loss prediction) with similar losses expected in the coming year.
Latin America has especially suffered from food access constraints caused by losses in income. The number of people facing crisis levels of hunger there has quadrupled over the past year. The region has implemented some of the strictest lockdown measures on its population in an effort to stop virus transmission. But as a result, it's seen its economy contract by more than 11 percent.
These income losses matter because of the composition of household spending in the world's poorest places. While most middle-class families in the United States spend around 10 percent of their income on food, that number is closer to 50 percent in many low-income countries. In many places affected by conflict, food costs—even for a single meal—far exceed daily incomes. Income losses in these places, then, translate directly to food insecurity.

**Hunger's New Face**

Covid-19 has created new and less expected vicitms in this hunger crisis. Because the virus has struck vulnerable wage earners so severely, it has added one new group, in particular, to global hunger rolls: urbanites in low- and middle-income countries. Although we've long considered global hunger to be an overwhelmingly rural phenomenon, Covid-19 has disproportionately impacted cities in developing countries.
In fact, IFPRI researchers have indicated that poverty in sub-Saharan Africa is likely to increase by 15 percent because of Covid-19 in rural areas and by 44 percent in urban areas. Urban areas are home to precisely the sorts of informal markets and workers impacted by the pandemic including those in the tourism sector like taxi drivers and hotel and airport staff, among others.
Diets among these and other groups are also being affected, with potential long-term impacts on health and nutrition, especially for children. Previous studies have shown that when faced with income losses, families often resort to eating cheaper, less nutritious, and often processed foods, a trend already identified by researchers early in the Covid-19 pandemic. Moreover, nutrient-dense foods like fruits and vegetables that require more complex supply chains (including cold chain) have proven less resilient to Covid-related transport shocks.
Since the pandemic began, more than 39 billion—billion with a "b"—school meals have been missed, with almost 400 million students losing out on a critical lifeline. Experts estimated that an additional 6 to 7 million children under the age of five are likely to suffer from acute malnourishment ("wasting") as a result of the pandemic, leading to as many as 10,000 more deaths each month. Malnourishment, in turn, leaves the body more susceptible to infection and disease and, as I explained in a previous piece for CSIS, malnourishment may even reduce vaccine efficacy once administered.

**Social Protection**

Amidst these startling trends, there is some good news to share. Covid-19 has caused a dramatic upscaling of social protection systems around the world. Cash transfers have nearly doubled in the past year in low-income countries and coverage grew by almost 250 percent, according to research by the World Bank. WFP has been approached by no fewer than 50 countries for support in scaling up food- and cash-based safety net systems.
Still, many social protection interventions—cash transfers, most notably—were one-off in nature. Though globally almost a trillion dollars were spent on social protection in 2020 in the wake of the virus outbreak, low-income countries spent, on average, just $6 per capita on such programs. In poor countries, the creation and scaling-up of these systems often rely on donor funding, with limited tax bases and scant domestic budgets limiting their long-term sustainability.
Donor funding, meanwhile, has been slashed in some places, and UN leaders have warned of major shortfalls in the coming year. WFP alone is anticipating funding shortfalls between $6 and $7 billion this year, more than the organization's entire budget just five years ago. So far, the Covid-19 Global Humanitarian Response Plan, the flagship UN-coordinated response, has received just 39 percent of its funding requirements.

**The Year Ahead**

The year ahead may genuinely make or break success toward the 2030 Sustainable Development Goal of ending hunger in all its forms—particularly since hunger *increased* in the years leading up the Covid-19 crisis. In fact, WFP executive director David Beasley has warned that 2021 could see the worst humanitarian crises since the United Nations was founded, and a UN special envoy has warned that the potentially worst food system impacts of Covid-19 in developing countries were simply deferred, not avoided. In light of what we've learned about Covid-19 and global food security and the looming crisis on the horizon, U.S. leaders should consider the following:

1. **Fight trade protectionism and food export restrictions.** The United States should exert pressure on countries that violate their World Trade Organization (WTO) and bilateral trade obligations regarding the free flow of trade in food. Agricutural trade is no panacea for families suffering from income losses (especially given the large proportion of food provided by smallholders and informal markets), but any additional upward pressure on food prices must be avoided.
2. **Sustain and scale-up investments in social protections in developing nations**. Most low-income countries lack the resources to establish, scale-up, and sustain assistance through safety net protections. The United States, the donor community, and multilaterals should emphasize support for cash-based and food transfer systems in low-income countries, both to respond to the crisis at hand but also to establish institutions and infrastructure to guard against the next one.
3. **Keep international assistance flowing.** The Organization for Economic Cooperation and Development warns that the global financing gap for developing nations to achieve the Sustainable Development Goals could grow by as much as 70 percent to $4.2 trillion because of Covid-19, erasing decades of development progress. The American Rescue Plan Act—signed into law by President Biden on March 11—makes available $800 million for the Title II Food for Peace program and $3 billion for international disaster assistance programming. These resources should be rapidly deployed to avert famine and acute hunger.
4. **Articulate the value of international assistance to the American people.** Budgetary pressures have never been greater, nor have calls to respond to the Covid-19 crisis at home and the millions in the United States suffering from its fallout. The U.S. government, implementing partners, and advocacy allies must make a concerted, sustained effort to communicate the value of international assistance to the American people, recognizing that crises like this one don't end at the water's edge.

***Chase Sova** is a non-resident senior associate with the Global Food Security Program at the Center for Strategic and International Studies in Washington, D.C. He is also senior director of Public Policy and Thought Leadership at World Food Program USA (WFP USA).*

## Tokyo 2020: No international fans at Olympics and Paralympics

Source: https://www.bbc.com/sport/olympics/56461152

Mar 20 – **No international fans will be permitted at the delayed 2020 Tokyo Olympics and Paralympics this summer because of concerns over the coronavirus pandemic.**

Japanese authorities told the Olympic and Paralympic committees it was "highly unlikely" that entry to the country could be guaranteed.

Organisers said the move now gives "clarity" to ticket holders and helps ensure "a safe and secure Games for all participants and the Japanese public".

The Games are due to begin on 23 July. The Paralympics follow the Olympics a month later, from 24 August.

Organisers said the "challenging" Covid-19 situation in Japan and many other countries, global travel restrictions and emergence of variant strains of the virus had led to the decision and that ticket holders would be refunded. The Olympics were postponed by a year in March last year because of the growing spread of coronavirus across the world.

**'Difficult decisions need to be made'**

It is the first time in the event's history it has been postponed, with more than 11,000 athletes from about 200 countries scheduled to take part in 2020.

Thomas Bach, president of the International Olympic Committee, said the move is a "great sacrifice for everybody".

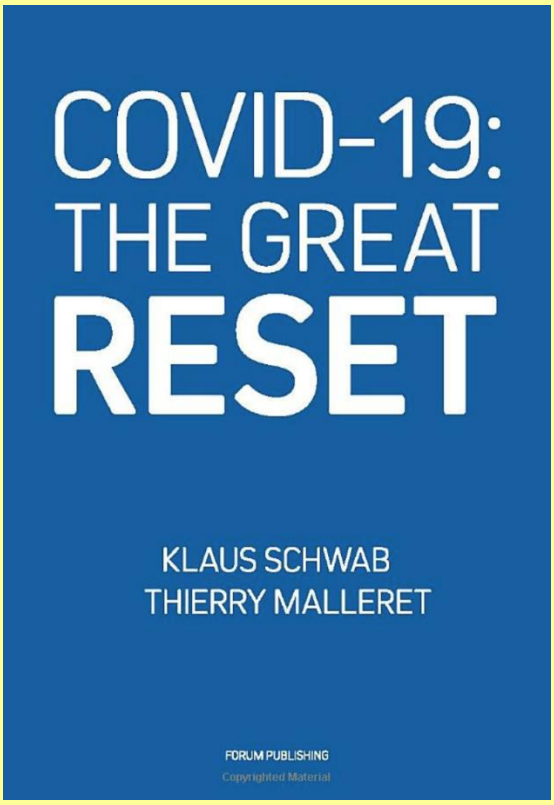
"We share the disappointment of all enthusiastic Olympic fans from around the world, and of course the families and friends of the athletes, who were planning to come to the Games," he said. "For this I am truly sorry.
"Every decision has to respect the principle of safety first. I know that our Japanese partners and friends did not reach this conclusion lightly.
"We stand shoulder-to-shoulder at the side of our Japanese partners and friends, without any kind of reservation, to make the Olympic and Paralympic Games Tokyo 2020 a great success."
International Paralympic Committee president Andrew Parsons said "difficult decisions" had to be made with safety the "top priority".
"It goes without saying that in an ideal world we would prefer to have international spectators at the Games," he said.
"But at the moment we must acknowledge that due to the global pandemic we are not living in an ideal world."

**'Very sad news' - reaction**
The British Olympic Association said that while it is "a very disappointing situation", it highlights the "determination to stage" a safe event during the pandemic.
"This is very sad news, not only for British fans but particularly for the family and friends of athletes," a BOA statement continued.
The exclusion of international fans comes as another major financial blow to the Tokyo Games.

**Costs for the Games have increased by $2.8bn (£2.1bn) because of measures needed to prevent the spread of Covid-19 but organisers have consistently ruled out a delay.**

Earlier this year, Japanese prime minister Yoshihide Suga said the Games would be "safe and secure" and could serve as a "symbol of global solidarity".
However, a poll at that time by national broadcaster NHK showed the majority of the Japanese general public oppose holding the Games in 2021, favouring a further delay or outright cancellation of the event.
Japan has also encountered problems unrelated to the pandemic, with the head of the Tokyo Olympics organising committee Yoshiro Mori resigning after he was criticised for making "inappropriate" remarks about women.
The Tokyo Games' creative chief then also resigned after suggesting a female comedian could appear as an "Olympig" at the opening ceremony.

## What do they have in common?


## Most extremists radicalized in less than one year, START analysis finds

Source: https://www.start.umd.edu/news/most-extremists-radicalized-less-one-year-start-analysis-finds

Mar 02 – While the far-right conspiracy theory known as QAnon rapidly escalated from an obscure fringe group to a mainstream movement with millions of followers, only a relative handful so far have been motivated to commit crimes on behalf of the cause, finds new UMD research.

Researchers from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland compiled comprehensive data on QAnon supporters who have been charged with criminal offenses in the United States to date—61 in total, including 31 participants in the U.S. Capitol riot on Jan. 6.

"We know movements like QAnon have what we call a low base rate of offense, which means far more people support the views than are actually going to mobilize to do something criminal," said Michael Jensen, a senior researcher at START who led the QAnon project. "But just because people aren't committing a lot of crimes connected to this movement, doesn't mean it's not harmful."

The QAnon study was compiled from the Profiles of Individual Radicalization in the United States (PIRUS) database created at START in 2013. Researchers started tracking crimes related to QAnon after the movement exploded online in 2020 and became regular fodder in the news media, particularly after former President Donald Trump retweeted multiple posts from accounts connected to the conspiracy theory.

Among their findings, researchers discovered that mental health concerns and past trauma were common among QAnon supporters compelled to commit crimes. In addition to the subjects who participated in the Capitol insurrection, 32 QAnon followers have been arrested since 2016 (including two followers of the PizzaGate conspiracy—a precursor to QAnon). Of those 32 subjects, more than two-thirds (68%) had documented mental health concerns, according to court records and other public sources. Meanwhile, 44% were radicalized after experiencing a traumatic event such as physical, emotional or sexual abuse, or post-traumatic stress disorder from military service.

While some extremists radicalize over extended periods of time, the data on QAnon offenders indicate that the majority did so in less than a year, and some in mere weeks. Researchers say the isolation many were experiencing during the COVID-19 pandemic provided ripe conditions for recruiting millions online.

"Conspiracy theories can be really attractive during uncertain times when people are vulnerable because they play into human tendencies to find someone to blame," said Sheehan Kane, the data collection manager for PIRUS. "The movement has done a good job of capitalizing on technology and turned into more of an umbrella conspiracy theory which brought a bunch of concerns together and created this common enemy—liberal elites."

START researchers expect QAnon to experience a period of significant disengagement in the coming months. Social media platforms are cracking down on its efforts to spread unfounded claims. For example, in August, Facebook took down more than 9,000 QAnon groups with as many as 3 million members. Trump—whom movement conspiracy theories cast as the nation's "savior" from a ring of liberal pedophiles and cannibals—lost his re-election bid and has also been largely silenced on social media. Meanwhile, as restrictions related to the COVID-19 pandemic ease, researchers say such groups will have a harder time exerting their influence.

"When individuals have competing loyalties and other things to spend time on—when they can't spend 16 hours a day on a QAnon chat, for example—that will have an effect on all extremist movements," Jensen said. "Netflix won't be the only one losing viewers."

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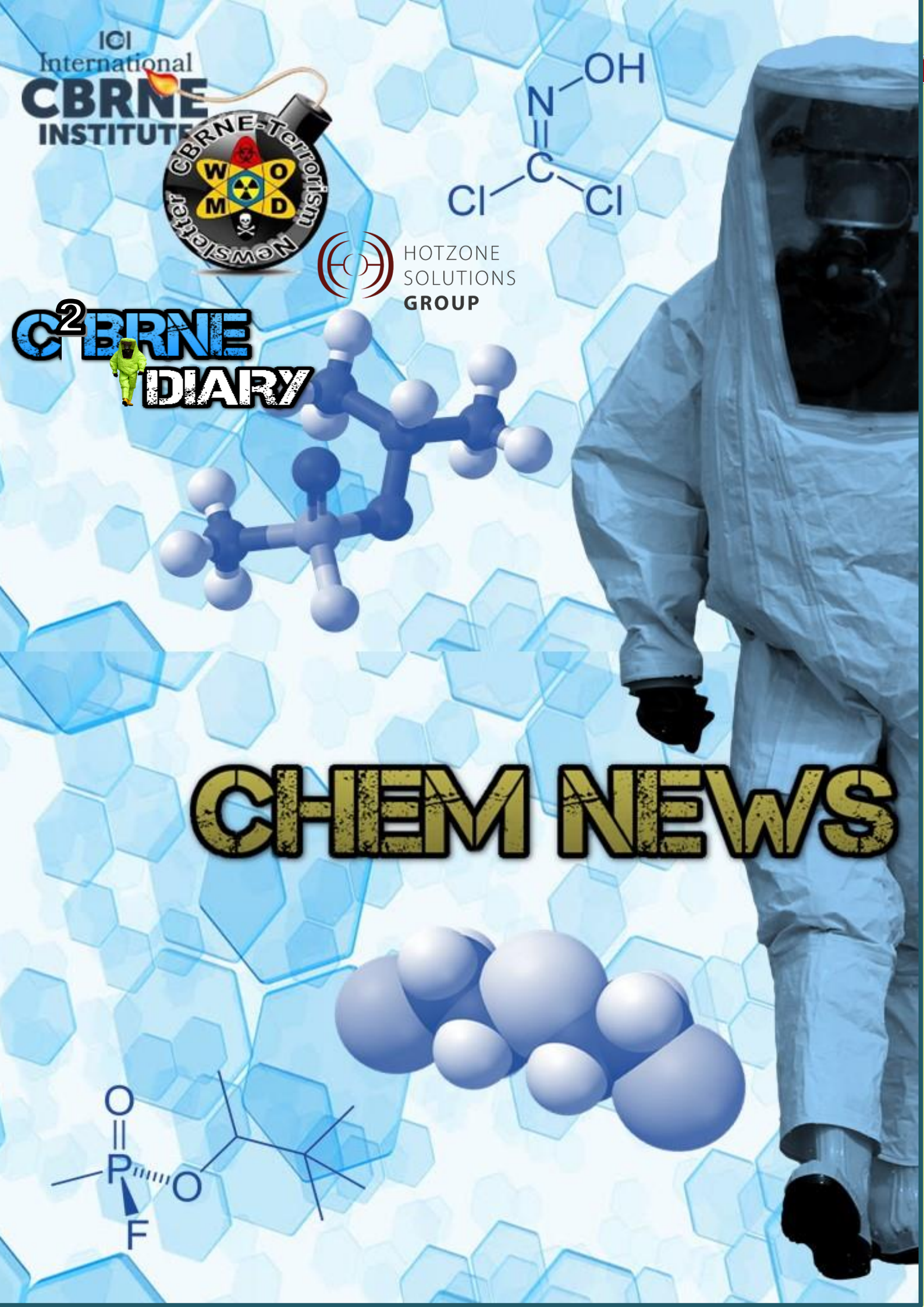
# CHEM NEWS



## Country Profile: Kazakhstan

Kazakhstan is the richest and the vastest country of the former Soviet republics in Central Asia. Today it's the world's first producer of natural uranium, covering 42% of the world's production. For decades the country was utilized by the Soviet Union to conduct nuclear tests. Factories were built to develop and produce chemical and biological war agents. Effects of such experiments hinder the environment still today. Furthermore, in the past decade Kazakhstan has seen an increase in Islamic radicalization and terrorist attacks. This country profile will provide an overview of Kazakhstan; from CBRNe threats to terrorism. Read this article...

## A History of Nerve Agents – with Dan Kaszeta

Source: https://www.youtube.com/watch?v=r7WunS8qCz0&feature=emb_logo

Dan Kaszeta, author of "Toxic", uncovers the development and propagation of nerve agents, the world's deadliest means of chemical warfare.

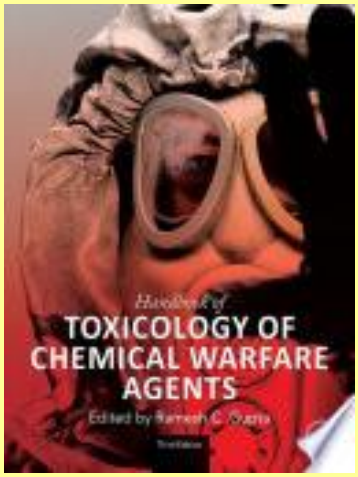
## Handbook of Toxicology of Chemical Warfare Agents

**Author: Ramesh C. Gupta**

*Academic Press, Mar 31, 2020 – 1318 pages*

Source:https://books.google.gr/books?id=AUbaDwAAQBAJ&dq=Penetration+enhancers+weaponization&source=gbs_navlinks_s

*Handbook of Toxicology of Chemical Warfare Agents, Third Edition*, covers every aspect of deadly toxic chemicals used in conflicts, warfare and terrorism. Including findings from experimental as well as clinical studies, this essential reference offers in-depth coverage of individual toxicants, target organ toxicity, major incidents, toxic effects in humans, animals and wildlife, biosensors and biomarkers, on-site and laboratory analytical methods, decontamination and detoxification procedures, and countermeasures.




Expanding on the second edition, *Handbook of Toxicology of Chemical Warfare Agents* has been completely updated, presenting the most recent advances in field. Brand new chapters include a new chapter on emergency preparedness, coverage of the chemical warfare agents used in Syria, the use of the Novichok agent in the UK, and more.

- Unites world-leading experts to bring you cutting-edge, agent-specific information on Chemical Warfare Agents (CWA) and their adverse effects on human and animal health, and the environment
- Provides you with all the information you need on CWA modes of action, detection, prevention, therapeutic treatment and countermeasures

New to this edition: a full update to reflect the most recent advances in the field and new chapters on emergency preparedness, the chemical warfare agents used in Syria, and the use of the Novichok agent in the UK.

## How the Pentagon Got Inside ISIS' Chemical Weapons Operation—and Ended It

**By Joby Warrick** (national security reporter at the Washington Post)

Source: https://www.politico.com/news/magazine/2021/02/27/red-line-book-excerpt-chemical-weapons-syria-471784

Feb 27 – The Kurdish fighters dug in along Highway 47 in Kesik Kupri, Iraq, on January 23, 2015, could hear the truck from far off and knew the attack was coming. The defenders crouched behind their vehicles or squatted along a low ridge, rifles trained on the narrow road. From the ridge to the earthen barrier across the highway were perhaps 500 men, skilled veterans of Iraq's Kurdish Peshmerga brigades as well as teenagers and elderly volunteers from neighboring villages who had come in their civilian coats, sneakers and checkered scarves to reclaim their homes from the men of ISIS. In two hard days of combat, they had seized a strategic crossroads and now effectively controlled the main route between the Iraqi city of Mosul and the Syrian frontier. The Islamists would do whatever they could to take it back.

The afternoon was nearly spent when the suicide vehicle appeared. The Kurds positioned along the ridge could see it clearly: a red farm truck with steel plates welded to the front for ramming and a trailer bed stacked high with metal tanks. The truck picked up speed as it approached the Kurdish line, and from the ridge the defenders unleashed a volley of rifle fire aimed at the passenger cabin. The fusillade kicked up rows of dust spouts in the nearby field, but some bullets found their mark, pinging against the cab and punching holes in some of the metal tanks. From the back of the truck came a ribbon of greenish smoke, like the contrail of a distant jet.

The dirt berm in the middle of the highway forced the driver to slow for a moment, and that was all the defenders needed. Two Kurdish fighters were waiting with a 35-pound antitank rocket, and they fired the projectile directly into the truck's side. The vehicle disintegrated in an instant. When the smoke cleared, the truck's twisted undercarriage lay on the asphalt 50 yards from the impact crater, and metal fragments and bits of the driver's remains were scattered across the nearby fields.

The commanding officer, a Peshmerga colonel named Sabri, cautiously inspected the debris with a few of his aides. The men discovered that the metal tanks in the truck's rear had blown clear of the vehicle when it exploded and landed haphazardly in the dirt. Some of the containers were leaking the same pale-green smoke the men had seen earlier. All around the leaking tanks the soil and grass bore a yellow coating, as though someone had spilled a jar of watery paint. A few men who ventured close to the damaged tanks detected a pungent odor and immediately fell ill.

Sabri could offer his men no protection other than surgical masks, which were useless, so he moved everyone back and radioed for help. Soon afterward, other Kurds arrived carrying respirators and sampling kits, the latter being used to scoop up a few grams of contaminated soil from around the leaking tanks. Weeks passed before the colonel learned precisely what had happened on that late January afternoon. ISIS had tried to break his line by means of a chemical bomb: a suicide truck loaded with 20 canisters of deadly chlorine gas.

The attack near the crossroads village of Kesik Kupri represented the first known attempt by the newly resurgent ISIS to use a chemical weapon in combat. It was a modest effort, causing no serious casualties and barely drawing notice outside northern Iraq. But its leaders had signaled their intentions to the Kurds, and to the world.

ISIS was officially in the business of using chemical weapons. And the United States, watching from afar, was just starting to think about how it should, or even could, respond.

**From outside Iraq,** it was hard to know what to make of reports of these apparently isolated incidents of chemical weapons. Was it really possible that the Islamic State was using poison gas on the battlefield? No army had used chemicals against troop formations since the Iran-Iraq War in the 1980s. No militia or terrorist group had done so, ever. Even if the accounts were true, where had the chemicals come from, and how did ISIS manage to get them?

The Kurds could not say. Obtaining chlorine was no problem, as the industrial chemical could be found in Iraqi factories the terrorists now controlled. But what about sulfur mustard? Had the terrorists stumbled upon abandoned munitions from Saddam Hussein's time? Had they managed to steal something from Syria's stockpile of poisons?

Some answers began to emerge in the following months, as delegations from the Organization for the Prohibition of Chemical Weapons (OPCW) arrived in Baghdad to investigate the reported attacks on Kurdish forces at the Iraqi government's request. The investigators swabbed yellow residue from recovered mortar fragments and tested the greasy soil in the spots where the projectiles had landed. They interviewed Kurdish soldiers and examined the ugly scars left behind wherever the foul-smelling liquid had touched human skin. They examined one soldier whose legs were utterly covered with chemical burns, from his waist to the crisp line at mid-calf where his army boots had offered some protection.

The lab tests and interviews yielded a confirmation, and also a surprise. The oily liquid in the mortar shells was sulfur mustard, no doubt, but it differed from the kinds of military-grade blister agents the OPCW's experts were familiar with. Its formula was relatively simple, even crude. It lacked enhancers and stabilizers that military weaponeers typically use, which meant that it tended to break down more quickly when exposed to the environment. It was neither Syrian nor Iraqi, judging from its chemical composition, yet it clearly had been made by someone with access to modern laboratory equipment, a working knowledge of toxic weapons, and a grasp of basic chemistry.

All the signs pointed in the same alarming direction. Somewhere in Iraq or Syria, ISIS was manufacturing its own chemical weapons. The terrorists had not yet mastered all the elements. But they were learning. And the U.S. government was on their tail.

**Suleiman al-Afari** woke up on the morning of February 8, 2016, with an unusually long to-do list, which put the 49-year-old ISIS weapons-maker in a peevish mood. As a scientist and lifelong bureaucrat, he liked keeping a routine, even in wartime, but on this morning there were errands and obligations that would keep him on the road and out of the office for half the day. His mother was ill, which meant an hour's drive to her village to visit with her, and perhaps to try to negotiate medical care with the jihadists who now ran the local hospital. He also had to drop his wife off at work,

pick up cakes and navigate a gantlet of checkpoints that clotted the highways all around Mosul, Iraq, forcing motorists to wait in lines while bearded militiamen peered suspiciously inside their vehicles. As a final chore, he had to stop at an industrial supply warehouse to load up his car with jugs of liquid soap.

For the peculiar kind of factory he ran, soap is considered essential safety equipment. His workers made sulfur mustard for the Islamic State's artillery rockets and bombs, and in case of a spill, the lye in the soap could help neutralize the chemical toxins and lessen the number of severe burns and disfiguring scars.

In his former life, Afari never dreamed of having such a job, and he certainly never asked for it. In that fateful summer of 2014 when ISIS took over his city, he had worked as a geologist and midlevel functionary in the Mosul office of Iraq's Ministry of Industry and Minerals.

He was a family man, gregarious and gray-haired, who had spent his entire life in Mosul and had chosen not to flee, as thousands of his neighbors did, when an Islamic State army swept through the city, defeating an Iraqi troop garrison that was at least 15 times larger.

When the men from Islamic State demanded that he help them make chemical weapons, Afari was reluctant to refuse. Thus Afari the geologist became Afari the chemical weaponeer.

On February 8, when he was out looking for soap, four helicopters descended on him.

He was still trying to make sense of it when he felt something hit the car. There was a loud bang, then a series of pops as bullets hit the side panels and hood. A searing pain shot through his left leg, and he felt the car veer sharply as one of its tires blew. Afari pulled off the road and cut the engine, and with uplifted hands he climbed out of the car and into a whirl of sand and rotor wash. A huge dog suddenly appeared from nowhere and seized him by the arm.

"I wasn't afraid that they would kill me," Afari said afterward of the lunging canine and its handler, an American commando in body armor who grabbed his other arm to cuff him as he lay on the ground. "I never saw myself as an important figure. Anyway, at the moment, I was busy with the dog."

Another soldier shoved a picture—an ID photo—in Afari's face and asked in English if he was the man in the photograph.

"That you?"

"Yes," Afari replied.

Then a cloth bag was slipped over his head and the world went dark.

**When the blindfold was removed** about a half-hour later, he was surrounded by U.S. and Kurdish soldiers at an Iraqi detention camp, many miles away. It was day one in Afari's yearslong ordeal in prison, and a breakthrough day for the U.S. and Kurdish forces that had just netted one of the most important ISIS weapons-makers ever to be captured alive. It took only a few hours for Afari to fully grasp his choices, and then the words started to flow. The Iraqis ultimately would seek the death penalty for the ISIS weaponeer, but with a stay of execution as long as he cooperated. So he cooperated.

The picture he painted over the following weeks was of a weapons program that was at once ambitious and amateurish; one that was often mismanaged and disorganized, but malevolent in its intention. The group's propaganda machine had never uttered a word about chemical weapons, but beginning in the fall of 2014, the United States learned, ISIS had been working diligently to make them. The interrogations took place in Iraq, inside the fortresslike headquarters of the Kurdistan Regional Government's Counterterrorism Department. Afari, sipping tea and wearing prison-issued sweat clothes and sandals, recounted in matter-of-fact detail the terrorist group's attempts to make mustard gas, part of what he described as a broader effort to create novel weapons and delivery systems to defend the caliphate and terrorize its opponents.

Over several weeks the interrogation of Afari yielded a trove of precious details, including specific locations of chemical facilities and the names of the scientists and functionaries who ran them. Each day's summaries were transmitted to analysts at the CIA and the Pentagon, and then back across the Atlantic to the Baghdad operations room from which Lieutenant General Sean MacFarland, leader of military forces in the anti-ISIS coalition, managed the war.

MacFarland read the reports carefully. The CIA and the Defense Department were now working to disrupt the Islamic State's weapons program, and they already had achieved a crucial success: the killing of Abu Malik, Afari's ISIS boss. Alarmed by the engineer's talk about gassing Western cities, the Pentagon quietly dispatched special-forces teams into Iraq to find him, and then ordered an airstrike that obliterated his Mosul office. Abu Malik was dead, but as Afari's confessions revealed, ISIS had not given up. Newcomers, including foreign scientists, had been tapped to fulfill Abu Malik's terrible vision. MacFarland parsed the latest intelligence in daily conference calls with other Pentagon officials who separately arrived at the same grim conclusion: Given enough time, the ISIS weaponeers would eventually succeed.

"We began to recognize that ISIS was pulling in not just fighters but people with unique skills: technical skills, scientific skills, financial skills," said General Joseph Votel, the Pentagon's special-operations chief at the time and a regular participant in the discussions. "That gave

us pause. We all witnessed the horrific things they were doing. You had to make the presumption that if they got their hands on a chemical weapon, they would use it."

By early 2016, under pressure from the U.S.-led military campaign, the caliphate's soldiers were retreating everywhere, but the chemical threat appeared ever more significant. The worry among both American and Iraqi commanders was that a collapsing ISIS would try to avenge its losses by unleashing its chemical weapons, either on the battlefield or in terrorist attacks in Western cities, delivered perhaps by one of the scores of small drones the militants had gone to great effort to acquire. "They were hoping for some kind of a wonder weapon," MacFarland said later, "one that might save the caliphate."

MacFarland faced enormous pressure to act. In Washington, President Barack Obama's national security advisers now were well aware of how a poison-gas weapon could transform the terror campaign that ISIS had already unleashed in European cities. Even a relatively minor attack in New York or Los Angeles would generate such an outcry that the White House would be compelled to expand the war and send another generation of U.S. ground forces into battle in Iraq and perhaps Syria. In Baghdad, Prime Minister Haider al-Abadi's government was equally anxious. Iraq's frontline troops already were jittery about the possibility of chemical attacks, so much so that senior commanders worried about the effect on morale. In MacFarland's visits with Iraqi counterparts, the subject almost always came up. The older officers had seen the effects of sarin and mustard gas during the Iran- Iraq War, and the memory was seared into their brains.

"They would talk about it, and the Iraqi press would make a big deal about it," MacFarland said. "They all knew how terrible it can be."

Taking out the group's capability would not be easy. The weapons facilities described by Afari were not hidden away on military bases or in underground bunkers, as they had been in Syria. The most important ones were in cities, inside lightly protected civilian facilities in the middle of residential neighborhoods. The Islamists had hidden a sizable production center inside a wing of a civilian hospital in Hit, a city of 60,000 people. Another was on the grounds of Mosul University, in the heart of Iraq's second most populous city. Any airstrike against sites such as these carried a risk of releasing clouds of dangerous chemicals that could drift through homes, schools and playgrounds. If civilians were killed, the U.S. military and its partners would be blamed.

But MacFarland was out of time. Waiting for Iraqi troops to recapture the sites would mean a delay of many weeks, perhaps months. ISIS would surely use the time to build more weapons, or better ones. Or it might simply move its factories somewhere else.

A strike package was carefully assembled, with special kinds of bombs selected for the unusual mission. Beginning in March, just over a month after Afari's arrest, MacFarland's team was ready to act.

**The spring's rolling airstrikes** began without fanfare and gained little notice in U.S. newspapers. The first target was the Iraqi city of Hit, where hundreds of government troops and tribal militiamen already were waiting on the outskirts to liberate the town from its ISIS occupiers. U.S. warplanes swooped in on March 25, 2016, to attack strategic targets around the city ahead of the ground assault, and over the next five days, the Americans struck 17 sites, one of which was blandly listed by the Pentagon as an "improvised weapons facility." On April 12, Iraqi forces fought their way into central Hit, capturing the hospital and its now-ruined chemical lab.

Next on the list was Mosul. The Islamic State's Iraqi capital was, even in wartime, a densely populated city of more than a million people, and the terrorists had positioned their most important laboratories at Mosul University, on the east bank of the Tigris River and smack in the middle of town. Mindful of the high risk of civilian casualties, the mission's planners selected special incendiary bombs designed to generate a small blast radius but intense heat, to vaporize weapons, supplies and any residual gases that might otherwise escape. Then they waited for conditions to be just right. The time of day, the wind's speed and direction, the humidity level—any one of these could be the margin between a clean strike and a calamity for an innocent Iraqi family.

The strikes occurred sporadically as conditions allowed and new targets emerged, beginning in late spring and continuing through fall. The biggest strike, on September 13, involved a dozen U.S. aircraft and more than 50 bombs and missiles that tore apart a large manufacturing complex for pharmaceuticals on Mosul's outskirts.

Then it was over. By late 2016, U.S. military commanders were confidently asserting that the Islamic State's industrial capacity for making chemical weapons had been eliminated. On January 14, 2017, six days before the end of the Obama presidency, Iraqi troops captured Mosul University, the heart of eastern Mosul and the epicenter of the Islamic State's chemical weapons program.

The impact of the Pentagon's bombing campaign was direct and measurable. Researchers ultimately would attribute more than 70 poison-gas attacks to ISIS forces in Iraq and Syria. After the liberation of eastern Mosul, the number of incidents dropped to zero.

Yet in the assessment of MacFarland and the other generals behind the bombing campaign, there was little doubt about the threat that remained. Several key ISIS figures were known to have escaped to Syria, including a French national named Joe Asperman, one of the Europeans recruited by ISIS for his scientific expertise. The caliphate's leaders were so protective of Asperman and his projects that they issued a statement falsely claiming that the Frenchman had been "martyred." Now

dispersed across the Middle East and perhaps beyond, Asperman and other operatives would simply be harder to find.

"They had all this capability and technical knowledge. Where did it go?" asked Votel, the former special operations commander who would soon become CENTCOM chief. "We know that some of their people were killed and others went home. But some may still be out there."

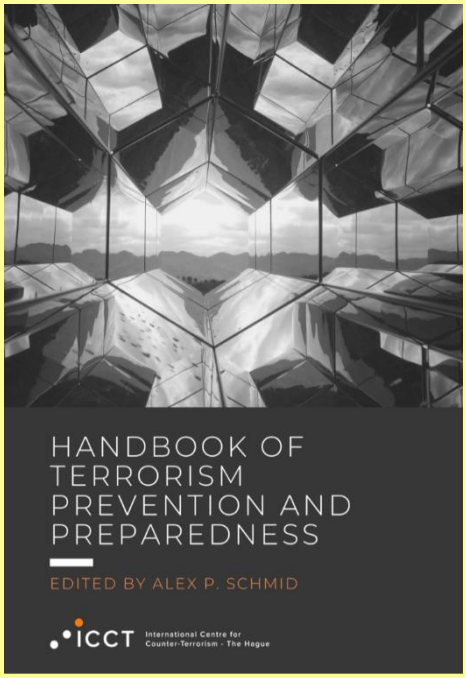
Indeed, ISIS itself issued a rare warning that a chemical attack would be coming, at a time of its choosing. Months after Kurdish fighters overran the caliphate's last enclaves in Syria in 2019, the group's leaders issued an official pronouncement declaring a "new stage" in the group's terror campaign against its enemies, especially Israelis. The message promised new tactics and weapons, and included, for the first time, an explicit call for the use of poison gas.

"O soldiers of the caliphate everywhere," it said, "below you are the settlements and markets of the Jews. So make them a testing ground for your weapons: our chemical-bearing rockets."

## Handbook of Terrorism Prevention and Preparedness

*Schmid, Alex P. (ed.) Handbook of Terrorism Prevention and Preparedness (The Hague, NL: ICCT Press) 2020.*

Source: https://icct.nl/handbook-of-terrorism-prevention-and-preparedness/




### Part III: Prevention of Preparatory Acts

**Chapter 13:** Prevention of Recruitment to Terrorism
**Chapter 14:** Prevention of Terrorist Financing
**Chapter 15:** Prevention of Cross-Border Movements of Terrorists: Operational, Political, Institutional and Strategic Challenges for National and Regional Border Controls
**Chapter 16:** Prevention of the Procurement of Arms and Explosives by Terrorists
**Chapter 17: Prevention of CBRN Materials and Substances Getting into Terrorist Hands**
**Chapter 18:** Prevention of (Ab-) Use of Mass Media by Terrorists
**Chapter 19:** Prevention of (Ab-)Use of the Internet for Terrorist Plotting and Related Purposes

▶▶ **NOTE:** Chapter 17 has been written by the Editor of C²BRNE Diary.

## CBRN Civil Defense

**By the Editor-in-Chief of C²BRNE Diary**

Civil defense or civil protection is an effort to protect the citizens of a state (generally non-combatants) from military attacks and natural disasters. It uses the principles of emergency operations: prevention, mitigation, preparation, response, or emergency evacuation and recovery. Programs of this sort were initially discussed at least as early as the 1920s and were implemented in some countries during the 1930s as the threat of war and aerial bombardment grew. It became widespread after the threat of nuclear weapons was realized.

Since the end of the Cold War, the focus of civil defense has largely shifted from military attack to emergencies and disasters in general. The new concept is described by a number of terms, each of which has its own specific shade of meaning, such as *crisis management*, *emergency management*, *emergency preparedness*, *contingency planning*, *civil contingency*, *civil aid* and *civil protection*.

In some countries, civil defense is seen as a key part of "total defense". For example, in Sweden, the Swedish word *totalförsvar* refers to the commitment of a wide range of resources of the nation to its defense—including to civil protection. Respectively, some countries (notably the Soviet Union) may have or have had military-organized civil

defense units (Civil Defense Troops) as part of their armed forces or as a paramilitary service.

**Today**

Many countries still maintain a national Civil Defense Corps, usually having a wide brief for assisting in large scale civil emergencies such as flood, earthquake, invasion, or civil disorder.

After the September 11 attacks in 2001, in the United States the concept of civil defense has been revisited under the umbrella term of homeland security and all-hazards emergency management.

In Europe, the triangle CD logo continues to be widely used. The old U.S. civil defense logo was used in the FEMA logo until 2006 and is hinted at in the United States Civil Air Patrol logo. Created in 1939 by Charles Coiner of the N. W. Ayer Advertising Agency, it was used throughout World War II and the Cold War era. In 2006, the National Emergency Management Association—a U.S. organization made up of state emergency managers—"officially" retired the Civil Defense triangle logo, replacing it with a stylized EM (standing for Emergency management). The name and logo, however, continue to be used by Hawaii State Civil Defense and Guam Homeland Security/Office of Civil Defense.

The term "civil protection" is currently widely used within the European Union to refer to government-approved systems and resources tasked with protecting the non-combat population, primarily in the event of natural and technological disasters. In recent years there has been emphasis on preparedness for technological disasters resulting from terrorist attack. Within EU countries the term "crisis-management" emphasizes the political and security dimension rather than measures to satisfy the immediate needs of the population.

In Australia, civil defense is the responsibility of the volunteer-based State Emergency Service.

In most former Soviet countries civil defense is the responsibility of governmental ministries, such as Russia's Ministry of Emergency Situations.

**Importance**

Relatively small investments in preparation can speed up recovery by months or years and thereby prevent millions of deaths by hunger, cold and disease. According to human capital theory in economics, a country's population is more valuable than all of the land, factories and other assets that it possesses. People rebuild a country after its destruction, and it is therefore important for the economic security of a country that it protect its people. According to psychology, it is important for people to feel as though they are in control of their own destiny, and preparing for uncertainty via civil defense may help to achieve this.

In the United States, the federal civil defense program was authorized by statute and ran from 1951 to 1994. Originally authorized by Public Law 920 of the 81st Congress, it was repealed by Public Law 93-337 in 1994. Small portions of that statutory scheme were incorporated into the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 100-707) which partly superseded in part, partly amended, and partly supplemented the Disaster Relief Act of 1974 (Public Law 93-288). In the portions of the civil defense statute incorporated into the Stafford Act, the primary modification was to use the term "Emergency Preparedness" wherever the term "Civil Defense" had previously appeared in the statutory language.

**Threat assessment**

Threats to civilians and civilian life include CBRN (Chemical Biological Radiological and Nuclear) threats as well. Threat assessment involves studying each threat so that preventative measures can be built into civilian life.

*Conventional*

Refers to conventional explosives. A blast shelter designed to protect only from radiation and fallout would be much more vulnerable to conventional explosives.

*Nuclear*

Shelter intended to protect against nuclear blast effects would include thick concrete and other sturdy elements which are resistant to conventional explosives. The

biggest threats from a nuclear attack are effects from the blast, fires and radiation. One of the most prepared countries for a nuclear attack is Switzerland. Almost every building in Switzerland has an *abri* (shelter) against the initial nuclear bomb and explosion followed by the fall-out. Because of this, many people use it as a safe to protect valuables, photos, financial information and so on. Switzerland also has air-raid and nuclear-raid sirens in every village.

*Dirty Bomb*

A "radiologically enhanced weapon", or "dirty bomb", uses an explosive to spread radioactive material. This is a theoretical risk, and such weapons have not been used by terrorists. Depending on the quantity of the radioactive material, the dangers may be mainly psychological. Toxic effects can be managed by standard hazmat techniques.

*Biological*

The threat here is primarily from disease-causing microorganisms such as bacteria and viruses.

*Chemical*

Various chemical agents are a threat, such as nerve gas (VX, Sarin, and so on.).

**Stages**

*Mitigation*

Mitigation is the process of actively preventing the war or the release of nuclear weapons. It includes policy analysis, diplomacy, political measures, nuclear disarmament and more military responses such as missile defense and air defense artillery. In the case of counter-terrorism, mitigation would include diplomacy, intelligence gathering and direct action against terrorist groups. Mitigation may also be reflected in long-term planning such as the design of the interstate highway system and the placement of military bases further away from populated areas (depending on the strategic depth of the country).

*Preparation*

Preparation consists of building blast shelters and pre-positioning information, supplies, and emergency infrastructure. For example, most larger cities in the U.S. now have underground emergency operations centers that can perform civil defense coordination.

Other measures would include continual government inventories of grain silos, the Strategic National Stockpile, the uncapping of the Strategic Petroleum Reserve, the dispersal of lorry-transportable bridges, water purification, mobile refineries, mobile de-contamination facilities, mobile general and special purpose disaster mortuary facilities (such as Disaster Mortuary Operational Response Team (DMORT) and DMORT-WMD in the United States), and other aids such as temporary housing to speed civil recovery.

On an individual scale, one means of preparation for exposure to nuclear fallout is to obtain potassium iodide (KI) tablets as a safety measure to protect the human thyroid gland from the uptake of dangerous radioactive iodine. Another measure is to cover the nose, mouth and eyes with a piece of cloth and sunglasses to protect against alpha particles, which are only an internal hazard.

To support and supplement efforts at national, regional and local level with regard to disaster prevention, the preparedness of those responsible for civil protection and the intervention in the event of disaster

- To establish a framework for effective and rapid cooperation between different civil protection services when mutual assistance is needed (police, fire service, healthcare service, public utility provider, voluntary agencies)
- To set up and implement training programs for intervention and coordination teams as well as assessment experts including joint courses and exchange systems
- To enhance the coherence of actions undertaken at international level in the field of civil protection, especially in the context of cooperation

Preparing also includes sharing information:

- To contribute to informing the public, in view of increasing citizens' level of self-protection
- To collect and disseminate validated emergency information
- To pool information on national civil protection capabilities, military and medical resources
- To ensure efficient information sharing between the different authorities

*Response*

Response consists first of warning civilians so they can enter fallout shelters and protect assets.
Staffing a response is always full of problems in a civil defense emergency. After an attack, conventional full-time emergency services are dramatically overloaded, with conventional firefighting response times often exceeding several days. Some capability is maintained by local and state agencies, and an emergency reserve is provided by specialized military units, especially civil affairs, Military Police, Judge Advocates and combat engineers.
However, the traditional response to massed attack on civilian population centers is to maintain a mass-trained force of volunteer emergency workers. Studies in World War II showed that lightly trained (40 hours or less) civilians in organized teams can perform up to 95% of emergency activities when trained, liaised and supported by local government. In this plan, the populace rescues itself from most situations, and provides information to a central office to prioritize professional emergency services.
In the 1990s, this concept was revived by the Los Angeles Fire Department to cope with civil emergencies such as earthquakes. The program was widely adopted, providing standard terms for organization. In the U.S., this is now official federal policy, and it is implemented by community emergency response teams, under the Department of Homeland Security, which certifies training programs by local governments, and registers "certified disaster service workers" who complete such training.

*Recovery*

Recovery consists of rebuilding damaged infrastructure, buildings and production. The recovery phase is the longest and ultimately most expensive phase. Once the immediate "crisis" has passed, cooperation fades away and recovery efforts are often politicized or seen as economic opportunities.
Preparation for recovery can be very helpful. If mitigating resources are dispersed before the attack, cascades of social failures can be prevented. One hedge against bridge damage in riverine cities is to subsidize a "tourist ferry" that performs scenic cruises on the river. When a bridge is down, the ferry takes up the load.

**CBRN Civil Defense**

As already mentioned above, Civil Defense is the organization responsible for the well-being of all citizens and the people visiting or temporarily residing in the country. In that respect, all critical infrastructure, enterprises, religious and cultural places, agriculture and food industry, tourism industry and transportation hubs are under the umbrella of Civil Defense in case of natural or man-made disasters and threats. The latter includes CBRN threats and chemical/nuclear accidents or sabotage. In addition, disasters of all kinds can happen in a neighboring country or even in a country being far away (e.g. the Chernobyl nuclear power plant accident that affected almost the entire European continent and beyond). Usually, the Civil Defense is supported by the National Armed Forces since they have heavy machinery and specialized equipment that Civil Defense might be lacking. This happens only when the Civil Defense declares a status of national emergency meaning that available resources are not adequate to counter the disaster of the threat. The public perception that the military will take care of everything is totally wrong but sometimes leads to a hesitation to address specific threats like the release of CBRN agents in an urban environment.
The Civil Defense is depending on ordinary first responders to deal with all hazards/disasters. Policemen, firefighters and ambulance crews represent the first line of defense supported by a spectrum of stakeholders representing different organizations. It must be kept in mind that a disaster does not affect a single sector of the community or nation. All critical

infrastructure depends on each other and if one of them is having a problem almost all others will be, more or less, affected.
Let us see now how each organization should be prepared to counter a future CBRNe incident:

*Civil Defense*
Usually, this organization is under the Ministry of Interior or can be an independent authority. Civil Defense should have an office, department or directorate specialized in CBRN threats and be responsible for the planning of all stages of emergency response mentioned above. An external experts' team can support its functions comprised of specialists from different entities (public sector and academia both national and international). Civil Defense should periodically review and update existing plans and procedures adjusting response to modus operandi deployed by terrorists around the globe. In addition, frequent tabletop exercises and field drill should be organized in order to check the functionality of plans and the level of readiness of the agencies involved. Planning should be anthropocentric – this means that we plan based not on what people should do but on what people will actually do. For example – based on the Tokyo subway sarin attack experience – victims will not remain at the incidence site waiting for first responders to arrive and deal with them. Instead, they will run away and if they have a health problem they will go to the nearest hospital (but also to all hospitals and clinics in the city) by their own means (>85%). This will happen even if the response team will arrive on-site within 15 minutes.
A second issue is the crisis communication management of the incident. In the era of Internet and social media there is no doubt that minutes after the incident, photos, videos or live streaming along with initial info (not always accurate) will be on the air. News websites and blogs will provide info on the effects of the supposed nature of the agent involved focusing on the effects on the human body (i.e., instant death; incapacitation; future genetic effects; carcinogenesis, etc.) that will empower civil anxiety or even cause mass panic reactions (triggering the flood of "worried-well" to hospitals – ration 1 (contaminated) to 5 (worried-well: people who think that they have the symptoms and signs described in public). Therefore, it is of crucial importance for the state to be able to respond faster and provide an initial information about what happened, the agent released and some basic countermeasures to be taken by the public. Regular updates with more information should follow in order to attract people to be informed by official info means instead of trying to find answers on the Internet or social media. In order this to be done, preliminary work should be done and special files addressing each and every threat should be available for immediate release with necessary adjustments per case.

*Police*
Police forces will be activated in three levels: (1) cordon the area around the incident site. Level-C PPEs will be required to avoid exposure. It would be clever to be able to provide a leaflet with instructions to those evacuating the area (pedestrians and with cars). (2) enter the Hot Zone. Level-A PPEs will be required until the agent released will be identified. Duties to be performed include: report of the situation; search for secondary IEDs aiming first responders; identify absence of remaining active shooters; take samples (soil, liquid, air, debris); take photos and videos, etc.), and (3) support the perimeter of hospitals – this is where all those seeking medical advice or assistance will end up. Level-C PPEs will be required to avoid secondary contamination. By controlling the incoming flow of victims, police will give necessary time to hospital's emergency department to be prepared and deploy decontamination means of available.

*Fire Service*
Fire Service will be activated in three levels: (1) enter the Hot Zone (together will police forces) performing similar or complementary duties; (2) perform the triage (if not medical personnel are available) and decontamination process in the Warm Zone (a gradually contaminated Green Zone); and (3) perform decontamination ("*water curtains*" – high volume/low pressure [50-60psi] decontamination with water) if hospital does not have specialized equipment to do that.

*Ambulance Service*
It would be great if ambulance service could enter the Warm Zone but usually ambulance crews (and medical people in general) are reluctant to do that preferring

to operate in the Cold Zone where victims are "clean – decontaminated". They perform a more thorough triage and transport victims (usually non-ambulatory) to dedicated hospitals.

*Incident Commander*

Usually, the crew that arrives first on site provides a senior serviceman to be the Incident Commander operating in the Cold Zone. Later on, a more experienced officer might take control together with his team supporting his functions. A drone flying over the incident site could provide a real operational picture on what is happening in the area facilitating a better synchronization of forces involved.

*Hospitals*

The Emergency Department of the hospital is the only shield protecting the hospital (premises, medical/nursing personnel, workers, inpatients, visitors) from secondary contamination. ED should be able to deploy a triage/decontaminate/first aid station just outside its premises in order to receive either victims transported by ambulances or victims arriving with their own means. Are hospitals prepared to receive mass contaminated casualties? Unfortunately, they are not – and this is a global phenomenon! Can hospitals be CBRN-proofed? Of course, they can – and it is not as expensive as it sounds. But even if it is, what if the CBRN incident happens TODAY? What would be the excuse of those responsible for not been prepared for the unexpected? Medical people "*bombard*" people on a daily basis with "preparedness is better than treatment" but in the case of CBRN threats, they are those who forget their own suggestion! In that respect, Civil Defense should pay special attention to the preparedness of hospitals – not to a specific hospital but to ALL hospitals (public, private; military) nation-wide. Please note, that in case of a real CBRN incident, ALL medical specialties will be involved one way or another (again, lessons learned from the Tokyo sarin incident). In that respect, the entire hospital should be educated on the CBRN threats and actions to taken depending on the level of involvement.

*National Pharmaceutical Stockpile*

Usually, there is one aiming to cover the needs of the population in the aftermath of a natural disaster. What about the needs of the people after a CBRN incident? Civil Defense should pay special attention to this issue and try to find solutions regarding storage, content, and distribution of medications required (antibiotics; vaccines; antidotes). Take for example that a hospital needs antidotes for 100 victims exposed to nerve agents. In the field, 300 auto-injectable antidotes (atropine + pralidoxime) will be required (prehospital norm: 3 antidotes (max) per victim); but at the emergency department, more than these will be necessary (i.e., 1000 pieces). It is obvious, that hospitals cannot wait for the national pharmaceutical stockpile to be activated. Therefore, it is clever to have a stockpile of special drugs on its own in order to cover the needs of the first 24 or 48 hours. Time is life and a hospital stockpile will be the solution.

*Businesses/enterprises*

Do they have a CBRN business continuity plan in order? Most of them (if not all of them) do not! In collaboration with Civil Defense, they can make a plan and make sure that all their employees are aware of it. Also make sure, that instructions are given in different languages because many employees cannot speak/read the local language. Also, what if they cannot read at all?

*Tourism industry/transportation hubs*

There is a chemical industry accident generating a contaminated plum directed to the location a 5-star hotel is located. Do the hotel officials know how to implement "shelter-in-place" since there is no time to evacuate 500-1000 guests? Can they provide the simple means to do that? Can they instantly inform all their guests via their telephone center about what to do and how?

A metro/subway station or car is the target of a CR attack. What needs to be done? How to evacuate the commuters affected? Are there CR sensors that could provide an on-time alarm that might save lives? Do they have a pre-emptive plan addressing

who is doing what and how? Again, Civil Defense can help these organizations/entities making and testing their plans.

*Escape hoods*

If it was on the hands of the author, he should distribute escape hoods to every single citizen or guest of the state! Escape hoods give time (20-30 min) to escape from a hazardous area and move to a safer place. Not very expensive, with a long-time self-life (~10yrs), one size fits all, no problem with facial hair/glasses/gender) can be donned in seconds providing protection from CBRN agents and smoke (cyanide compounds are released during fires especially inside buildings or houses). Escape hoods should be mandatory for ordinary first responders (police, fire service, and ambulance crews) since these are the people who will go first at an incident site. Responders should always keep in mind the "1-2-3" rule of survival (one person down = might be a medical emergency; 2 people down = move with caution; 3 people down [or more] = retreat, put your escape hood, cordon the area, help evacuate people on-site). In offices, hotels, operational centers, transportation hubs, airports, ports, mosques, shopping malls, etc. escape hoods should be stored in special racks in the corridors of each floor and people should have easy access to them in case of a real CBRN emergency.

*Special groups and disabled people*

In every disaster (including CBRN) both special groups (children; pregnant women; elderly citizens) and disabled people (on wheelchairs; chronic diseases; deaf; blind, etc.) will be involved. Do CBRN first responders know how to deal with them? Are these groups included in their operational modus operandi? Have they tested their plans with the active participation of these groups? Unfortunately, most plans have no special chapter addressing the special needs of these people. Revise plans and work with them. Life is such a precious thing!

*Language barriers and ethics*

Do you think that all people speak Arabic, English, Chinese or Hindu? Surely, not! So, how you will communicate with them during triage or decontamination processes? Modern technologies can provide solutions that need to be considered (i.e., field multilingual translation tablets, posters, cartoons, etc.).

Do you think that it is easy to persuade a Muslim or Hindu woman to undress in public in order to be decontaminated by male CBRN crews? Even when their lives are at stake? Civil Defense should seriously address these issues and find the most appropriate solutions according to national legislation, perceptions, rules, traditions, and ethics. And then test these solutions with field drills in order to ensure applicability or make modifications.

*Sirens and public alert systems*

Almost all countries have a siren system deployed in strategic areas within city limits. But do people know what each sound accounts for? Or even where these sirens are located? Modern electronic road boards can be easily modified to deliver alerts and information.

*Management of the dead*

In countries with very hot climate, this might become a major public health problem. Consider using refrigerated commercial trucks or ice-dromes' for temporal storage of corps. Special MoUs should be signed in advance. In addition, a stockpile of corps' bags should be stocked and be available at all instances.

*CBRN training and equipment*

One training does not fit all! One piece of equipment does not fill all! Each organization must make its own response plan based on the mission to be executed and this will help to define the type of training required and the specialized equipment to be purchased. Keep in mind the "rule of 2": two pieces of equipment (i.e., chemical detectors) of two different technologies (there is no chemical detector covering all chemical threats). The "*holistic training model*" is a combination of theoretical and practical hands-on training based on realistic scenarios and combination of adverse operational conditions that sharpen the response modus operandi of CBRN first

responders. The ultimate training is the live agents training – mostly with controlled portions of CWAs but also with exposure to non harmful biological agents and visits to areas with increased environmental radiation – e.g., Chernobyl, Ukraine. Training should be re-certified every 2-3 years along with field exercises both national and international. In addition, there are some excellent CBRN simulants in the market that ease the training procedure and add realism in the scenarios chosen.

*Educating the populace*

Usually, the most important player in all emergency response plans is kept out of the game (planning). How do we expect people to "shelter-in-place" if we do not educate them of what this is and the resources they need to have at home/office in order to implement it when the government asked them to take this specific protection? We educate people on what to do in case of an earthquake or a wildfire; so, why not on what to do in case of a terrorist CBRN attack or an industrial accident (even when it happens outside the country). Will they panic if we do that? People watch so much violence on television or on the Internet that most probably will not. On the contrary, they will feel more secure and will try to cope with instructions given in order to be prepared for a real incident that might never happen in real life. Volunteer organizations and groups might play an important role in dissemination of information to the public or even organize citizens on how to respond to special threats such as CBRN.

*Universities' medical/nursing schools*

Introduction of "CBRN Medicine" in the curricula of universities/colleges' medical/nursing schools will enhance the differential diagnosis capabilities of the front-line health professionals of tomorrow. It is easy to be done and requires a small budget – but the impact would be enormous! Invest on people and this investment will – one day – pays back in lives to be saved!

*Why buying everything on the market?*

When defense companies advertise their CBRN products and solutions they always claim that they are the best in the market or that they cover all needs. In practice, we discover that this is not always entirely correct since each organization has its own peculiarities and ways of doing things in the field. So, why not adopt a do-it-yourself (DIY) approach that will make products tailor-made for the mission and the most important of all with a fraction of cost requested for commercial products? This will enhance autonomy and reduce costs. Even in rich countries, why spending money when you can invest to improve own CBRN systems for the benefit of the people and the State?

**In conclusion**

The mission of the national Civil Defense is of utmost importance for the "face" of a country and the survival of its people. Careful to the point planning; regular update and testing of the plans; right for the mission training and equipment will end-up in an effective and applicable preparedness, response and mitigation in a future real CBRN incident in an urban environment. Open minds, practical anthropocentric proposals, and solutions along with collaborative efforts represent the key to success in case the unexpected happens tomorrow and under our authority. Possible failures in case of a massive incident might be excused and even be understandable; excuses for not been prepared to deal with an unexpected massive asymmetric incident will be not! ■

## Iran secretly plotting nerve agent attacks inside UAE and Saudi Arabia

**By Salah Uddin Shoaib Choudhury**

Source: https://www.weeklyblitz.net/news/iran-secretly-plotting-nerve-agent-attacks-inside-uae-and-saudi-arabia/

Mar 09 – The rogue regime in Iran has been repeatedly threatening of avenging the reported assassination of its chief nuclear scientist Mohsen Fakhrizadeh, who was shot dead outside of Tehran in 2020. Such repeated threats remind of Iran's long history of both sponsoring global terrorism and actively engaging in it with its own personnel, and it also proves – Iran

has spent decades in building a highly active Shiite terror network in the world. According to a credible intelligence source, **the Iranian regime is secretly plotting series of nerve-agent attacks on civilians and officials inside the United Arab Emirates** and **Saudi Arabia by the end of this year**.

**Iran producing *Novichok* nerve-agent**

Chemical weapons, and their precursors, were banned by the Chemical Weapons Convention, which has been signed and ratified by nearly all the countries in the world. However, the illegal use of chemical weapons, whether by state agencies or terrorist organizations, remains a threat.

Chemical weapons were used by Iraqi forces in the 1980s against Iranian forces and Kurdish civilians. Some chemical weapons, such as chlorine gas, are believed to have been used in recent years in the Syrian civil war.

Current databases include mass spectra of the more common chemical warfare agents; however, more work needs to be carried out on rarer agents. The so-called *Novichok* agents are a range of highly toxic nerve agents developed in the Soviet Union in the 1970s and 1980s.

**According to intelligence sources, the Iranian researchers synthesized five *Novichok* agents, along with four deuterated analogs. They were all *O*-alkyl *N*-[bis(dimethylamino)methylidene]-*P*-methylphosphonamidate compounds (i.e., molecules with the typical nerve agent phosphorus group coupled to *N*'*N*'-tetramethylguanidine). The *O*-alkyl group was varied, with the methoxy, ethoxy, isopropoxy, phenoxy, and 2,6-dimethylphenoxy derivatives being prepared. The syntheses were carried out on a micro-scale in order to minimize exposure.**

The synthesized nerve agents were examined using GC/MS, using a 40–280°C GC ramp, an electron ionization (EI) source and a mass selective detector (MSD). The compounds all showed a good to moderate molecular ion. The other main ions were identified with the help of the mass spectra from the deuterated analogs. The fragmentation was mostly as might be expected; for example, for the methoxy analog, the base peak involved loss of a dimethylamino group and the phosphorus methyl group. For the phenoxy compound, the base peak was that from the loss of a dimethylamino group; the authors propose an intramolecular reaction involving attack from the ortho position of the phenoxy group on the central 'guanidine' carbon, leading to the loss of the dimethylamino group and formation of a stable sigma complex. Some evidence for this mechanism is provided by the spectrum of the 2,6-dimethylphenoxy derivative, where the corresponding peak is far weaker, presumably because the ortho positions are blocked by the methyl groups. A distinctive McLafferty-type rearrangement, with the loss of an alkene from the alkoxy group, was seen with derivatives where this was possible, such as ethoxy and isopropoxy, but not in methoxy and phenoxy derivatives, where such a rearrangement could not occur.

The compounds were examined by LC-MS/MS, using electrospray ionization (ESI) source and a quadrupole tandem mass spectrometer. The HPLC used an aqueous acetonitrile gradient system, with 20 mM formic acid. In general, the ESI spectra were similar to the EI spectra. The facile loss of a dimethylamino group with the phenoxy derivative was again noted.

Iranian scientists have given a code name to their brand of *Novichok* as *Azraeel* – which according to Qur'an is the name of the Angel of Death.

According to information, Iran is currently recruiting volunteers for executing its vicious plan of causing "optimum damage" to Saudi and UAE nationals through nerve agent attacks. It is further learned that most of the recruits for this secret project are from the African nations and former Soviet republics. Members of the Iranian intelligence agency are coordinating the recruitment by working as under-cover members of the Iranian Cultural Center in various countries.

**Iran's tactic of smuggling-out *Novichok* agent**

**According to a leaked data, the Iranian regime is going to ship-out the consignments of *Novichok* and similar nerve agents inside Saudi Arabia and the United Arab Emirates being packed inside bottles of concentrated perfume.** Iranian nationals in Dubai and Abu Dhabi are assigned to coordinate this dangerous mission.

**According to statistical data, the UAE is currently home to 700,000 Iranian expatriates, most of whom live in Dubai.** The Iranian Club in Dubai is the main social club of Iranian expatriates in the country, which is also known as the key activity point of the Iranian intelligence. The Iranian population in UAE also includes small communities of Baloch people and Khuzestani Arabs.

There are an estimated over eight thousand Iranian-backed businesses in Dubai alongside the Iranian Business Council and Iranian Hospital. According to information, Iranians have business investments worth above US$400 billion in the United Arab Emirates. That makes a very convenient way for the Iranian spy agencies in mobilizing funds required for the recruitment of agents as well as executing terrorist plots in the Middle East and the world.

Iranian business entities in the UAE are having contacts with various individuals and business establishments in other Middle Eastern nations, including Qatar, Iraq, Jordan, Yemen, Bahrain, Oman, and Saudi Arabia. It is anticipated that Iranians in the UAE are mainly coordinating the issues related to funding Houthis terrorists in Yemen as well as Shiite terror outfits and pro-Iran groups and individuals in Iraq.

**Iranian spies in the Middle East**

Iranian regime has also infiltrated deep inside the military establishments in the United Arab Emirates. Back in 2017, the Abu Dhabi Federal Court of Appeals issued tough rulings in a range of cases related to state security, handing out jail sentences ranging from three to 15 years in cases related to the promotion of terrorism, espionage for foreign countries, and joining terrorist organizations.

The court sentenced a 28-year-old Emirati, identified as H.A.M.M., to 15 years for spying for Iran.

The military man was found guilty of transferring sensitive military information to Iranian agents working at the Iranian embassy in Abu Dhabi.

The court also ordered the confiscation of all documents and means of communications and directed him to pay for all judicial expenses.

The court also sentenced a Sudanese woman, 46, to 10 years in prison to be followed by deportation for aiding and abetting the military man through facilitating his contacts with the Iranian agents.

The court sentenced four Jordanians to 10 years in prison and a Dh1 million fine each after being convicted of setting up pages on social media to promote the ideology of Shiite terrorist organizations by publishing articles, information, photos, videos, and electronic documents, which jeopardize the interests of the UAE.

According to the court documents, the materials contained false and fabricated information on the foreign policy of the UAE.

In another case, the court sentenced a 35-year-old Emirati man to 10 years in prison and a Dh100,000 fine after being convicted of espionage for Iran.

The man, who passed on information about a security entity to agents of the Iranian Embassy in Abu Dhabi, was also ordered to be put under probation for three years after serving his prison term.

The court sentenced his accomplice, a 45-year-old Bahraini, to three years in prison and a Dh50,000 fine for having conspired with the first defendant to set up social networking sites and spread lies through them. The court also found him guilty of deliberately insulting UAE leaders by spreading lies on those sites.

In another case, the court sentenced an Emirati man to **seven years in prison for spying for Iran**.

The court found the defendant guilty of communicating information about oil and gas fields in Abu Dhabi with Iranian agents.

In 2019, a trove of 700-pages leaked cables exposed Iran's espionage activities inside Middle Eastern nations.

In February 2010, Iranian spies had Tehran's most wanted man in their sights. Their target, Sunni Islamist militant Abdolmalek Rigi, had killed an Iranian general and was responsible for a string of terrorist attacks in Iran from across the Pakistani border. After Rigi boarded a commercial flight to Dubai that took him through Iranian airspace, secret agents on board appeared, ordered the plane to land, and then arrested Rigi. He was later executed.

That's just one of the many secret operations in recent years by Iran's Ministry of Intelligence and Security (MOIS). It is a non-military governmental organization that operates both inside and outside of Iran. Intelligence experts rank MOIS as one of the largest and most dynamic intelligence agencies in the Middle East.

As an official Iranian government agency, MOIS is overwhelmingly staffed by Iranians. It does, however, recruit other nationalities for its missions.

Until the reelection of President Mahmoud Ahmadinejad in 2009, most MOIS personnel were not uniformly hard-line Islamists, although they were vetted for ideological conformity. For example, in an article on the Fars News Web site in July 2005, the former minister of intelligence and security, Ghorbanali Dorri Najafabadi, said that when he consulted the former foreign minister, Ali Akbar Velayati, about whether to accept an offer from President Mohammad Khatami (president, 1997–2005) to become head of MOIS, Velayati told him "the Ministry of Intelligence is like a city which is governed by various insights and trends."

MOIS operates under the direct supervision of Iran's Supreme Leader, Ayatollah Khamenei, who claims to be the leader of the Muslim world. As noted above, MOIS agents are known as "Unknown Soldiers of Imam Zaman," who is the Twelfth Imam in the succession of Islamic leaders of Shi'a Muslims. However, the organization is not bound by Shi'a beliefs. To advance its goals, MOIS recruits individuals regardless of their beliefs, including Arabs or Jews to spy in Israel. For example, the deputy minister of MOIS, Saeed Emami, was appointed to a key position in the ministry because of his family record, despite allegedly being Jewish by birth.

After the 1979 Islamic Revolution, Iranian intelligence functioned like intelligence organizations in every other revolutionary country—it identified and eradicated opponents

and defectors inside and outside of the country. Thus, collecting information was not the priority. At this time, the Palestinian Liberation Organization (PLO) was providing the most foreign information to the Iranian government.
From the beginning of the Revolution in 1979, internal security was in the hands of Islamic Revolutionary Kumitehs (literally, committees), which Ayatollah Khomeini ordered to be formed because of concerns that a police force might be more loyal to the shah than to the new revolutionary regime. People established Kumitehs in their neighborhoods in places such as police stations, mosques, and youth centers. In addition to having responsibility for security, each Kumiteh had a unit to gather information (intelligence) on its neighbors. Ayatollah Mohammad Reza Mahdavi Kani, who was one of the revolutionaries close to Ayatollah Khomeini, was in charge of the Kumitehs.
Kumitehs may have operated under the Ministry of Interior.15 Other groups were involved in gathering information as well, including judges who were in charge of cases dealing with sabotage by opposition groups and with counterintelligence.
According to a 2012 report by the Federal Research Division at the Library of Congress, the spy agency counts as "the most powerful and well-supported ministry among all Iranian ministries", in terms of finance and support.

## Do I require a Respiratory Escape Device?

Source: https://www.shephardmedia.com/news/landwarfareintl/do-i-require-respiratory-escape-device-sponsored/

Mar 10 – Individuals who are routinely subjected to particulates, gases or vapors which are harmful to the respiratory tract will deploy suitable Respiratory Protective Equipment (RPE) and other Personal Protective Equipment (PPE) to ensure they are suitably protected from the threat at hand. The presence of harmful substances occurs in a range of workplace professions, for example in paint shops which therefore require the selection of appropriate RPE. Often in these cases, the threat substance is known and suitable protective equipment can be selected to allow work to be conducted safely. However, in certain situations, the potential for a release of materials hazardous to health means organisations and agencies typically develop an Emergency Response Plan, consisting of a means to protect and safely evacuate all affected individuals.

**Adapting protection to meet changing threat profile**
Increasingly, respiratory protection is at the forefront of people's minds due to the everchanging threat profile. In the last decade, there has been an increased concern about the potential for a terror attack releasing a chemical or radiological agent.
However, these threats are not confined to only deliberate releases. Economic development has meant the presence and transportation of hazardous materials have become more widespread globally due to increasing numbers of industrial facilities and the associated waste being produced and subsequently transported cross-country. The increasing volumes and geographic spread of Toxic Industrial Chemicals and Materials (TICs/TIMs), leads to a greater potential for an accidental release of these materials in both rural and urban communities.
Large-scale incidents of a Chemical Biological Radiological and Nuclear (CBRN) nature generally occur without warning meaning initial first on scene response is likely to be conducted by front-line emergency services personnel rather than specialised units, particularly in cases where the threat is unknown.
Consequently, emergency services have expressed a desire to be prepared for any potential threat and investigate and action the procurement of CBRN protection to all emergency personnel. For this kind of respiratory protection to be successful, it needs to be low-profile, simple to use with a quick don time as well as cause no interference with existing equipment utilised.
The Capitol riots in January 2021 shocked the world as it came under attack and threatened the safety of the lawmakers inside. Few could foresee such an event taking place; however, it demonstrated the importance of being prepared.
With rioters close to breaching the doors to the Senate, escape hoods were distributed and deployed to law makers and politicians housed inside to protect against any airborne threat such as tear gas or any unknown substance that may be released by rioters.

**What is the difference between an escape hood and traditional respirator?**

A respiratory escape device is designed to provide a period of protection to enable a safe escape from the threat at hand. A key differentiator of an escape device, such as an escape hood, is it is designed and approved by certifying bodies only for escape.

Whereas typical Air Purifying Respirators (APRs) are approved by certifying bodies to be used in the workplace for the completion of tasks and job roles, Air Purifying Escape Respirators (APERs) are approved only for the evacuation of a hazardous environment. APERs, like the CH15 occupy a small footprint allowing them to be carried at all times, with no maintenance, minimal training and no annual fit testing meaning they offer a compact, potentially lifesaving device which they can use to escape the incident area and subsequently regroup at a safe zone.

**Portable escape devices**

Avon Protection, a world leader in CBRN respiratory protection recently launched the CH15 escape hood. The CH15 is a revolutionary, ultra-thin, single size respiratory device that

provides a minimum of 15 minutes of respiratory vision and facial protection against Chemical, Biological, Radiological and Nuclear threats.

The CH15 is a development driven following an emerging requirement from specialist users to provide instant protection from all CBRN materials when in a live threat scenario. The CH15 was developed in conjunction with The Combating Terrorism Technical Support Office (CTTSO), in order to provide rapid deployment respiratory protection for specialist users and protective detail.

Offering a different approach to carrying respiratory protection, Avon Protection's CH15 provides what no other traditional respirator can, a low profile, lightweight, one size fits all solution that is small and light enough to be carried at all times. This unique solution means the CH15 is on hand for the unexpected.

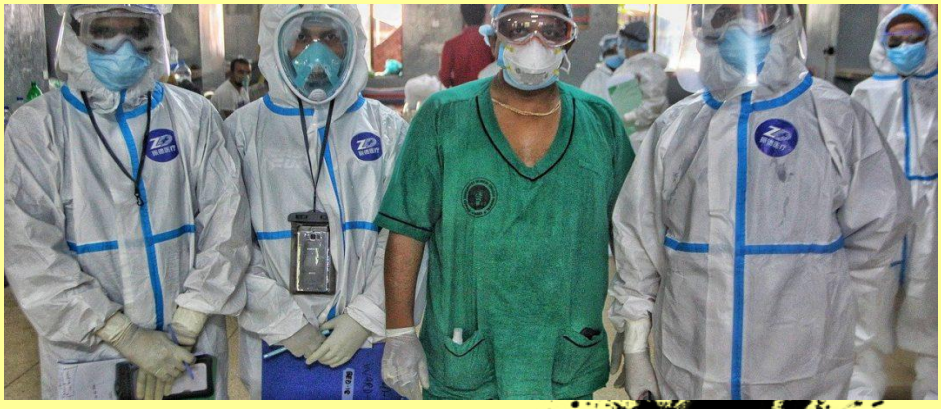
The CE approved CH15 compliments Avon Protection's leading respiratory protection portfolio, adapting proven technology to create their most compact CBRN protection device to date.

**▶▶ To learn more about the CH15 visit** CH15 - Military

## From Security R&D to Counter COVID-19 Innovation

Source: https://i-hls.com/archives/107488

Mar 11 – Shifting from the development of protection against hazardous materials to improving the equipment of COVID-19 teams. Wearing COVID-19 personal protective equipment is cumbersome. A new DARPA program will explore how to "radically" cut down on the amount and bulk of the equipment. The Agency's research on lightweight protective equipment could be the next line of defense against COVID-19 and future pandemics.



The **Personalized Protective Biosystem (PPB) program** is exploring how to reduce discomfort while using protective equipment. Originally launched in December 2019, the PPB program aims to develop technology that reduces the need for burdensome protective equipment while increasing individual protection against chemical and biological threats. The program comprises two technical areas: reactive materials that prevent threat-agent access to the body; and a configurable barrier countermeasure that neutralizes threat agents at vulnerable points of entry, i.e., skin, airway.

In response to the COVID-19 pandemic, PPB program performers have reoriented their initial development efforts to provide protection by using commensal organisms as well as material solutions that can be worn for up to 30 days. Commensal organisms are bacteria found on the surface of the body that are harmless, and sometimes beneficial.

Successful PPB technologies would therefore change how the military and public health communities perform in unpredictable threat environments, according to nationaldefensemagazine.org.

## Novichok poisoning house to be sold after 13,000 hours of heavy-duty cleaning

Source: https://www.dailystar.co.uk/news/latest-news/novichok-poisoning-house-sold-after-23646621

Mar 09 – The infamous home of former Russian spy Sergei Skripal has been bought by Wiltshire council three years after the Novichok assassination attempt against him and his daughter.

The council on Monday revealed it will "rebuild and refurbish" the infamous four-bedroom detached house in Salisbury to offer its shared ownership property to local residents.

A spokesman added it will ensure nobody will be allowed "to trade on its history" following 13,000 of heavy duty cleaning to sanitise the area of Novichok, the Mail Online reports.

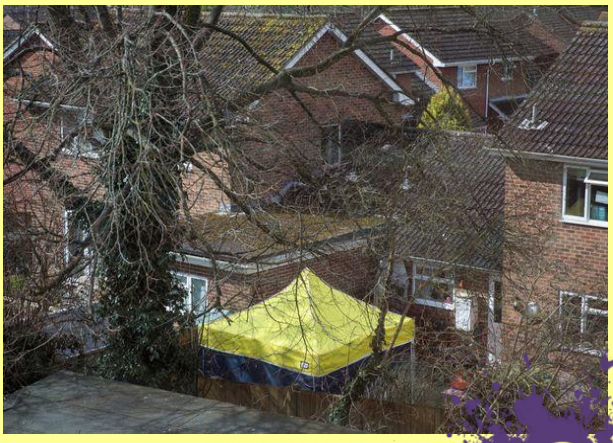
The property, which boasts a new bathroom suite, two reception rooms and a 22ft lounge, has been lying empty since the poisoning attempt.


Reports say it took a total of 13,000 hours to sanitise the 13 sites around Salisbury contaminated by the nerve agent (Image: Getty Images)

It was bought for £260,000 on August 12, 2011, before the Novichok attack, according to the Land Registry.

A council spokesman said: "Wiltshire Council has agreed to purchase 47 Christie Miller Road, Salisbury to enable the property to be brought back into use.

Wiltshire council has bought the infamous home of former Russian spy Sergei Skripal and nobody will be allowed "to trade on its history" (Image: Rowan Griffiths)



"Once refurbished it will then be offered as a shared ownership property to local residents in line with the council's affordable housing policies with a legal stipulation that it must be used as a residential property that it may not be sub let and that nobody can trade on its history."

Ex-double agent Skripal, 69, was left in a critical condition when his Salisbury home was contaminated with the nerve agent on March 4 2018.

He and his daughter, then 33, were poisoned in a suspected attack by Russian spies.

But a year and a half later the house in Wiltshire was decontaminated and refurbished ready for it to be put up for sale.

It is believed Mr Skripal, who was moved to a secret hideout following the attacks, has been advised not to return for security reasons. Reports say it took a total of 13,000 hours to sanitise the 13 sites around Salisbury contaminated by the nerve agent. The house was the last to be pronounced decontaminated.
The home was finally declared safe enough for him to sell in September 2019 - 18 months after Novichok was smeared across the letterbox.
Officials were said to have made effort to ensure the site doesn't become a "dark tourism" hot spot or turn into a museum.
The house had been officially decontaminated in March 2019, but extensive work has been carried out to restore the property to its former state.
A footpath feared poisoned by the Novichok attack has also been re-opened. Police believed the alleged hit men had used the footpath and may have left traces of the deadly nerve agent on it.
Three months after the Skripals were targeted, Dawn Sturgess and Charlie Rowley fell ill seven miles away from Salisbury in Amesbury.
Ms Sturgess later died after spraying a perfume bottle contaminated with the same nerve agent on her wrist, given to her by Mr Rowley. Wiltshire Police Sergeant Nick Bailey was also taken to hospital after coming into contact with the deadly substance, but was later discharged.

**EDITOR'S COMMENT:** £260,000 to buy the home. Not a word about the cost of the 13,000 hours [542 days] of decontamination. Does it really worth it? It could burn down to ashes and make a nice garden as a gift to the people in the area and the inconvenience caused.

## New machine harnesses Earth's magnetic field to detect chemicals

Source: https://www.newswise.com/articles/new-machine-harnesses-earth-s-magnetic-field-to-detect-chemicals


Los Alamos National Laboratory – Derrick Kaseman works on the ERDE device, which uses the Earth's magnetic field to measure the unique signatures of chemicals. This portable instrument is about the size of a microwave.

Mar 15 — A Los Alamos National Laboratory-designed spectroscopy instrument allows scientists, industry, and governments to decipher even trace amounts of chemicals using the Earth's own magnetic field. Called the **Earth-field Resonance Detection and Evaluation device** (ERDE, which is German for "Earth"), the instrument is the most sensitive, affordable, and portable technology of its kind, with the ability to detect a range of chemicals, including those commonly used in scientific labs, biological weapons, and even slight traces of insecticides in drinking water.
"Using the Earth's magnetic field allows us to do several things that were not possible before," said Derrick Kaseman, a scientist at Los Alamos and ERDE project co-lead. "It provides a perfect magnetic environment for highly accurate detection and identification of chemicals while allowing the spectrometer to be much smaller and, therefore, easily portable compared to other spectrometers currently available on the market that do similar detailed analyses."

**ERDE operates much like a magnetic resonance imaging machine, or MRI, commonly found at hospitals. MRIs use large magnetic fields to map chemical compounds in the body, mostly water. This can be done because the nuclei of some molecules, like the hydrogens in $H_2O$, spin at particular speeds in magnetic fields. Depending on the location of the hydrogen atoms in the body (such as body fat vs. muscle) and what they are chemically bound to (like the oxygen in $H_2O$) their speeds will differ, which allows the MRI magnet to respond to their unique frequency. The result is a detailed image of the chemical compounds that make up organs, tissue, and other biological material.**

ERDE works similarly, except that it senses chemical compounds in a much smaller volume. The ERDE spectroscopy instrument, a little larger than a microwave, works by passing the

sample through a small set of magnets, which helps to build the signal in the spinning nuclei. The chemical sample is rapidly moved into a small box that harnesses the Earth's natural magnetic field. This is the same force that directs a compass needle to point north. The interaction of the chemical with earth's magnetic field is then detected.

Current spectroscopic technologies use only permanent magnets for portability, making them much less sensitive to chemical detection. Highly sensitive spectrometers that use superconducting magnets, like an MRI, are too large to be portable, sometimes as large as two stories tall. Although they're highly accurate, they rely on limited and expensive cryogenic liquids like helium and nitrogen, which are not portable.

ERDE, however, is easily used in multiple settings such as on a workbench in a laboratory where scientists can test the chemical compounds they've developed. It can be deployed to areas where the use of chemical weapons by a government, terrorist group, or assassin is suspected, as was the case recently during the Syrian civil war or the Skripal and Navalny poisonings.

ERDE also easily allows regulators to ensure a company is only using approved chemicals in a product. Additionally, it can continuously monitor tap water through pipes at a pumping station to prevent chemical compounds used in pesticides and other toxic materials from entering people's homes.

## Wagner Mercenaries Use Chemical Weapons in CAR – OpEd

**By Augusts Augustiņš**

Source: https://www.eurasiareview.com/20032021-wagner-mercenaries-use-chemical-weapons-in-car-oped/

Mar 20 – Putin's polite green men, the existence of which the Kremlin has denied for six years now, have once again made the spotlight – just like the Russian Ministry of Foreign Affairs (MoFA) and the secret "security" services often do – with some "good" deeds in the Central African Republic (CAR). Information that was leaked online has revealed that the Kremlin has been regularly using chemical weapons against local "insurgents", or "freedom fighters" if you happen to be on the other side of the argument. Regardless of who is fighting what and why, this is another case when Russia uses chemical weapons it shouldn't even have, suggesting that the Kremlin hasn't been complying with the obligations it undertook not to produce chemical weapons, not to mention actually using them in combat operations.


The Kremlin has openly stated: "Our private military company mercenaries are heroes in the fight against terrorism just like the Russian Armed Forces' pilots, infantrymen, special ops troops, GRU and FSB employees, etc. This isn't something to be ashamed of – it's something to be proud of."

This statement came right after the crash of the *SA 341 Gazelle* helicopter in the CAR belonging to the Wagner cutthroats. The incident took place near a strategically important road that ensures the deliveries of "foodstuffs" to the capital Bangui which has been surrounded by insurgents. These helicopters are used by the Russians to punish the rebels and evacuate the injured mercenaries, meaning that the crashed helicopter was carrying a high-ranking *Wagner* mercenary to the capital to receive treatment. The Kremlin's MoFA explained that the helicopter made an emergency landing and only afterwards caught fire due to a fuel leak, adding that the pilot and the on-board "instructor" didn't make it out alive.

It took several days for information about the crash to be made public, suggesting that the Russians were attempting keep the incident a secret. This has been the case numerous times, as Russia never speaks about the huge losses suffered by Wagner in the CAR, because according to the Kremlin Wagner mercenaries are "almost" not there and therefore can't take part in any combat operations.

Later, it was told that Wagner "instructors" help in preparing FACA – the CAR army – just like they did with the Venezuelan Armed Forces. It's also not a secret anymore that Wagner mercenaries ensure the personal security of "president" Touadéra, who just happens to be an ardent fan of Putin. The Russian cutthroats also guard gold and diamond mines in the CAR, which is the main reason Prigozhin's bandits are stationed in this African country.

The Russian regime officially maintains that there are military specialists of the Russian Armed Forces in the CAR, but that they don't participate in combat operations, hence there can be no talks about any losses of lives – period!

However, journalist and Moscow Duma deputy Andrey Medvedev (*Андрей Медведев*) has a different opinion: "If it wasn't for the Wagner Group, the CAR regime would have been gone long ago, as it was Wagner that prepared the CAR army and cleansed 25% of the country's territory of rebel units. Prior to that, the "bravehearted" FACA soldiers fled the battlefield as fast as they could if they heard that insurgent forces are approaching. Prigozhin's mercenaries have established a corridor between Bangui and Cameroon – this is the lifeline of president Touadéra, which was created by Wagner mercenaries literally burning and killing anything and anyone in their way. A lot of Wagner mercenaries were needed to clear the cities of Bozoum and Abba."

According to the Africa Report, in 2018 there were 450 Wagner mercenaries in the Car, but by 2020 this number had grown to more than 1,000. This means that the CAR has the second largest concentration of Prigozhin's cutthroats, the largest being in Libya. Quite numerous these Russian "instructors".

Regardless, it's safe to say that there are tens of times more rebels than Wagner mercenaries, which poses a logical question – how are the Russians able to deal with them, considering that the CAR is a huge country? Let's also not forget that any information about Wagner losses in the CAR is kept hidden, however if we look at their situation in Syria, we can be certain that hundreds of Russian adventurers have already died in the CAR.

We received an answer to this question on 2 March 2021 when the local newspaper *Le Nouveau Centrafrique* published evidence that Russian forces, or Prigozhin's mercenaries to be more precise, consistently employ chemical weapons against insurgents in the CAR. This is a violation of the Chemical Weapons Convention and the Geneva Protocol.

Russia employs the same dirty tactics in the CAR as it does in Syria, not thinking much about the possibility of one day being held accountable of the war crimes it has committed. Using chemical weapons against farmers in the CAR proves that Wagner is no elite combat unit to be proud of, but instead a mob of bloodthirsty opportunists who are incapable of carrying out effective combat operations – their skills are limited to cutting up hostages and poisoning people from the air.

**P.S.** Wagner's motto is "Those who question our peaceful nature will choke on their blood, as our mercy is merciless!" There are also talks that Prigozhin has set his sights on the Baltic states – what could this mean? Only time will tell.

***Augusts Augustiņš** is Reserve Sergeant of the Latvian National Guard.*

## ISIS running chilling online training camps with bomb-making classes as fears grow of chemical or nuclear attack on UK

Source: https://www.thesun.co.uk/news/14389765/isis-online-training-bomb-making-attack-uk/

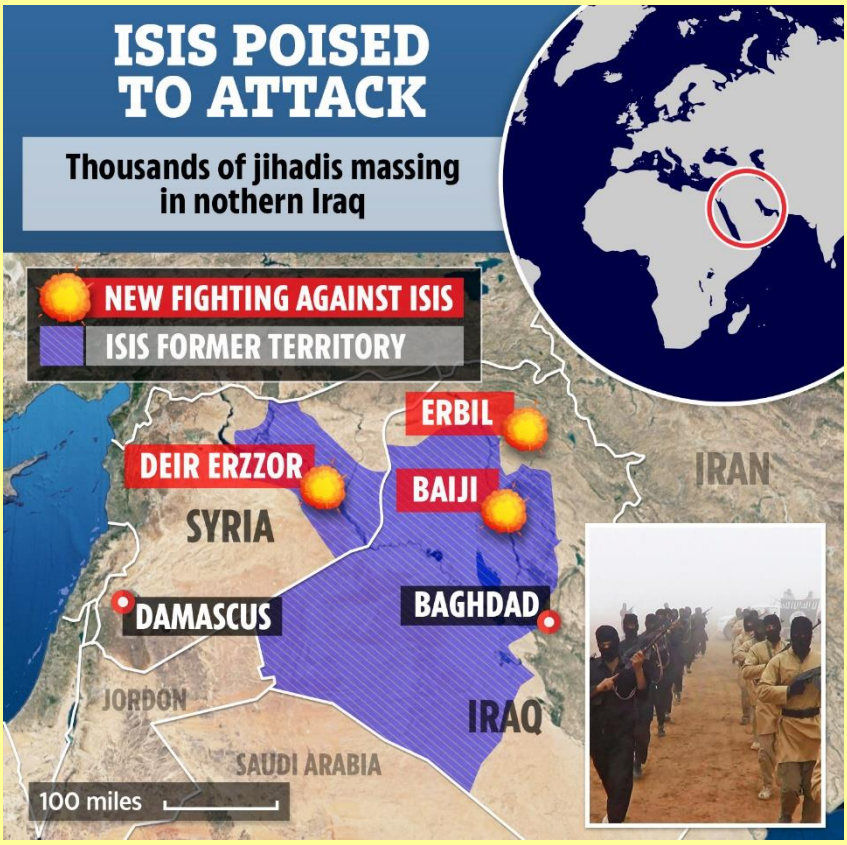
Mar 19 – ISIS State has been running online virtual training camps amid fears that it is rapidly growing in strength.

The resurge of the jihadi maniacs comes as the government warns terrorists are poised to launch a successful chemical, biological or nuclear attack on Britain in the next nine years.

The Sun Online has seen videos on Tam Tam, a Russian social media platform that has become a favourite of ISIS since the Jihadis were kicked off Telegram.

Our investigation discovered that the jihadists have resumed recruiting new fighters in a series of private groups.

One of them is even offering a series of terrorism guides and manuals, including step-by-step guides to bomb-making.
Security experts fear the group is mounting a resurgence with an estimated 10,000 fighters ramping up attacks in Syria and Iraq with the RAF now attacking targets.




ISIS successfully used social media to persuade thousands of jihadists to fight with the group in Syria and Iraq to establish a rogue state governed by hardline Islamic sharia law.
It was, however, effectively defeated March 2019 after losing 95 per cent of its territory in a year due to a military surge by Kurdish militia forces backed by the UK and US.
But it can be revealed that the bloodthirsty terrorists are once again recruiting and distributing anti-western propaganda but using encrypted chat apps to work around bans by tech giants Twitter and Facebook.
The official ISIS jihad training group included a complete 216-page illustrated terror manual for "the novice jihad fighter".
Fanatics were also urged to download an instructional video showing how to make a one-shot pen-type gun for assassinations at close quarter or personal protection.
The cyber network includes groups that are devoted to recruiting and supporting women from western countries who want to participate in jihad.
One contained Islamic reminders, including a post that urged the reader not to shy away from proclaiming jihadist beliefs.
Another included a propaganda video featuring ISIS women and praising them for keeping their faith after being taken to prison camps following the demise of the Caliphate.
Official images posted by terror group leaders on an invitation-only social media group showed a huge armoured personnel carrier that had been captured during fighting.
Propaganda channels are once more issuing claims of responsibility for attacks including gruesome videos of firefights and dead bodies.
Others detailed assaults in Deir Ezzor and Diyala province in eastern Iraq, as well as attacks against Shia militia forces to the north of the capital Baghdad.
Recent claims include attacks close to Jalalabad in Afghanistan and near Ghani Khel in western Nangarhar province.
Last year it was sleeper cells have regrouped under new leader Abu Ibrahim al-Hashimi al-Quraishi and were taking advantage of outbreaks of Covid-19 in the region.
ISIS was reported to have established control of territory in the desert around 15 miles from the centre of the town of Deir Ezzor, the first land it has held since the end of the Caliphate.

The so-called "tempo" of attacks in Baghdad by ISIS is seen as a measure of the strength of Islamic State forces.
Across the globe ISIS activities have been on the rise across the globe, from Africa to the Philippines.
US special forces are to be deployed to Mozambique after aligned with the vile death cult turned football pitches into execution grounds and beheaded children in front of their parents.
ISIS is also particularly active in West Africa and there are reports that senior leaders have re-based themselves in the region to train insurgents with techniques learned in Syria and Iraq.
They also claimed responsibility for the sickening bombings in Sri Lanka which killed 321 people on Easter Sunday.

## Innovative Chemical Weapons Detection Technology

Source: http://www.homelandsecuritynewswire.com/dr20210318-innovative-chemical-weapons-detection-technology

Mar 18 – An innovative new chemical detection technology called SEDONA, or **SpEctroscopic Detection of Nerve Agents**, was recognized as a 2020 R&D 100 Award-winner.
SEDONA is the result of a joint research and development effort between the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) and our partners at the Los Alamos National Laboratory (LANL). When deployed at security checkpoints, border crossings, and ports of entry across the country, SEDONA will enhance DHS's abilities to detect and intercept dangerous chemicals and nerve agents.

"DHS staff members in the field need to be able to safely and efficiently scan for and detect

chemicals, nerve agents, and related substances that can pose a threat to our citizens," said S&T program manager Dr. Don Bansleben. "To ensure that they always have cutting-edge tools at their disposal, we continuously work with our various partners and subject matter experts to review new and improved technologies that can help these frontline operators address and mitigate emerging threats."
SEDONA is a user-friendly, portable, prototype chemical agent detection system that uses an ultra-low-field nuclear magnetic resonance technique to quickly and accurately detect chemical threats in smaller-sized bottles and containers—without needing to open them.
"SEDONA works by scanning and analyzing liquids to check for the presence of specific chemical elements that are key components in organophosphorus nerve agents and related chemical threats," said Dr. Bob Williams, LANL Bioscience Division team lead. "These elements respond in very specific ways when they are exposed to SEDONA's electromagnetic field. Each one has a unique radio frequency, also known as a 'signature,' at which they resonate when SEDONA's electromagnetic radiation passes through them."
The system recognizes these signatures, and by measuring their amounts and ratios, determines whether a nerve or chemical agent is present. Benign liquids such as shampoo, toothpaste, and bottles of water and other beverages will not contain chemical elements of interest. Nerve agents and related chemical threats, however, will exhibit a unique signature, known as "J-

coupling," which will be immediately detected and red-flagged by SEDONA in less than 10 seconds.
"SEDONA was recognized with an R&D 100 Award due to the fact that it's a groundbreaking technology—the first of its kind," explained Williams. "Until now, there has never been a tool with SEDONA's capabilities."
"We believe in the importance of fostering technological and scientific advancements in the fields of checkpoint, border, and port security," explained Bansleben. "This is why we supported LANL in their efforts to develop SEDONA. We're very proud of their achievements and are thrilled that they were recognized with this prestigious award."
Preliminary testing data from LANL indicates that SEDONA has the potential to be a promising secondary screening tool at security checkpoints, border crossings, and ports in the near future. However, before it's implemented in the field, the LANL team is working to expand SEDONA's screening capabilities to detect key elements that are found in other types of nerve agents, liquid explosives, and opioids; automate the process; and conduct more field testing to confirm its efficacy.
Bansleben noted that SEDONA could be useful in a wide range of fields and venues.
"Federal agencies may find SEDONA to be a versatile screening tool for helping to mitigate the unlawful entry, dissemination, and use of nerve and chemical agents, liquid explosives, and drugs," said Bansleben. "However, it also has the potential to be effective in other settings such as courthouses, sporting arenas, correctional facilities, government buildings, and any other highly-trafficked areas where security and safety are of the utmost priority."

## 42 "mystery chemicals" from unknown sources discovered in people

Source: https://newatlas.com/science/mystery-chemicals-discovered-in-people-epa-standards-ucsf/

Mar 18 – A study from scientists at UC San Francisco is demonstrating a new screening method developed to better identify human-made chemicals in people. The proof-of-concept research discovered more than 100 chemicals, including 55 that have never been reported found in humans before.
The research team set out to develop a screening workflow to detect chemical exposures in pregnant women. Matched maternal and umbilical cord blood samples were screened using a method called liquid chromatography–quadrupole time-of-flight tandem mass spectrometry.

**Overall, the research homed in on 109 unique chemicals in the blood samples. Half of those chemicals detected have never previously been reported in human beings, and 42 were labeled "mystery chemicals" with unknown environmental sources.**

"These chemicals have probably been in people for quite some time, but our technology is now helping us to identify more of them," explains Tracey Woodruff, one of the authors on the new study. "It is alarming that we keep seeing certain chemicals travel from pregnant women to their children, which means these chemicals can be with us for generations."
Many of the chemicals detected could be traced back to certain products such as cosmetics, pharmaceuticals, pesticides and flame retardants. However, a number of chemicals identified were relatively unknown, with no information as to what they are used for or how they could have contaminated a human body.
One chemical detected, for example, is known as LL-D-253alpha. The researchers say very little is known about this compound and there currently seems to be no known commercial uses for it.
"It's very concerning that we are unable to identify the uses or sources of so many of these chemicals," says Woodruff. "EPA must do a better job of requiring the chemical industry to standardize its reporting of chemical compounds and uses. And they need to use their authority to ensure that we have adequate information to evaluate potential health harms and remove chemicals from the market that pose a risk." **Dimitri Panagopoulos Abrahamsson**, co-lead author on the new study, says chemical manufacturers must be more transparent in providing access to chemical data known as analytical standards. These standards allow researchers to compare their findings to pure chemicals from manufacturers, but that information is not always easily accessible.
"These new technologies are promising in enabling us to identify more chemicals in people," Dimitri notes, "but our study findings also make clear that chemical manufacturers need to provide analytical standards so that we can confirm the presence of chemicals and evaluate their toxicity."
The study makes no claims as to potential harms from these chemical exposures. The key takeaway from the study, the researchers stress, is that it highlights a lack of strong regulatory protections and the need for manufacturers to issue analytical standards so chemicals in people and the environment can be swiftly traced back to their sources.

▶▶ **The new study was published in then journal** *Environmental Science and Technology*.

# HTS terrorists planning false-flag chemical attack in Syria's Idlib, Russia warns

Source: https://www.presstv.com/Detail/2021/03/20/647680/HTS-militants-preparing-false-flag-chemical-attack-in-Syria-Idlib-Russia-warns

In this file picture, Takfiri terrorists attend a mock battle in anticipation of an attack by Syrian government forces on Idlib province and the surrounding countryside, during a graduation of new Hay'at Tahrir al-Sham members at a camp in the countryside of Idlib province, on August 14, 2018. (Photo by Getty Images)

Mar 20 – **Russia has warned that foreign-backed terrorists are preparing for a false-flag chemical attack in Syria's northwestern province of Idlib to implicate government troops and fabricate pretexts for foreign acts of aggression on the war-ravaged Arab country.**

Rear Admiral Alexander Karpov, the deputy head of the Russian Defense Ministry's Center for Reconciliation of the Opposing Parties in Syria, said on Friday that the center had received information that the foreign-sponsored Takfiri terrorists, affiliated with the Hay'at Tahrir al-Sham (HTS) terrorist group, were seeking to escalate tensions in the northeastern part of the province through organizing an attack on the village of Kityan in order "to frame the Syrian army for the use of chemical warfare against civilians."

Karpov noted that his center has frequently been informed about terrorists' provocative actions in Syria and their attempts to carry out false-flag chemical attacks.

Back on March 9, the HTS militants were intending to stage a chemical attack on the village of Kabana in Idlib.

The Russian Center for Reconciliation of Opposing Parties in Syria announced on February 20 that the HTS terrorists had been planning a provocation with the use of toxic agents northeast of the de-escalation zone in Syria's Idlib Province.

The center said at the time that the al-Qaeda-affiliated terrorists had already delivered truck containers with toxic agents, presumably chlorine, to the town of Turmanin.

"According to our information, militants plan to simulate a chemical attack entailing casualties among local residents in order to accuse the Syrian government forces of the use of chemical weapons against civilians," it stated back then.

Also on April 4, 2017, a suspected sarin gas attack hit the town of Khan Shaykhun in Syria's Idlib Province, killing more than 80 people.

The Western countries rushed to blame the incident on the Syrian governemnt, with the US launching a missile attack against Shayrat Airbase in Syria's Homs Province on April 7, 2017.

Washington claimed that the air field had been the origin of the chemical attack. Damascus, however, said the Khan Shaykhun incident was a fabrication to justify the subsequent US missile strike.
Russia has repeatedly criticized the Organization for the Prohibition of Chemical Weapons (OPCW) for ignoring the information about toxic provocations in Syria, saying the body is biased against the Damascus government.
Recently, Russia's UN Ambassador Vasily Nebenzya said the OPCW is being used as a political tool by the Western countries to put pressure on the states they deem as "undesirable".

Moscow and Damascus have on many occasions accused members of the so-called White Helmets civil defense group of staging gas attacks in a bid to falsely incriminate Syrian government forces and fabricate pretexts for military strikes by the US-led military coalition.
The group claims to be a humanitarian NGO but has long been accused of collaborating with anti-Damascus militants.
On April 14, 2018, the US, Britain and France carried out a string of airstrikes against Syria over a suspected chemical weapons attack on the city of Douma, located about 10 kilometers northeast of the capital Damascus.
Washington and its allies blamed Damascus for the Douma attack, an allegation rejected by the Syrian government.
Western governments and their allies have never stopped pointing the finger at Damascus whenever an apparent chemical attack takes place.
This is while Syria surrendered its stockpile of chemical weapons in 2014 to a joint mission led by the United States and the OPCW, which oversaw the destruction of the weaponry. It has also consistently denied using chemical weapons.

**Syrians slam US occupation, call for withdrawal of Turkish forces from Hasakah**

Meanwhile, Syrians in northeastern province of Hasakah have attended a tribal forum to protest the deployment of US and Turkish military forces in their areas, and express their full support for the anti-terror operations of Syrian army troops.
Participants in the forum, organized by Taei tribe in the city of Qamishli, stressed the need for popular resistance as the most viable strategy in the face of foreign forces, who plunder natural resources and steal agricultural crops to increasing the sufferings of people in the Jazira region.
Sheikh Muhammad al-Faris, a senior tribal leader, told Syria's official news agency SANA that "The forum is being held after ten years of resilience against terrorism."
He noted that the residents of Jazira region strongly support the territorial integrity of their motherland as well as the unity of all Syrians, and stand by government troops.
Sheikh Faris emphasized that members of local clans will cast their ballots in the forthcoming presidential election.

**'US military forces smuggle wheat crops from Hasakah into Iraq'**

A convoy of dozens of US trucks has left Hasakah for the neighboring Iraq, carrying tens of tons of grain, reports said.

SANA, citing local sources, reported that 17 military vehicles loaded with wheat crops from silos of Touwiba village headed towards Iraqi territories.

The sources added that the trucks were escorted by US-sponsored militants affiliated with the so-called Syrian Democratic Forces (SDF).

## FBI terrorism unit investigating poison powder mailed to Sedgwick County officials

Source: https://www.kansas.com/news/politics-government/article250128709.html

Mar 22 – The FBI's Joint Terrorism Task Force is investigating a potential biological attack aimed at Sedgwick County government, county officials said Monday.

At least two Sedgwick County employees were exposed to a dangerous chemical substance sent through the mail Monday afternoon and eight employees were decontaminated as a precaution. One employee was sent to an area hospital.


The Sedgwick County Finance Department received a certified letter from a group claiming to be part of a Moorish nationalist group on Monday afternoon. The origin of the letter is under investigation, Sedgwick County Manager Tom Stolz said.

Inside the envelope was a three-page document coated with an unknown white powder. Two employees handled the letter and began to experience symptoms, Stolz said.

One employee began coughing and the other had a skin irritation. They received medical evaluations and appeared to be "OK," Stolz said. The employees were being held Monday afternoon for observation and decontamination to make sure their conditions didn't worsen. One of the employees was taken to a local hospital for evaluation.

Three additional finance employees, two courthouse police officers and two sheriff's deputies were also decontaminated as a precaution, according to a news release from the Sedgwick County Sheriff's Department.

The Wichita Fire Department shut down ventilation on the 8th Floor of the Sedgwick County Courthouse.

Investigators have determined the substance was **diaminotoluene**, Stolz said. That substance is used in dye making. It is highly toxic and potentially fatal if enough of the substance is inhaled, swallowed or absorbed through the skin, according to the National Center for Biotechnology Information.

Sedgwick County Commissioner Lacey Cruse said the apparent attack "definitely rattles the nerves."

"Decisions made by county officials, myself included, are at times gut wrenching," she said in a written statement Monday afternoon. "I get it that some people are not happy with policy decisions but there is never a reason to attack public officials. We are doing the best we can knowing that all decisions made and votes cast will affect our families too. This is scary stuff and completely uncalled for."

# How chemical profiling is aiding the investigation of CWA crimes

**By Steven Pike (Argon Electronics)**
Source: https://www.argonelectronics.com/blog/how-chemical-forensics-are-solving-cwa-crimes

Mar 23 – It is twenty-six years since the Japanese terrorist group Aum Shinrikyo released the deadly nerve agent sarin in a series of five coordinated attacks on Tokyo's subway system.
Twelve people lost their lives in the aftermath of the incident on March 20th 1995. More than 5,000 civilians required medical attention, with some fifteen-hundred found to have been moderately to severely poisoned by the effects of the toxin.
Subsequent analysis of the harrowing events of that day would reveal a number of key lessons which continue to inform and guide authorities, responders and medical teams in their preparedness and response to chemical incidents.
First is the importance of ensuring that emergency responders are provided with adequate and appropriate PPE and breathing apparatus.
Second is the need for systems that enable response personnel to quickly and accurately assess the possible causes of poisoning based on symptoms.
And third is the development of enhanced detection and identification methods that can provide simple qualitative analysis of poisonous substances.

**Analysis of chemical attribute signatures (CAS)**
With the threat of chemical terrorism continuing to remain a crucial global priority there has been a powerful drive within the scientific community to develop new forensic tools that can aid in the investigation and characterisation of chemical agents.
One especially productive area of research has focused on the leveraging of the chemical attribution signature (CAS) which can be used to help investigators identify a toxic chemical, and trace the origin and related materials of that agent back to its source.
Even the tiniest amounts of chemical materials contain elemental clues (starting materials, impurities, side products, by-products, additives etc) which can be analysed to reveal crucial information about the synthetic origin of a chemical agent, the nature of the synthesis process and the environment in which that material has been created.
The stable, highly reproducible and easily detectable nature of a chemical agent's CAS can provide investigators with crucial technical information that can both complement and supplement traditional forensic processing methods.
Crucially too, it provides a way to enhance sample collection, to preserve evidence at a chemical incident scene and to link that evidence with people, places and other events.

**The research and technology aiding CWA forensics**
Research into the CAS of toxic chemical agents, and the ways in which this knowledge can be used to inform and enhance federal intelligence gathering efforts, has been a critical aspect of the Forensic Science Centre (FSC) for the past three decades.
From its base at the Lawrence Livermore National Laboratory (LLNL), the FSC is at the forefront of research and technology that supports US security, counterterrorism and non-proliferation efforts.
Currently, it is one of just two US laboratories that is internationally certified in the identification of chemical warfare agents (CWAs) and its forensics analysis and expertise plays a crucial role in supporting the interdiction of dangerous materials and the deterrence of terrorist attacks.
Much of the centre's work has focused on profiling the signatures of chemical warfare agents and inorganic/nuclear specimens. More recently, it has also expanded into other classes of chemicals including pharmaceuticals and illicit drugs.
With the help of state-of-the-art computational and statistical tools, researchers at the FSC have been able to more accurately determine the chemical attribution signature (CAS) of toxic chemical agents.

**Attributing responsibility for CWA attacks**
The wider practical applications of CAS are resounding. In April 2020, the Organization for the Prohibition of Chemical Weapons (OPCW) released their findings of a nine-month investigation into a series of sarin and chlorine attacks on the rebel-held town of Ltamenah in Syria in 2017.
In an article authored by Julie Masterson from the Arms Control Association, she described how the OPCW's Investigation and Identification Team (IIT) was able to identify the presence of a specific "marker chemical" that linked a sample taken from the Ltamenah attacks with a sample remnant from Syria's own chemical weapons stockpile.

"With the chemical signature to confirm the sarin dropped over Ltamenah on March 24 and March 30 was produced in a Syrian lab... the IIT's April 8 report leaves little room for doubt about the role of the Syrian government in the March 2017 chemical attacks," Masterson explained.
"This first report, based on nine months of investigation, is one of several that it is due to produce attributing blame for some 33 chemical weapons attacks where perpetrators have not yet been identified."

## 2021 CONFERENCES

**7-9 April: CBRNe SUMMIT USA Conference and Exhibition 2020**
Las Vegas, Nevada
https://intelligence-sec.com

**21-22 April: ABSA Biosecurity Symposium**
Virtual
https://biosecuritysymposium.org/

**27-29 April CBRNe Summit Europe**
Brno, Czech Republic
https://intelligence-sec.com/events/cbrne-summit-europe-2021/

**28-30 April Future Forces/ World CBRN & Medical Congress conference**
Prague, Czech Republic
https://www.future-forces-forum.org/events/default/63_cebiram-2021?lang=en

**6-9 June: NBC Symposium on CBRNE Threats**
Sibelius Hall, Lahti, Finland
https://nbc2021.org/

**8-10 June 2021: NCT CBRNe and eXplosive Europe**
CBRN School, Rieti, Italy
https://nct-events.com/event/nct-cbrne-europe-2021/
https://nct-events.com/event/nct-europe/

**17 June 2021: CBRNE IG Luncheon, TBD**
21-25 June: IABTI's 2021 International In-Service Training and Expo,
Las Vegas, Nevada,
https://ist.iabti.org/

**21-25 June 2021: CCRA CBRN Exhibition**
Fort Leonard Wood, MO
https://www.cbrnexhibition.com

**28 June-July 2nd, 2021 NCT PRO Challenge 2021**
Cambodia
https://nct-events.com/event/nct-pro-asia-2021/

**2-4 August 2021: NDIA-JPEO CBRND CBRN Conference**
Baltimore Harbor Hilton, Baltimore, MD
3-5 August 13th Annual Nuclear Deterrence Summit
Alexandria VA
https://na.eventscloud.com/ereg/index.php?eventid=525816&#

**7-9 September NCT South America 2021**
Lima, Peru
https://nct-events.com/event/nct-america-del-sur-2/
TBD September 2021: NCT Pro Special Forces
Camp New Amsterdam, Netherlands. New date TBD
https://nct-events.com/event/nct-pro-special-forces-2021

**2-4 November 2021 CBRNe Convergence 2021**
Orlando, Florida
https://cbrneworld.com/events/cbrne-convergence-orlando

**10-12 November NCT CBRNe & eXplosive Asia Pacific 2021**
Seoul, South Korea
https://nct-events.com/event/nct-cbrne-asia-2021
https://nct-events.com/event/nct-explosive-asia-2021

**5-6 December NCT Middle East 2021**
Abu Dhabi, UAE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# Future scenarios for the COVID-19 pandemic

**By David Skegg, Peter Gluckman, Geoffrey Boulton, et al.**

*Published online:February 16, 2021*

Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00424-4/fulltext

The COVID-19 pandemic has been met by unequal responses in different countries[1, 2] and led to unequal impacts, with populations in Europe, the USA, and Latin America disproportionately impacted.[3]

Science has uncovered much about SARS-CoV-2 and made extraordinary and unprecedented progress on the development of COVID-19 vaccines, but there is still great uncertainty as the pandemic continues to evolve. COVID-19 vaccines are being rolled out in many countries, but this does not mean the crisis is close to being resolved. We are simply moving to a new phase of the pandemic. What emerges next will partly depend on the ongoing evolution of SARS-CoV-2, on the behaviour of citizens, on governments' decisions about how to respond to the pandemic, on progress in vaccine development and treatments and also in a broader range of disciplines in the sciences and humanities that focus both on bringing this pandemic to an end and learning how to reduce the impacts of future zoonoses, and on the extent to which the international community can stand together in its efforts to control COVID-19. Vaccines alone, unless they achieve high population coverage, offer long-lasting protection, and are effective in preventing both SARS-CoV-2 transmission and COVID-19, will not end the pandemic or allow the world to return to "business as usual". Until high levels of global vaccine-mediated protection are achieved across the world, it could be catastrophic if measures such as mask wearing, physical distancing, and hand hygiene are relaxed prematurely.[4]

Countries, communities, and individuals must be prepared to cope in the longer-term with both the demands and the consequences of living with such essential containment and prevention measures.

Many factors will determine the overall outcome of the pandemic. A nationalistic rather than global approach to vaccine delivery is not only morally wrong but will also delay any return to a level of "normality" (including relaxed border controls) because no country can be safe until all countries are safe. SARS-CoV-2 could continue to mutate in ways that both accelerate virus transmission and reduce vaccine effectiveness.[5, 6, 7]

Vaccine hesitancy, misinformation, and disinformation could compromise the global COVID-19 response.[8]

Naive assumptions about herd immunity, given the appearance of new and challenging SARS-CoV-2 variants,[5, 9]
could seriously risk repeated outbreaks and recurrences. SARS-CoV-2 can probably never be globally eradicated, because of its presence in many animals (including cats and dogs)[10] and because of incomplete vaccine coverage and variable degrees of immunological protection.[11]

Hence, ongoing strategies to deal with the endemic presence of SARS-CoV-2 in populations over the long term will be needed. Furthermore, we do not yet know if, and when, revaccination with current or new COVID-19 vaccines will be required since the duration of immunological protection and the efficacy against emergent SARS-CoV-2 variants remain unknown. With such uncertainties, we should not assume that recent scientific progress on COVID-19 diagnostics, vaccines, and treatments will end the pandemic. The world is likely to have many more years of COVID-19 decision making ahead—there is no quick solution available at present.

The decisions of global agencies and governments, as well as the behaviours of citizens in every society, will greatly affect the journey ahead. There are many possible outcomes. At one extreme is the most optimistic scenario, in which new-generation COVID-19 vaccines are effective against all SARS-CoV-2 variants (including those that may yet emerge) and viral control is pursued effectively in every country in a coordinated effort to achieve global control. Even with international cooperation and adequate funding, this scenario would inevitably take a long time to achieve. The COVAX initiative is just an initial step towards addressing vaccine equity and global coordination for vaccine access, especially for lower income countries.[12]

At the other extreme is a pessimistic scenario, in which SARS-CoV-2 variants emerge repeatedly with the ability to escape vaccine immunity, so that only high-income countries can respond by rapidly manufacturing adapted vaccines for multiple rounds of population reimmunisation in pursuit of national control while the rest of the world struggles with repeated waves and vaccines that are not sufficiently effective against newly circulating viral variants. In such a scenario, even in high-income countries, there would probably be repeated outbreaks and the path to "normality" in society and business would be much longer. And there are many other intermediate or alternate scenarios.

Countries that have kept SARS-CoV-2 in check and countries where there are high levels of viral transmission will in time all probably reach a similar destination, even though their paths to arrive there will be quite different, because no countries can remain permanently isolated from the rest of the world. Unfortunately, countries working in isolation from each other and from global agencies will prolong the pandemic. A nationalistic rather than a global approach

to COVID-19 vaccine availability, distribution, and delivery will make a pessimistic outcome much more likely. Additionally, unless countries work together to scale up prevention efforts, the risk of other pandemics, or other transboundary disasters with similar consequences, including those fuelled by climate change, will remain a constant threat.
The International Science Council (ISC), as the independent, global voice for science in the broadest sense, believes it is crucial that the range of COVID-19 scenarios over the mid-term and long-term is explored to assist our understanding of the options that will make better outcomes more likely. Decisions to be made in the coming months need to be informed not only by short-term priorities, but also by awareness of how those decisions are likely to affect the ultimate destination. Providing such analyses to policy makers and citizens should assist informed decision making.
In developing its COVID-19 Scenarios Project, the ISC has consulted with WHO and the UN Office for Disaster Risk Reduction. The ISC has established in February, 2021, a multidisciplinary Oversight Panel made up of globally representative world experts in relevant disciplines to work with a technical team to produce the scenario map. The Oversight Panel will report within 6–8 months to the global community on the possible COVID-19 scenarios that lie ahead over the next 3–5 years, and on the choices that could be made by governments, agencies, and citizens to provide a pathway to an optimistic outcome for the world.

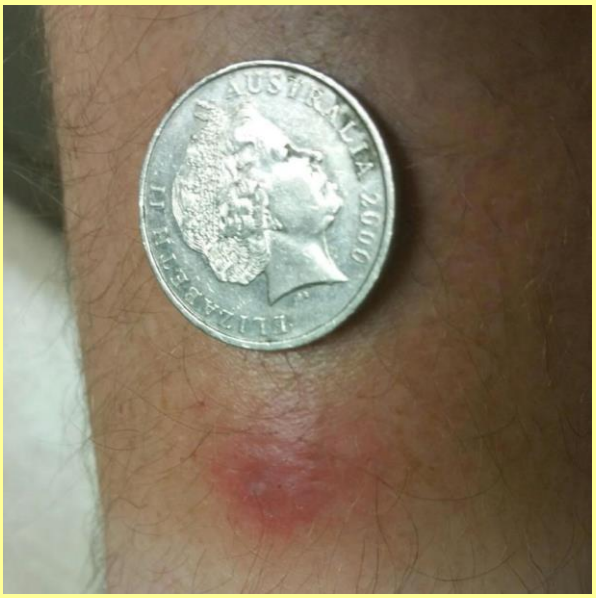
## Sanofi, GSK Launch Phase II Trial of "Refined" COVID-19 Vaccine

Sanofi and GSK said they have begun testing their COVID-19 vaccine candidate in a Phase II trial (VAT00002; NCT04762680) that is expected to recruit 720 volunteer participants ages 18 and older, with the goal of selecting the most appropriate antigen dosage for a Phase III study expected to begin in the second quarter. **+ MORE**

## Flesh-eating Buruli ulcer cases discovered in inner Melbourne suburbs

Source: https://www.abc.net.au/news/2021-02-23/flesh-eating-buruli-ulcer-cases-discovered-in-inner-melbourne/13184224

Feb 23 – Cases of the flesh-eating Buruli ulcer have been discovered in the Melbourne suburbs of Essendon, Moonee Ponds and Brunswick West, Victoria's Department of Health has said — the first time a non-coastal area has been identified as a potential area of risk.



The bacteria had also been isolated in the faeces of a local possum but the source had not been established.
Tim Stinear from the Doherty Institute in Melbourne said initially it was hard to know if these people caught the illness at their homes or at their coastal holiday homes where the ulcer was more prevalent.
"Recently we've been able to use the power of genomics to establish evidence of the local transmission of Buruli ulcer in these inner suburbs," Professor Stinear said.

The lesion usually starts off resembling a mosquito bite before progressing to a skin lesion. *(Supplied: Anthony Fleming)*

"Yes, it is a flesh-eating disease but it's a very slowly moving one, one we can treat and if we detect it early then it's not a serious infection.
"I don't think there's a cause for huge alarm here."
The skin infection caused by the bacterium mycobacterium ulcerans (M. ulcerans) can initially be mistaken for an insect bite.
Over a period of months, it can progress to potentially destructive skin lesions known as Buruli, or Bairnsdale, ulcers.
While the condition is not lethal, it can leave people maimed or scarred for life.
"If people present with a small mosquito bite that doesn't look quite right there's a very good diagnostic test," Professor Stinear said.
"If you're given the right antibiotics then there's a really good clinical outcome for people."

**Transmission risk considered low**

Professor Stinear runs the Beating Buruli research project which he said had shown if mosquito numbers were reduced, "we can stop this disease from spreading to people".

He said the risk of transmission in the Melbourne areas was considered low.

Usually, the ulcer is associated with locations on the Mornington Peninsula, including Rye, Sorrento, Blairgowrie and Tootgarook.

Other coastal areas, including the Bellarine Peninsula and the Frankston and Seaford areas, have a moderate risk.

Cases have also been discovered in the south-eastern bayside suburbs and East Gippsland.

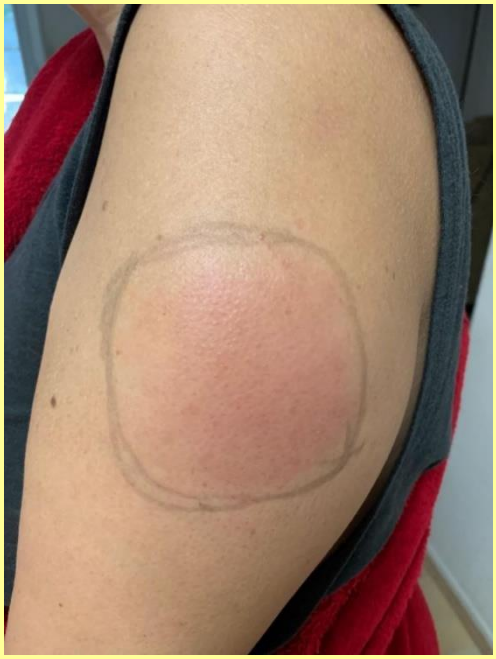
The disease is not transmissible from person to person, and there is no evidence of transmission between possums and humans, the department said.

## Should You Be Worried About COVID Arm?

Source: https://health.clevelandclinic.org/should-you-be-worried-about-covid-arm/

**Q:** There have been some reports of people getting "COVID arm" after being vaccinated for COVID-19. Should I be concerned about this big, itchy, red blotch and can it mean something more serious is going on?

**A:** What we essentially think is going on with COVID arm is that your immune cells are reacting to muscle cells that have taken up the messenger RNA vaccine. The immune cells can be a little over-exuberant because they view the SARS-CoV2 spike protein produced by the vaccine as an infection that they need to fight off.



If you've ever had a tuberculosis test where they inject it under your skin and then check a day later to see if it's puffed up, what you get is something called a "delayed type hypersensitivity reaction." It usually takes a few days to develop. But if you have a certain type of infection, cells from your innate immune system will come in and try and destroy it and it ends up being an over-exuberant response.

COVID arm usually goes away within a few days and it is not life-threatening. The skin can be red, and some people have said that their injection arm was warm. But COVID arm is just a sign of your immune system being in overdrive.

That's the puzzling thing when it comes to COVID-19. You'd think that this virus would just cause a cold and that's it. But when it gets deep into your lungs, then it's a race against the clock. The part of your immune system that's making the antibodies will ramp things up to clear the virus.

On the other hand, your innate immune system is trying to destroy it. So, that's the battle. And this's why the COVID-19 vaccines are so valuable. Because if you do get this infection in your lungs and you're vaccinated, you can start making antibodies right away.

Should you end up with COVID arm, you can put a cold compress on it to help ease the inflammation. You can even take a pain reliever like Tylenol for the soreness. Rest and ice are good for most inflammatory conditions. And if you're worried about possibly having a sore arm after your second dose, get it in the opposite arm to make things a little easier.

***Thaddeus Stappenbeck, MD, PhD** is Chairman of the Department of Inflammation and Immunity at Cleveland Clinic's Lerner Research Institute.*

## I took an antibody test after receiving my Covid-19 vaccine. Here's what I learnt

Source: https://www.thenationalnews.com/uae/health/i-took-an-antibody-test-after-receiving-my-covid-19-vaccine-here-s-what-i-learnt-1.1170743

Feb 22 – After two shots of the vaccine, I had high antibodies in my system – so high, in fact, that doctors think I had Covid-19 and never knew

More than 40 per cent of the UAE population has now received at least one dose of a vaccine against Covid-19.

On January 4, I received my second shot of the Sinopharm vaccine.
Five weeks later, I was keen to learn how my body had responded, so I booked myself in for a serology test.
That scanned my blood for antibodies to two Sars-Cov-2 proteins, as well as a "quality check" of their neutralising abilities against the virus.
So, what is the test? And should we all be doing it?

**What are antibodies – and what does the test do?**
Antibodies are proteins that help to fight off infections and can provide protection against getting that disease again.
I took a quantitative test, which measures the level of antibodies in a person's blood against the Sars-Cov-2 virus, which causes Covid-19.
It provides three results, with levels of two antibodies: one against the N protein – or nucleocapsid – which is found inside the virus; and one against the spike or S, on the surface, which the virus uses to enter our bodies.
The third result provides a simple positive or negative result for neutralising antibodies.
Scientists have discovered that people who have been infected with Sars-Cov-2 make antibodies against the N protein and the spike.
But people who have received vaccines against Covid-19 – including the Sinopharm vaccine, the most widely used shot in the UAE – tend to make antibodies mainly against one protein: the spike. These are known as anti-S or anti-spike antibodies.
Often people who have received a Covid-19 vaccine do not usually make anti-N antibodies.
That's according to Dr Sally Mahmoud, lab director at Biogenix Labs, part of G42 Healthcare, an Abu Dhabi technology company that helped lead trials of the Sinopharm vaccine.
People who take the test after receiving a Covid-19 vaccine should not be surprised if the result is negative for anti-N antibodies, she said.
Only "a small fraction" test positive for anti-N antibodies after vaccination, Dr Mahmoud said.

**My results**

- Immunoglobulin G (IgG) Anti-N antibodies: 4.86 (negative is less than 1.4, positive is more than 1.4)
- IgG Anti-S antibodies: 124 (negative is 12 or less, borderline is 12-15, positive is more than 15)
- Neutralising antibodies: positive

**What does that mean?**
I should be well protected.
I have enough neutralising antibodies and both other results were strongly positive.
The anti-S or anti-spike antibodies are "very good", Dr Mahmoud said, which should prevent the virus from entering my cells.
The high level of anti-N antibodies – which are usually reflected more during infection than vaccination – should prevent the virus from progressing, if it does manage to invade my cells.
The level of my anti-N antibodies probably means I had the virus before being vaccinated against it, said Dr Mahmoud.
This was news to me.
It's very possible you had Covid-19
Dr Sally Mahmoud, G42 Healthcare
"It's very possible you had it," she said.
"I cannot prove it of course, because there is a fraction who do respond to the vaccine with anti-N.
"But of the small fraction, we reckon whoever had the anti-N most probably was previously infected. However, we cannot yet prove that, we need to complete our studies."
This is perfectly possible, as the virus affects everyone differently.
Up to a third of people who contract Covid-19 are completely asymptomatic.
"People who have been vaccinated after infection have had a better response to the vaccine, of course, because it is like a second infection," she said.
"The body responds even better than just vaccination," she said, as the antibody concentrations "are usually much higher than in people who are only vaccinated, or only infected".
A billboard urges the public to sign up for the voluntary vaccine outside Bahrain International Exhibition and Convention Centre in Manama. The tiny island nation has put technology at the heart of its response, using WhatsApp, Facebook Messenger and chatbots to deliver test results and information. Mazen Mahdi / AFP

**How does Sinopharm compare to Pfizer-BioNTech?**
Theoretically, because Sinopharm is an inactivated vaccine – a 'killed' virus – the immune response should be broader than Pfizer-BioNTech, which is designed to induce antibodies to the spike only.
However, medics are still examining how effective any vaccine is against new strains, including the Sinopharm shot.

**What is an average result?**
That is a hard question to answer, Dr Mahmoud said.
Anything above 15 arbitrary units per millilitre is positive for the anti-S antibody test. However, a typical result after the Sinopharm vaccine is anything between 50au/ml to 150au/ml.
But although rare, the lab has seen people with levels below 20 and above 1,000, she said.
For the anti-N antibody test, anything above 1.4 is positive.
The test to check for neutralising antibodies is a straight positive above 30 per cent, or negative if below that.

**What does a higher result mean?**
The higher the value, the better response to the vaccine, and the better immune response, Dr Mahmoud said.
"Higher antibodies stay for longer and are said to give better protection than lower antibodies," she said."

**Should we all be taking this test?**
This quantitative serology test is not one that has been widely carried out in other countries – and not something UAE authorities urge people to get. But it is available in some hospitals in the UAE, mostly in Abu Dhabi.
Other doctors said more research is needed.
"Some vaccines remain in our body for life – that's why we need only one dose when we take a childhood vaccine," said Dr Anitha Varghese, a general practitioner at Aster Jubilee Medical Centre in Dubai.
"When it comes to Covid-19, it's very new. We still don't know how long the cells' memory to kill the virus lasts."
She said antibody tests could help determine whether people vaccinated against Covid-19 would require regular booster injections.
Hospitals in Dubai previously told *The National* the tests were not available there, at the request of the authorities.
In Abu Dhabi, the test typically costs about Dh300 ($81).

**How long do antibodies last?**
Scientists are still working out the answer to that. It really depends on a person's immune system.
"Some people we have been monitoring, they have had the antibodies for almost eight months now," Dr Mahmoud said.
"Other people have had a drop in antibodies after a couple of months, so getting this average number is ongoing.
"We're still doing the research."

**Does recovering from the virus give as much protection as getting the vaccine?**
Only for a short period, Dr Mahmoud said.
"Depending on the strength of the infection, people with severe infections do respond with very high antibody levels," she added.
"But we have seen the antibody levels drop very quickly after infection."
Antibodies produced after vaccination appear to last longer. However, this needed to be confirmed by research, she said.

## Inhaled antibody therapy to protect against new COVID variants

Source: http://outbreaknewstoday.com/inhaled-antibody-therapy-to-protect-against-new-covid-variants-72699/

Feb 23 – Aridis Pharmaceuticals, Inc., a biopharmaceutical company focused on the discovery and development of novel anti-infective therapies to treat life-threatening infections, announced today that it has **augmented its inhaled AR-711 monoclonal antibody (mAb) to COVID-19 with a second mAb (AR-713) that is designed to neutralize newly emerging COVID-19 mutated variants including those from South Africa, Brazil and Japan.** Together, the enhanced dual antibody cocktail will be delivered as an inhaled treatment and is expected to provide broad coverage of all known high-risk strains. In addition, Aridis is pleased to announce preclinical development services support from NIAID. The preclinical development services support is

also provided by the Coronavirus Immunotherapy Consortium (CoVIC). Aridis is on track to initiate the program's Phase 1/2/3 clinical trial in 2H 2021.
AR-711 is being developed as a self-administered, at-home inhaled treatment for COVID-19 patients who are not yet hospitalized. The Company's vision is that if highly effective immunotherapies such as mAbs could be formulated as inhaled therapy, then COVID-19 patients could be treated much earlier in the course of their disease within their own homes. This could offer convenience to patients and reduce pressure on medical infrastructure, including outpatient infusion centers and hospitals. As the pandemic evolves, new mutant and more contagious strains of the SARS-CoV-2 virus have emerged, rendering most available vaccines and monoclonal antibodies less effective. In response, the Company is now adding a second mAb AR-713, which has been shown to completely neutralize *in vitro* the 'E484K' mutation containing SARS-CoV-2 variant, associated with the Brazilian and Japanese variants (P.1) and the South African variant (B.1.351). This enhanced cocktail is designed to neutralize these variants as well as the original strain, the D614G strain, and the UK strain (B.1.1.7), providing broad coverage of all currently known high-risk strains.
"As the COVID-19 pandemic spreads globally, the virus continues to mutate into variants which render the majority of the available vaccines and mAbs less effective," commented Vu Truong, Ph.D., Chief Executive Officer of Aridis Pharmaceuticals. "Scientists at Aridis continue to collaborate with multiple global research organizations in their ongoing search for the best agents to target this rapidly-changing virus. We are committed to being nimble and adjust our treatment, as needed, in order to keep pace with the virus as it continues to evolve. The addition of AR-713 follows this strategy of rapid responsiveness."
"Even at peak COVID-19 vaccination coverage, it is expected that up to a third of the world's population will remain unvaccinated and at risk of contracting COVID-19, thus requiring treatment intervention. This is exactly where treatment modalities such as our inhaled COVID-19 mAb cocktail could fill the gap, i.e. by neutralizing the circulating and variant viral strains allowing infected individuals to be treated earlier and recover at home," continued Truong. "We are pleased to deliver a second mAb to provide broad coverage including the newly emerging COVID-19 strains. We are also thankful to our collaborators at NIAID/CoVIC whose lab work is helping us complete our FDA and EMA dossiers for an expeditious start of the Phase 1/2/3 clinical trials."
The Company remains on track to finalize the Phase 1/2/3 design for this program and obtain concurrence from the FDA and EMA in 1H 2021 such that patient enrollment can be initiated in 2H 2021.

## Why COVID vaccines are so difficult to compare

Source: https://www.nature.com/articles/d41586-021-00409-0

Feb 23 – **Yusuff Adebayo Adebisi knows that a vaccine that offers 70% protection against COVID-19 could be a valuable tool against the coronavirus pandemic in Nigeria — especially if that vaccine is cheap and doesn't have to be stored at extremely cold temperatures. But what if another vaccine — one that is more expensive to buy and to store — was 95% effective?**
"Should we send the less-effective vaccine to Africa? Or should we look for a way to strengthen the cold storage?" asks Adebisi, director for research at African Young Leaders for Global Health, a non-profit organization based in Abuja.
These are the kinds of question facing researchers and government leaders worldwide, as they take stock of the emerging selection of coronavirus vaccines and try to decide which will be most useful in putting an end to a pandemic that has already taken nearly 2.5 million lives. It is a decision shaped by limited supplies and hampered by limited data, says Cristina Possas, a public-health researcher at the Oswaldo Cruz Foundation in Rio de Janeiro, Brazil. "It is not possible to compare these vaccines at this point," she says.
In Bangladesh, health economist Shafiun Shimul at the University of Dhaka worries about the risks if governments delay vaccinations for months to build cold-chain infrastructure. "If you want to control infection, you have to rely on something that is contextually doable for you — it's not only about effectiveness," he says. "If they wait for perfection, I think it will be a long wait."

**The 'best' vaccine**
Given the demand for speed amid limited supplies, any effort to rank the vaccines must take into account not only their reported effectiveness, but also supplies, costs, the logistics of deploying them, the durability of the protection they offer and their ability to fend off emerging viral variants. Even so, many people might find it hard to look away from clinical-trial results that suggest an efficacy gap. So far, more than 200 million doses of coronavirus vaccines have been delivered, and data have been rolling in from clinical trials in several countries. The top-line results from those studies suggest a range of protection: from 95% efficacy for a vaccine made by Pfizer of New York City and BioNTech of Mainz, Germany,

to about 70% suggested by initial results on a vaccine made by AstraZeneca of Cambridge and the University of Oxford, both in the United Kingdom.
It might be tempting, but it simply isn't possible to directly compare the effectiveness of vaccines on the basis of those results alone, cautions David Kennedy, who studies the ecology and evolution of infectious diseases at Pennsylvania State University in University Park. Each measure of efficacy comes with a degree of uncertainty, and trials might have differing definitions of important criteria, such as what constitutes a 'severe' bout of COVID-19 compared to a 'moderate' one.
Added to this are the demographics of each trial: in the case of the Oxford–AstraZeneca vaccine, for example, the developers collected few data about the vaccine's efficacy in people over 65. This led Germany to authorize the vaccine only for those under 65, even though the European Medicines Agency recommends it for all adults.
And the vaccines were studied at different times in various countries. Each trial can only offer a snapshot of protection against the viral variants that were dominant in that time or place, says Kennedy. "That number relates to a particular point in time," he says. "How that translates into protection over one to two years is not the same."
This point is particularly relevant as the world grapples with emerging coronavirus variants, some of which seem to evade aspects of the immune responses stimulated by vaccines. Researchers first spotted one such variant, called 501Y.V2 or B.1.351, in December in South Africa, where it now accounts for the majority of new coronavirus infections.
That variant has since been identified in countries around the world, and the extent to which it might reduce vaccine efficacy remains unclear. Laboratory studies and clinical-trial data suggest that most vaccines will still provide significant protection. But the AstraZeneca vaccine faltered badly: in an analysis[1] of about 2,000 people in South Africa, it did not protect against mild or moderate COVID-19 due to the variant. .
Faced with those results, the government of South Africa announced on 7 February that it would place the rollout of the AstraZeneca vaccine on hold, despite the shot being significantly cheaper than Pfizer's vaccine, and easier to store. AstraZeneca and the University of Oxford have granted permission to generics makers such as the Serum Institute of India in Pune to crank out doses as quickly as possible, and the vaccine had been considered the best hope for Africa, says Joia Mukherjee, chief medical officer of Partners in Health, a charity based in Boston, Massachusetts, that operates in 11 countries. "But if it isn't effective against the South African variant, we're going to have to switch tactics," she says. "To march forward and use it when we know that the variant is spreading through Africa, particularly southern Africa, is malpractice on a global scale."
However, some regions in Africa could still benefit, says infectious-disease specialist Loice Achieng at the University of Nairobi. The 501Y.V2 variant has not yet become dominant in Kenya, she says, and it's still possible that the AstraZeneca vaccine could protect against severe COVID-19 caused by it. "I think it's probably something that shouldn't be written off," she says.

**Better options**

There are hopes that more suitable vaccines will become available to fill some of the gaps. Johnson & Johnson in New Brunswick, New Jersey, for example, is developing a single-shot vaccine that would dramatically simplify vaccine roll-outs. But it completed clinical trials only in late January, and it is not yet clear how quickly or smoothly the company will be able to start producing millions of doses, says Jerome Kim, director-general of the International Vaccine Institute in Seoul.
The world is still waiting for crucial data about the vaccines that are being rolled out now, says Kim. Medicines do not always perform as well in the real world as they do within the strict confines of a clinical trial. Early data from Israel's massive vaccination campaign suggest that the Pfizer vaccine results are holding up, but it will take months to collect similar data about other vaccines.
Researchers are also starting to test a range of doses, schedules and combinations of vaccines. They still do not know how long vaccine-mediated immunity will last, or how well the various vaccines reduce coronavirus spread — all factors that could shape which is considered the 'best'. "It's not just a matter of getting them out as fast as possible," says Mark Jit, a vaccine epidemiologist at the London School of Hygiene & Tropical Medicine. "It's making sure that as we get them out, we are putting in place the surveillance studies to see how well the vaccines are doing in different situations."
Eventually, it might be possible to be more strategic about which vaccines to use in which settings, says Kim. But for now, the data simply aren't there. "You're watching these things change in real time," he says. "In the next month, we could think something quite different."

**EDITOR'S COMMENT:** Just another article in a respectful magazine where certain vaccines are forgotten because they are not "Western products".

# I HAVE THE RIGHT

# TO CHOOSE MY VACCINE

# California coronavirus strain may be more infectious—and lethal

**By Meredith Wadman**

Source: https://www.sciencemag.org/news/2021/02/coronavirus-strain-first-identified-california-may-be-more-infectious-and-cause-more

Feb 23 – A new strain of the pandemic coronavirus, first identified and now spreading in California, appears to be somewhat more transmissible and heighten patients' risk of admission to the intensive care unit (ICU) and death, according to a preprint reporting lab studies and epidemiological data.

The variant is also present in other states, but its prevalence among more than 2000 samples collected in California swelled from 0% to greater than 50% between September 2020 and late January, according to researchers at the University of California, San Francisco (UCSF). "This variant is concerning because our data shows that it is more contagious, more likely to be associated with severe illness, and at least partially resistant to neutralizing antibodies," says senior author Charles Chiu, an infectious diseases physician and sequencing expert at UCSF. The data suggest the new strain "should likely be designated a variant of concern warranting urgent follow-up investigation," the authors write in their preprint, which has not been peer reviewed and which they say is expected to be posted online soon.

The findings "warrant taking a much closer look at this variant," says Angela Rasmussen, a virologist at Georgetown University's Center for Global Health Science and Security who was not involved with the research. They "underscore the importance of pulling out all the stops in terms of both exposure reduction and increased vaccine distribution and access."

But other coronavirus experts say more data are needed before conclusions are drawn, noting that among patients with the variant, the study included fewer than 10 who were admitted to the ICU and fewer than 10 who died. "If I were a reviewer, I would want to see more data from more infected people to substantiate this very provocative claim," says David O'Connor, a viral sequencing expert at the University of Wisconsin, Madison, who was not part of the research.

For their study, the authors sequenced 2172 genomes from virus samples captured from patients in 44 California counties between 1 September 2020 and 29 January. **The new variant, which comes in two forms labeled B.1.427 and B.1.429** that carry slightly differing mutations, accounted for 21.3% of these sequences overall. (Under a different naming scheme, the variant is sometimes referred to as 20C/L452R.)

The scientists also studied the medical records of 324 people with COVID-19 who were cared for at UCSF clinics or its medical center. The researchers adjusted the data to account for differences in age, gender, and ethnicity, and found that, compared with patients who had other viral strains, those carrying the variant were 4.8 times more likely to be admitted to the ICU and more than 11 times more likely to die.

**Other data suggest the variant is more contagious.** The scientists found that people infected with the variant harbored about twice as much virus in their noses, an index of viral shedding, which may make them more infectious to others. In the lab, viruses engineered to carry a key mutation found in the variant were better than control viruses at infecting human cells and lunglike structures called organoids. And in one nursing home where the variant took hold, it spread severalfold faster than in four other nursing home outbreaks caused by other viral variants. "The evidence is growing that this [variant] is more transmissible than [its] immediate competitors," although not as transmissible as some other variants of concern, says William Hanage, an expert on viral evolution at the Harvard T.H. Chan School of Public Health. (Variants of concern are coronaviruses with mutations that make them more likely to spread, evade vaccines, or make people sicker.)

In lab studies, B.1.429 also impacted the effectiveness of antibodies: It was four times less susceptible than the original coronavirus to neutralizing antibodies from the blood of people who recovered from COVID-19, and two times less susceptible to antibodies from the blood of people vaccinated with the Pfizer or Moderna vaccines. That diminished potency is "moderate but significant," the researchers wrote.

Robert Schooley, an infectious disease physician and virologist at UC San Diego, praised the paper's ambition and noted its findings of high viral loads in infected people's noses. "The biology of having a higher level of virus … would certainly fit the thesis that people would not do as well," he says. That comports with the fact that "we are seeing here in Southern California more people … for a longer period of time in our ICUs."

The patient data suggest the variants may be linked to worse outcomes. But although the ICU and mortality findings reached statistical significance, the numbers were small: Eight of 61, or 13%, of hospitalized patients with the variants were admitted to the ICU, compared with seven of 244, or 2.9%, of hospitalized patients who did not harbor the variants. Seven of 62 people (or 11.3%) with the variants died, versus five of 246 (or 2%) of people without the variants.

The authors admit it is not possible to tell whether the variants actually make people sicker or whether, for instance, most of the patients with the variant got sick during the worst months

of the pandemic, when health care systems were overloaded and patient care may have been suboptimal. All the variant-infected patients in the study who died at UCSF did so between 22 December 2020 and 28 January, when the area was experiencing a surge of infections.
"Could any of the seven individuals who died with this variant have survived if they received treatment when the state wasn't in the midst of a surge?" O'Connor asks. "It's really impossible to know, as the authors acknowledge."
The real evidence will be seeing if, when introduced elsewhere, these lineages start to take off in similar fashion.
William Hanage, Harvard T.H. Chan school of Public Health
In addition to other mutations, B.1.427 and B.1.429 each have an identical trio of mutations in the coronavirus spike protein, which allows the virus to invade human cells. One of those mutations, dubbed L452R, is thought to stabilize the interaction between the spike protein and the receptor it uses to attach to and invade human cells, increasing infectivity. None of those three spike mutations is found in the three other variants of concern, which emerged in the United Kingdom, South Africa, and Brazil.
Evolutionary biologists also caution against overinterpreting the study. "The work is definitely worth reporting, but I don't buy that on its own this is sufficient to categorize these as variants of concern," Hanage says. He notes that B.1.427 and B.1.429 likely emerged in July and June 2020, respectively, but infections have not exploded in the exponential curves seen with the three identified variants of concern. "The real evidence will be seeing if, when introduced elsewhere, these lineages start to take off in similar fashion."
The paper also offers another cautionary tale about the United States's subpar effort to sequence coronavirus samples nationwide. It's "worrisome" that a state like Nevada, which borders California, has fewer than 500 sequences in GISAID, the leading coronavirus sequence repository, O'Connor says. The limited data from Nevada currently suggest the variant represents 27% of collected sequences, according to a database created by Scripps Research using GISAID data.

***Meredith Wadman*** *joined* Science *as a staff writer in September 2016, after covering biomedical research and its politics from Washington, D.C., for 20 years. Her current beat includes biology research, policy, and sexual harassment. She has been a staff writer for* Nature *and a contributing writer at* Fortune. *She has also written op-eds for* The Wall Street Journal, The New York Times *and* The Washington Post. *Her first book,* The Vaccine Race: Science, Politics and the Human Costs of Defeating Disease, *was published by Viking (U.S./Canada) and Transworld (U.K.) in February 2017. Meredith earned her B.A. in Human Biology at Stanford University and began medical school at the University of British Columbia in her native Vancouver. She completed her medical degree as a Rhodes Scholar at the University of Oxford in the United Kingdom, and earned a master's of science at the Columbia University Graduate School of Journalism.*

## A Baby Sick With COVID-19 in Washington Had 51,000 Times More Viral Particles

Source: https://www.sciencealert.com/baby-sick-with-covid-variant-found-with-51-000-times-the-number-of-virus-particles
Feb 25 – A new coronavirus variant has emerged.

A very sick newborn, treated at Children's National Hospital in Washington, D.C., was found to have not only a new variant of the novel coronavirus, but a viral load 51,418 times higher than other young patients, according to the *Washington Post.*
The new variant was identified recently when the researchers sequenced the genome of the virus from the baby, who was treated in September and recovered, reported the Post's Ariana Eunjung Cha.
It's not clear how common or how risky this new variant might be. The database found eight other cases of this variant in the US mid-Atlantic region, according to a pre-print study, which has not yet been peer-reviewed, on coronavirus variations in children.
The variant, researchers said, has a different type of spike protein structure that may make it more infectious.
It's not clear whether this new variant explains the huge number of viral particles detected in the infant's nose.
"It could be a complete coincidence," Roberta DeBiasi, chief of infectious disease for the Children's National Hospital, told the Post. "But the association is pretty strong. If you see a patient who has exponentially more virus and it's a completely different variant, it is probably related."

**Many questions remain about how the coronavirus affects children**
Children are less likely to have severe cases of COVID-19, according to national data. Very young children may be less likely to infect other people when they get sick, although the CDC still suggests that everyone could potentially spread the disease.

But researchers still don't fully understand all the implications of coronavirus for children and babies.
In the past five months, the number of pediatric coronavirus cases has gone up "dramatically," according to the American Academy of Pediatrics and the Children's Hospital Association.
Severe cases of COVID-19 in children are rare, but do exist, and have been linked to serious and long-term side effects, including brain damage.
And we do know that some children are more vulnerable than others – the death rate of children of color is far higher than that of their white peers.
As of February 11, 241 children have died of COVID-19 and the vast majority have been Black, Hispanic, or American Indian or Native Alaskan.

## Relationship between human exhalation diffusion and posture in face-to-face scenario with utterance

**By Keiko Ishii, Yoshiko Ohno, Maiko Oikawa, and Noriko Onishi**
*Physics of Fluids 33, 027101 (2021)*
Source: https://aip.scitation.org/doi/10.1063/5.0038380

**ABSTRACT**
Because of the COVID-19, the world has been affected significantly. Not only health and medical problems but also the decline in life quality and economic activity due to the suspension of social activities cannot be disregarded. It is assumed that the virus is transmitted through coughing and sneezing; however, the possibility of airborne infection by aerosols containing viruses scattered in the air has become a popular topic recently. In airborne infections, the risk of infection increases when the mucous membrane is exposed to exhaled aerosols for a significant amount of time. Therefore, in this study, we visualize human breath using the smoke of electronic cigarettes as tracer particles. Exhalation when speaking was visualized for four human posture patterns. The result shows that the exhaled breath is affected by the body wall temperature; it rises when it remains in the boundary layer by wearing a mask. On the other hand, without a mask, it initially flows downward due to the structure of the nose and mouth, so it flows downward due to inertia and diffuses randomly. This finding is effective in reducing the risk of infection during face-to-face customer service.

**EDITOR'S COMMENT:** Read the full text at source's URL – many videos to download

## Long-term effects of COVID-19 given name by experts

Source: https://www.yahoo.com/lifestyle/long-term-effects-of-covid-19-given-name-by-experts-fauci-231226751.html

Feb 25 – When Ed Hornick first came down with COVID-19 symptoms last January, he assumed that one day he'd feel better. But a year later, like millions of others who contracted the virus, he's still sick. This torturous cycle of debilitating brain fog, fatigue and muscle pain — which Hornick, a senior editor at Yahoo News, recently wrote about — has been referred to by mostly informal names thus far, such as "long COVID."

**But during a press conference Wednesday, Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, finally referred to it by an official name: PASC. "Many of you are now aware of what had long been called 'long COVID' but actually, what that really is is post-acute sequelae of SARS-CoV-2 infection, which we're now referring to as 'PASC,'" Fauci said.**

With some studies showing that as many as one-third of patients with COVID-19 may experience lingering symptoms, the National Institutes of Health announced this week that it is launching an analysis to figure out what is causing the constellation of symptoms. "It's very difficult to treat something when you don't know what the target of the treatment is," Fauci said during the press conference. "And that's the reason why it's extremely important to take a look at these individuals, not only the scope of this and not only, you know, the depth and breadth of the symptoms, but also to try and have some correlate that actually is the pathophysiological correlate."
Dr. Bradley Sanville, a pulmonologist at UC Davis who treats PASC patients at the facility's Post-COVID Clinic, says Fauci's announcement is a significant development. "The name is important. I think the colloquial name of 'long haulers' is fine and helps patients identify with

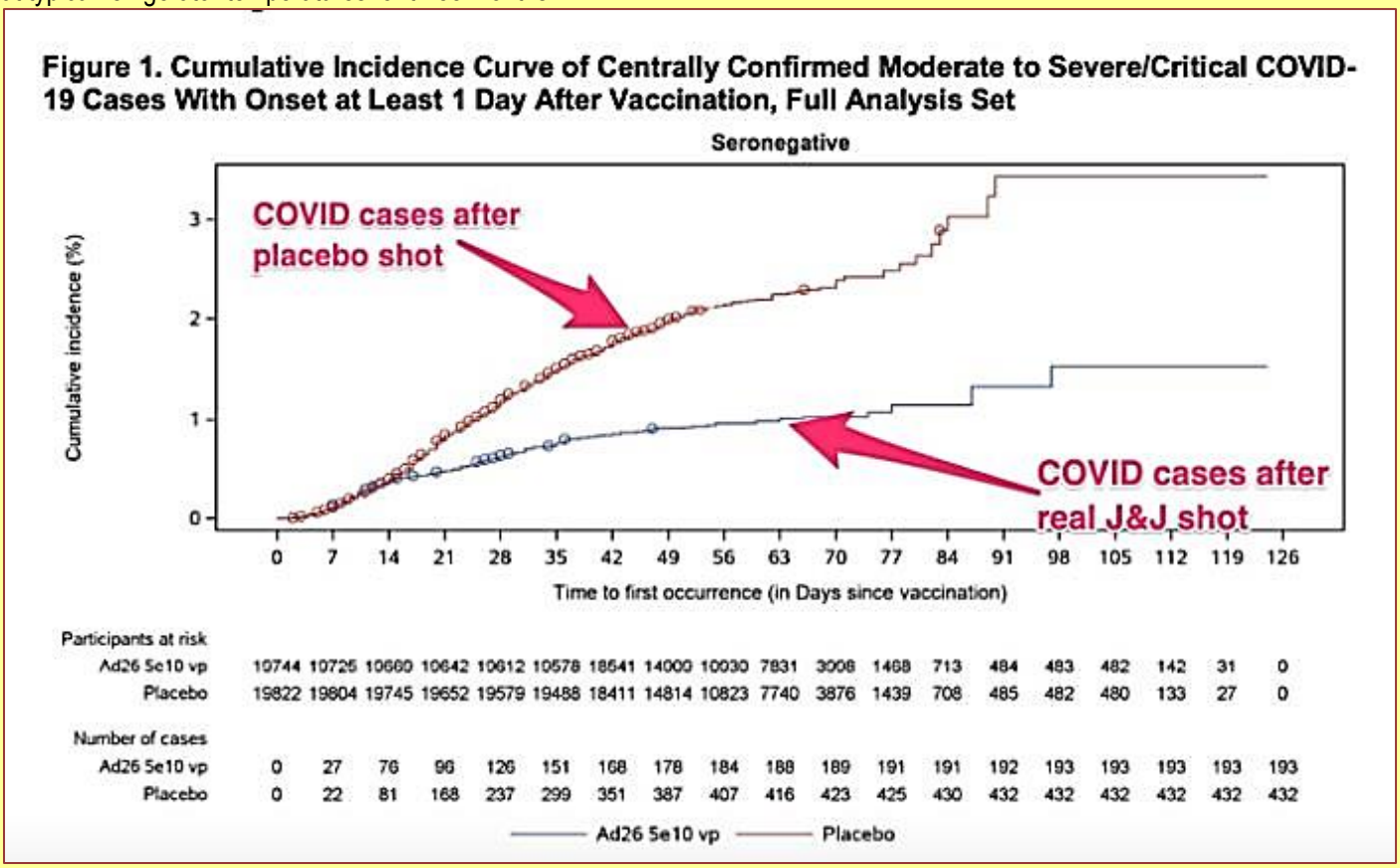
others," Sanville tells Yahoo Life. "But from a medical standpoint, naming is important because it gives it a little bit of veracity that it otherwise wouldn't have."
Sanville says that the inclusion of "sequelae" — which technically means "aftereffect of a disease" — helps capture the large variation of symptoms that long-haulers experience. "It's different than using 'disease'; disease is something that is much more discreet and we know has a particular pathophysiology behind it," says Sanville. "Whereas a syndrome, or sequelae, is something that's associated with — well, in this case, SARS-CoV-2 virus. But we don't know exactly what's causing it, and it's probably a collection of a couple of different things happening."
He's hopeful that this name will add to the legitimacy of this condition, which he currently sees at a rate of six new patients a week. "Giving it a name that physicians and nurses understand helps it kind of give some reality too," he says. "I had a patient the other day who complained that the doctor she had seen had just written her off as being neurotic. So — not that I have any magic answers necessarily for all these patients — but it's so prevalent that it seems unlikely that ... it's just in people's brains."
Equally appreciative of the new name is Dr. Ruwanthi Titano, a cardiology specialist at Mount Sinai who has treated more than 260 patients with cardiac symptoms of PASC. "I think this is an appropriate name — showing that it's after the acute illness, there are these long-term sequelae that we're really seeing coming out of the woodwork," she says. Titano is particularly happy to hear about NIH's plans to study the condition, for which symptoms range from shortness of breath and heart palpitations to hair loss and numbness.
"I think the more [patients] we see, the more comfortable we are at recognizing the syndrome — but what to actually do with it is still up in the air," says Titano. "There is a general approach I take, but then I have to get very individualized for each patient ... and so we're adapting all the time. This is a critical area where I think having NIH-level help and funding is really important to collect data, make registries and then move forward and say, 'We have these unanswered clinical questions.'"
For people like Hornick, the acknowledgment and naming are long overdue. "It's incredibly comforting to know that what I've been going through for the past 10 months has an official name — and that significant research and resources are being dedicated to tackling it," says Hornick. "Hopefully, scientists will be able to get to the bottom of not just PASC, but also afflictions like chronic fatigue syndrome and fibromyalgia, which still remain a mystery to doctors."
Titano feels optimistic that they will. "I am very hopeful," she says. "I think because, you know, the alternative is really bleak and, because based on my experience, I have seen a lot of patients improve. It has been very incremental and gradual ... but I have seen patients improve, and I think we will continue seeing that as we learn more and more."

## One simple chart shows how well J&J's single-dose coronavirus vaccine works, with protection starting after 2 weeks

Source: https://news.yahoo.com/one-simple-chart-shows-well-143350397.html

Feb 24 – Johnson & Johnson's coronavirus vaccine starts protecting people from getting sick with COVID-19 about two weeks after immunization.
The Food and Drug Administration released a 62-page review of the vaccine on Wednesday. The documents shows that the shot is safe and effective against COVID-19. The one-dose vaccine is in the final stages of the US review process for emergency authorization, which could come as early as this weekend or early next week.
One simple chart in the FDA's review shows a key takeaway from J&J's study: its one-dose vaccine works quite well, leading to far fewer COVID-19 cases among volunteers who received the shot. J&J's vaccine was 67% effective after two weeks and 66% effective after four weeks from injection, according to the FDA's review documents.
The red line represents the total number of COVID-19 cases in the control group, or people who got the bogus placebo shot. The blue line shows the number of cases among people who received the real J&J shot. The two groups diverge right around 14 days, with far more COVID-19 cases being tallied in the placebo group from that point.
J&J's efficacy figures are markedly lower than the 94% and 95% efficacy rates shown by two-dose vaccines from Moderna and Pfizer, but it's difficult to directly compare the studies, as they happened at different stages in the pandemic and across different geographies.
Expect a debate among experts in the coming days over just how much the efficacy difference matters.
Still, J&J's shot works quite well, especially at preventing the worst outcomes of disease. Across the entire study, 31 people wound up in the hospital from COVID-19: 29 had received

the placebo shot and just two had gotten J&J's vaccine. The study also tallied seven deaths from COVID-19, all in the placebo group. Experts have argued the key benefit of COVID-19 vaccines is being able to prevent people from needing hospitalization or dying. J&J's shot clears that bar, and the company has been highlighting its unique advantages in being a one-dose shot that can be stored at typical refrigerator temperatures for three months.




Effectiveness of Johnson & Johnson's coronavirus vaccine compared to placebo FDA

An FDA advisory committee will meet Friday to discuss J&J's shot and ultimately vote on whether or not to recommend emergency authorization. If OK'd by regulators, the healthcare giant has said it will be able to ship 4 million doses immediately and that it's on track to deliver 100 million doses to the US by the end of June.

## New Report: Crisis Standards of Care: Lessons from New York City Hospitals' COVID-19 Experience: The Emergency Medicine Perspective

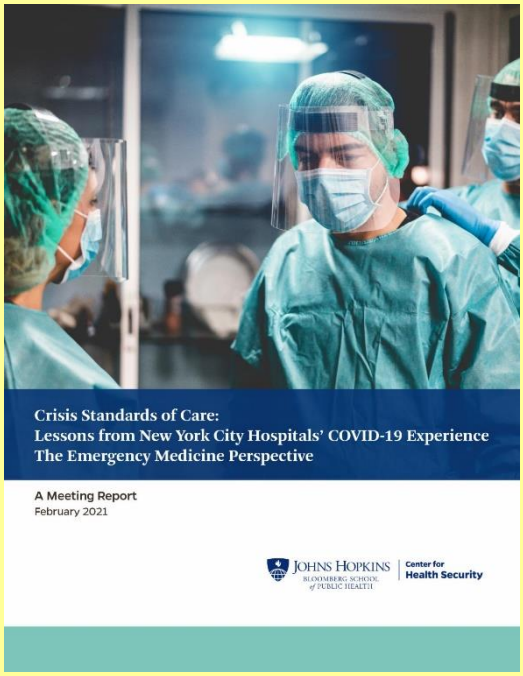
Today (Feb 25), the Johns Hopkins Center for Health Security released a new report about the lessons from New York City hospitals' emergency department experiences during the unprecedented surge of COVID-19 patients in April through June 2020. This surge was associated with extraordinary use of emergency department resources needed for severely ill patients. Many hospitals were overwhelmed and found it challenging to maintain conventional standards of care.

Based on the virtual convening of New York City emergency physicians in January, the new report, *Crisis Standards of Care: Lessons from New York City Hospitals' COVID-19 Experience: The Emergency Medicine Perspective*, identifies what went well and what needs to be addressed to prepare better for future health crises. This report follows an earlier one looking at lessons learned from NYC hospitals' ICU experience.

The National Academy of Medicine had released the first in a series of reports about so-called "crisis standards of care" (CSC) in 2009. The COVID-19 pandemic in New York City was the first time in the U.S. since then that a transition to CSC was implemented by hospitals on a large and prolonged scale.

The emergency physicians reported some of the same issues as the ICU directors from the previous report, including there being no patient load-balancing from one hospital system to another and that no CSC declaration was formally made by the state, city or any hospital.

In addition, new themes emerged, and some issues raised earlier by ICU directors were expressed in a new way:




- Hospitals and healthcare systems were taken by surprise by the pandemic, and most clinicians and administrators were not familiar with CSC principles and best practices.
- No hospital or health system represented at the convening, and no city or state agency, had a CSC plan that was ready to be implemented.
- A culture of secrecy regarding the severity of the crisis impeded CSC implementation.
- Staffing was a major challenge because of the surge of patients and illness among healthcare workers. Reinforcement clinicians were of limited help.
- There were widespread shortages of critical equipment and supplies, including ventilators, respiratory supplies, oxygen cylinders, intravenous pumps, and personal protective equipment.
- Emergency medical services protocols did not always align with emergency department (ED) protocols, leading to some staff conflict and demoralization.
- ED staff were often redeployed to other parts of the hospital, despite the influx of COVID-19 patients, because total ED patient volume was much lower than normal.
- Because of the persistent lower ED volumes, many healthcare workers, including experienced doctors and nurses, have been furloughed or laid off, and many graduating emergency medicine resident physicians have had difficulty finding jobs.

## Bell's palsy and SARS-CoV-2 vaccines

**By Al Ozonoff, Etsuro Nanishi, and Ofer Levy**

Source: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00076-1/fulltext

| | Vaccine type | Study design and population | Study period | Summary of the results |
|---|---|---|---|---|
| Inactivated intranasal influenza vaccine[1] | Virosomal subunit vaccine | A matched case-control study and case-series among patients with Bell's palsy (≥18 years of age) | 2000–01 | During the 91-day exposure period, compared with controls, recipients of the vaccine had an adjusted odds ratio for Bell's palsy of 84·0 (95% CI, 20·1–351·9) |
| Parenteral inactivated seasonal influenza vaccine[2] | Protein-based split vaccine | Review of adverse events reported to VAERS | 1991–2001 | Proportional reporting ratio of Bell's palsy after influenza vaccine: 3·78 (95% CI not provided) |
| Monovalent pandemic H1N1 influenza vaccine[3] | Split virion adjuvanted with AS03 | Retrospective cohort study among 1 024 019 individuals vaccinated with pandemic influenza vaccine | 2009–10 | Increased incidence of Bell's palsy compared with unvaccinated people, with a hazard ratio of 1·25 (95% CI, 1·06–1·48) |
| Monovalent pandemic H1N1 influenza vaccine[4] | Two protein-based vaccines: adjuvanted with MF59, or without adjuvant | Review of adverse events reported to NADRRS, Taiwan | 2009–10 | Increased risk for Bell's palsy 0–42 days post-vaccination; estimated-to-expected ratio of 1·48 (95% CI, 1·11–1·98) |
| Quadrivalent meningococcal conjugate vaccine[5] | Protein vaccine conjugated to a carrier protein | Self-controlled case-series analysis among 48 899 individuals immunized with meningococcal vaccine (11–21 years of age) | 2011–13 | Increased relative incidence for Bell's palsy in participants receiving concomitant vaccines (5·0, 95% CI, 1·4–17·8) |

VAERS=US Food and Drug Administration's Vaccines and Related Biologic Products Advisory Committee. NADRRS=National Adverse Drug Reaction Reporting System.

In light of the ongoing pandemic, development of vaccines to protect against SARS-CoV-2 infection and COVID-19 disease is an important public health priority. As of February 2021, two SARS-CoV-2 vaccines have received emergency use authorisation by the US Food and Drug Administration (FDA), both of which use mRNA technology. While the safety data are reassuring, phase 3 studies of both vaccines demonstrate an imbalance of cases of Bell's palsy in the vaccine groups compared with the placebo groups. This Comment has three purposes: to briefly review the literature on the association of Bell's palsy with vaccination, and vaccination for respiratory viruses such as influenza in particular, to consider biological mechanisms that might explain observed associations, and to reconsider statistical and epidemiological evidence from the reported safety data of the SARS-CoV-2 vaccine trials.

Associations between influenza vaccines and Bell's palsy have been studied extensively (table). Elevated incidence of Bell's palsy among recipients of an inactivated intranasal influenza vaccine was reported in a study conducted in 2000–01.[1]
Since this vaccine contained the *Escherichia coli* heat-labile toxin as a mucosal adjuvant, which undergoes retrograde neuronal uptake, it was suspected that heat-labile toxin could affect the seventh cranial nerve through such an interaction. Potential signs of Bell's palsy have been reported following parenteral seasonal influenza vaccinations,[2] and influenza H1N1 monovalent pandemic vaccinations.[3, 4] However, the association between parenteral influenza vaccines and Bell's palsy was not reproducible in other studies.

▶**NOTE:** Enlarge the page to have a better look of the table

## Huge News: US Officials Approve Pfizer Vaccine Storage at Normal Freezer Temperatures

Source: https://www.sciencealert.com/us-just-approved-pfizer-vaccine-storage-at-normal-freezer-temperature

Feb 26 – Frozen vials of Pfizer's COVID-19 vaccine may be stored at temperatures commonly found in pharmaceutical freezers for a period of up to two weeks, the US Food and Drug Administration (FDA) said Thursday.
The move loosens a previous requirement that the vaccine should be stored at ultra-low temperatures, between -112- and -76-degrees Fahrenheit (-80 to -60 degrees Celsius).
"The alternative temperature for transportation and storage will help ease the burden of procuring ultra-low cold storage equipment for vaccination sites and should help to get vaccine to more sites," said Peter Marks, director of the FDA's Center for Biologics Evaluation and Research.
The FDA said it would update its fact sheet for health care providers accordingly.
Pharmaceutical freezers commonly operate at around -4 degrees Fahrenheit (-20 degrees Celsius).
The move came after Pfizer submitted a request based on its research on the vaccine's stability under the warmer temperature.
The Pfizer vaccine is based on new technology that uses synthetic mRNA (messenger ribonucleic acid) molecules to deliver the genetic instructions for human cells to create a part of the coronavirus.
The mRNA molecules are encased in particles of fat to protect them, but they still degrade more quickly than traditional vaccines and so require stricter storage measures.
Once thawed, the vials can be stored at fridge temperatures of 35 to 46 degrees Fahrenheit (2 to 8 degrees Celsius) for up to five days.

**EDITOR'S COMMENT**: It would be interesting to know how they do it – just curious!

## Masking does not affect oxygen saturation in patients with asthma

Source: https://www.healio.com/news/primary-care/20210225/masking-does-not-affect-oxygen-saturation-in-patients-with-asthma

Feb 25 – Wearing a mask does not affect oxygen saturation in patients with or without asthma, according to research presented at this year's virtual American Academy of Allergy, Asthma and Immunology Annual Meeting.


"This data reinforces that wearing a mask, whether it is a surgical mask, cloth mask, or N95, is completely safe," **Alan P. Baptist, MD, MPH, FAAAAI,** assistant professor in the department of internal medicine and health behavior and health education at the University of Michigan School of Public Health, said in a press release. "This is true for all individuals, whether they have a diagnosis of asthma or not."

Reference: Freigeh G, et al.

Baptist and colleagues asked both adult and pediatric patients who received care at the Michigan Medicine Allergy clinic from Sept. 10, 2020, through Oct. 23, 2020, to complete a survey, which included information on demographics, asthma diagnosis, perceived asthma control and the type of masks they wore.
The researchers performed pulse oximetry in patients while they wore masks, and patients reported how long they used the masks before the measurement was taken.
A total of 223 patients who completed the survey and oxygen saturation were included in analyses. Among these patients, 46% had asthma and 27% were aged 19 years or younger.
Baptist and colleagues determined that oxygen saturation ranged from 93% to 100% — with a mean of 98% — in those both with and without asthma.
The researchers did not identify a significant difference in oxygen saturation after adjusting for gender, race, type of mask and duration of mask use.
They also found that among patients who reported their level of asthma control, the mean oxygen saturation scores were similar in those with well-controlled asthma (mean = 98%), those with somewhat-controlled asthma (mean = 98%) and those with uncontrolled asthma (mean = 96.5%).
"Wearing a mask is an essential step we can all take to reduce the spread of COVID-19," Baptist said. "I hope this latest data will deliver peace of mind to individuals who are worried that wearing a mask may be dangerous, especially for those individuals who have asthma."

## Belgian government says to stop wearing the free cloth masks they distributed 'as a precaution'

Source: https://www.brusselstimes.com/news/belgium-all-news/156876/belgian-government-says-to-stop-wearing-the-free-cloth-masks-they-distributed-as-a-precaution/

Feb 25 – The Belgian government has told people to stop wearing the cloth masks they distributed for free last summer "as a precaution" following the leak of a confidential report from Sciensano, the Belgian Institute for Public Health, that said they may be toxic.
The report, which the government stressed is only the first results of the first phase of a study, found that the masks contain nanoparticles of silver and titanium dioxide that when inhaled could damage the respiratory tract.


15 million of the masks were ordered and they were handed out to pharmacies across the country, but now Belgium's Minister of Health Frank Vandenbroucke has asked pharmacists to stop using and distributing them "pending further investigation," according to De Standaard.
"Although no health risk has been demonstrated, we recommend that anyone who received such a mask at the time for free through the pharmacy should not use it for the time being, as a precaution," said Vandenbroucke.
The Health Council said that the use of the fabric masks provided is not recommended unless they are the "only available means of prevention."
Titanium dioxide was banned from food products last year in France, and scientists are still debating how harmful the particles are. Its use in the cloth face masks is to whiten the fabric as a dye, while the silver is intended to provide an antibacterial effect.
"The manufacturer may have emphasized the advantages of those nanoparticles, but not the disadvantages. They can also penetrate the deep airways and cause damage there,"

toxicologist Jan Tytgat (KU Leuven) told De Standaard. "Those particles are more common in textile products and they are not prohibited by European regulations, but with the mouth masks they are in a place where we constantly breathe in and out. That's different from being in a raincoat or boots."
The company that provided the masks is Avrox, which while based in Luxembourg, manufactured the cloth masks in Asia.
There were warning signs regarding their product from the get-go, including that wearers were told not to wash the mask at 60 degrees in order to avoid damaging the antibacterial layer.
Three Belgian industry federations also warned about this issue and the possible consequences in a joint press release last summer. Both Avrox and the government maintained that there were no problems.
"All those questions were asked at the end of June," MP Michael Freilich said. "Why were they not taken seriously by De Block and then Minister of Defense Philippe Goffin? And why is action only now being taken? This is culpable negligence."
The purchase of the masks themselves, which involved a €40 million agreement, is also being investigated for potential fraud because two of the people involved are said to personally know each other very well.

## Cuba is one step closer to launching its own anti-COVID vaccines

Source: https://peoplesdispatch.org/2021/02/25/cuba-is-one-step-closer-to-launching-its-own-anti-covid-vaccines/

Feb 25 – Cuba is the only country in the Latin American and the Caribbean region that is working to develop its own vaccines against COVID-19. The country has four vaccine candidates. Two of them, **Soberana 02** of the Finlay Vaccine Institute (IFV) and **Abdala** of the Center for Genetic Engineering and Biotechnology (CIGB), will begin the third phase of clinical trials in March
Throughout 2020, Cuba played a significant role in fighting the COVID-19 pandemic globally. The small island nation sent over 50 contingents of doctors and healthcare professionals to about 40 countries around the world to assist them in their fight against the disease. Due to the country's extraordinary efforts to help humanity in one of the worst public health crises to date, thousands of organizations and individuals from across the globe have joined a campaign calling on the Nobel Committee to award the Nobel Peace Prize to Cuba's Henry Reeve Medical Brigade.

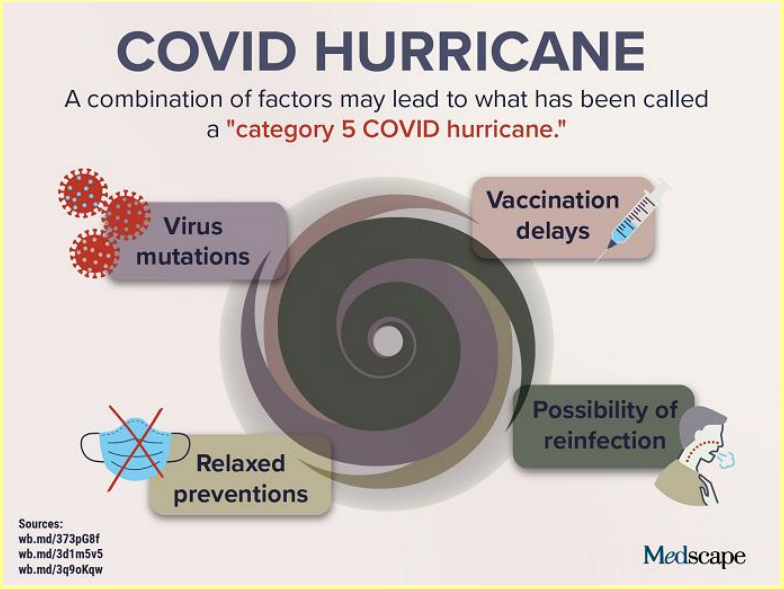

In 2021, the Caribbean country is prepared to add a new milestone in its inspiring history. While the rest of the Latin American and the Caribbean countries are focusing their efforts on importing vaccines, Cuba is the only country in the region focused on developing its own vaccines against COVID-19. Cuba is working in parallel on four possible vaccines: Soberana 01 and Soberana 02 of the Finlay Vaccine Institute (IFV), and Abdala and Mambisa of the Center for Genetic Engineering and Biotechnology (CIGB). Two of these, Soberana 02 and Abdala, showed positive results during the second phase of clinical trials and will advance to the third phase in March. If these vaccines yield desired results, Cuba will become the first country in the region to develop its own vaccines.
In August 2020, Cuba became the first country in the region and the 30th in the world to announce a vaccine candidate against COVID-19 with Soberana 01. The same month, following the pre-clinical studies on animals, Cuba's Center for State Control of Medications, Medical Equipment and Devices (CECMED) authorized the IFV to start human trials. In November 2020, the CECMED gave authorization to the IFV and the CICG to begin clinical trials of Soberana 02, Abdala and Mambisa.
Soberana 01, Soberana 02 and Abdala are injectable vaccines, administered by intramuscular route into the deltoid muscle, while Mambisa is a nasal spray vaccine, applied through the nose. The four vaccines work in a similar way. The difference between them is that each one has different formulations. The two Soberana vaccines use an antigen obtained from mammalian cells in various formulations, while Mambisa and Abdala use an antigen taken from yeast, also in various formulations.
Soberana 01 entered the second phase of trials this month and Mambisa is still in the first phase of trials. Meanwhile, Soberana 02 and Abdala are closer to being approved for a mass emergency use in March. Both the vaccines have shown a high immune response against coronavirus in the second phase. They have also shown few and mild adverse events such as mild pain around the site of injection.
Both Soberana 02 and Abdala are protein-based vaccines that contain part of the coronavirus. Unlike Pfizer and Moderna vaccines, they do not require deep freezing, and are

more economical and viable options for poorer countries that often lack the equipment to keep that many doses frozen. Countries, such as Iran, Venezuela, Vietnam, India and Pakistan, have already shown interest in acquiring Cuban vaccines.
Soberana 02 requires three doses to be administered at two-week intervals. Abdala, on the other hand, requires two doses at an interval of three weeks.
In the third phase, Soberana 02, which seems to be leading the race, will be tested on some 150,000 people in Cuba and Iran. Cuba and Mexico are also communicating about the possibility of carrying out phase III trials in Mexico as well. The details regarding Abdala's phase 3 trials have not been made public yet.
The socialist government of President Miguel Díaz-Canel is optimistic about the results. In case of success, Cuba hopes to produce 100 million doses of Sovereign 02 this year, with which it aims to vaccinate its entire population of over 11 million people and start exporting to other countries by the end of the year. Administration of anti-COVID vaccines will be free and voluntary in the country.
In a press conference, in the beginning of February, the president of the state-owned pharmaceutical company BioCubaFarma, Eduardo Martínez, also said that the country's vaccines showed very positive results and assured that the country might obtain "more than one vaccine."
At the same time, the director of the IFV, Vicente Vérez Bencomo, said that after receiving validation from the WHO, the country will produce its first batch of one million vaccines in April.
The four vaccine candidates are a proof of the power of Cuban biogenetic engineering and biotechnological advancements. Cuba began investing in biotechnology and medical science in the 1980s, as part of Commander Fidel Castro's vision to make the nation self-sufficient in the face of the US embargo that made it difficult to obtain medicines produced abroad.
As it is part of Cuba's long history of medical innovation rooted in humanism, internationalism and solidarity, the country has already announced to donate vaccines to poor countries. Additionally, the IFV's director, Vérez Bencomo, has announced that all foreigners who arrive in the country and want to be vaccinated with Cuban candidates will be able to do so.
The names of the vaccines are a tribute to the revolutionary history of the country. Soberana means sovereign in English, a nod to the country's autonomy and self-sufficiency in the face of the US' six-decade-long commercial blockade. Abdala is named after a dramatic poem written by Cuba's national hero José Martí in 1869. Mambisa refers to a woman guerrilla fighter who fought in the Cuban war of independence against Spain in the second half of the 19th century.

## COVID Hurricane

Source: https://reference.medscape.com/viewarticle/945867

Feb 19 – Michael Osterholm, director of the Center for Infectious Disease Research and Policy at the University of Minnesota, recently went on NBC's *Meet the Press* and told host Chuck Todd that he believes that the COVID-19 pandemic is about to worsen in unprecedented fashion. Pointing to the rise in cases associated with variant strains of coronavirus, he predicted that a "hurricane is coming." Describing it as "category 5 or higher," Osterholm used the analogy to urge a dramatic increase in vaccination efforts. The so-called "COVID hurricane" may be fueled by various factors (see Infographic below) and is this week's top trending clinical topic.




Atop the list of causes for an oncoming storm is a rise in coronavirus mutations. The B.1.1.7 variant, first identified in the United Kingdom, is becoming the dominant strain in many European countries and is doubling every 10 days in the United States. Its transmission rate is 30%-40% higher than that of more common lineages, and it may increase the risk for death by about 30%.

The B.1.351 variant that emerged out of South Africa has also been reported in various countries, including England, without known links to travel. Brazil has identified two variants,

P.1 and P.2. The P.1 variant has been detected in the United States, Germany, the Faroe Islands, and elsewhere.
The response of various vaccines to these new forms of the coronavirus is a concern. For example, the Johnson & Johnson vaccine demonstrated only 57% overall efficacy in South Africa against moderate to severe SARS-CoV-2 infection. Novavax reported an efficacy rate of 49.4% from a clinical trial conducted in South Africa, compared with 89.3% seen in a UK study. Whether the vaccines will struggle as new mutations emerge, such as the one recently identified in Bristol, is part of the potential "hurricane" on the horizon. Beating back the "category 5" storm will require more rapid vaccine administration and better genomic surveillance, according to experts. It will also take transmission mitigation strategies that have been recommended since the pandemic began. The use of better masks worn appropriately, adherence to physical distancing, and limiting indoor time among persons who don't live together remain the keys to prevention. As the pandemic enters its second year, some fear that fatigue is leading to relaxed responses.
A big unknown is how much reinfections may be a factor. Although fewer than 50 cases of reinfection have been substantiated worldwide, according to a global reinfection tracker, many agencies are not rigorously investigating suspected cases of reinfection. These cases need to be differentiated from so-called long-haul COVID or long COVID, which are infections that linger for months. The fear is that coronavirus mutations may lead to increased reinfections, which has not been well documented to this point. Still, experts say that it is important to get ahead of such a circumstance.
"COVID hurricane" is a term used to encompass the constellation of various elements that may lead to a worrisome turn in the pandemic. It became this week's top trending clinical topic as concerns about what may be on the horizon continue to rise.

## COVID-19 Vaccination in Cancer Patients Clinical Practice Guidelines (NCCN, 2021)

*National Comprehensive Cancer Network (NCCN)*
Source: https://reference.medscape.com/viewarticle/946473

Feb 26 - Preliminary recommendations for COVID-19 vaccination in patients with cancer were published in January 2021 by the National Comprehensive Cancer Network (NCCN) on the NCCN Web site. [1]
Note: COVID-19 vaccines should be prioritized over other needed vaccines. It is recommended that there be an interval of 14 days between administration of COVID-19 vaccines and administration of other approved vaccines.

### Patients Receiving Hematopoietic Cell Transplantation or Cellular Therapy

It is recommended that COVID-19 vaccination take place ≥3 months after hematopoietic cell transplantation (allogeneic or autologous) or cellular therapy (eg, chimeric antigen receptor [CAR] T cell therapy).

### Patients with Hematologic Malignancies

For patients receiving intensive cytotoxic chemotherapy, COVID-19 vaccination should be delayed until the absolute neutrophil count has recovered.
For patients with marrow failure from disease or therapy who are expected to have limited or no recovery, as well as for patients on long-term maintenance therapy, COVID-19 vaccination should be performed when the vaccine becomes available.

### Patients with Solid-Tumor Malignancies

For patients receiving cytotoxic chemotherapy, targeted therapy, checkpoint inhibitor therapy or other immunotherapy, or radiation therapy, COVID-19 vaccination should be performed when the vaccine becomes available.
For patients undergoing major surgical procedures, COVID-19 vaccination should be postponed until at least a few days after surgery.

### Patients' Caregivers and Contacts

Caregivers, household members, and close contacts aged 16 years or older should be vaccinated whenever they are eligible to receive the vaccine.

## COVID-19 Vaccination Linked to Less Mechanical Ventilation

Source: https://www.medscape.com/viewarticle/946568

Feb 26 – Immunization of people 70 and older with the Pfizer/BioNTech COVID-19 vaccine in Israel was associated with a precipitous drop in need for mechanical ventilation, new evidence reveals.

**Compared with residents younger than 50 — so far vaccinated at lower rates than the higher-risk older people — Israelis 70 and older were 67% less likely to require mechanical ventilation for SARS-CoV-2 infection in February 2021 compared with October-December 2020.**

"This study provides preliminary evidence at the population level for the reduction in risk for severe COVID-19, as manifested by need for mechanical ventilation, after vaccination with the Pfizer-BioNTech COVID-19 vaccine," lead author Ehud Rinott, Department of Public Health, Faculty of Health Sciences, Ben-Gurion University of the Negev in Beer-Sheva, Israel, and colleagues write.

The progress of COVID-19 vaccination across Israel presents researchers with a unique opportunity to study effectiveness on a population level. In this study, 84% of residents 70 and older received two-dose vaccinations. In contrast, only 10% of people in Israel younger than 50 received the same vaccine coverage.

Along with senior author Yair Lewis, MD, PhD, and coauthor Ilan Youngster, MD, Rinott compared mechanical ventilation rates between October 2, 2020, and February 9, 2021. They found that the ratio of people 70 and older compared with those younger than 50 requiring mechanical ventilation changed from 5.8:1 to 1.9:1 between these periods. This translates to the 67% decrease.

The study offers a "real-world" look at vaccination effectiveness, adding to more controlled evidence from clinical trials. "Achieving high vaccination coverage through intensive vaccination campaigns has the potential to substantially reduce COVID-19-associated morbidity and mortality," the researchers write.

Israel started a national vaccination program on December 20, 2020, targeting high-risk residents including people 60 and older, healthcare workers, and those with relevant comorbidities. At the same time, in addition to immunization, Israel has used strategies like stay-at-home orders, school closures, mask mandates, and more.

Potential limitations include a limited ability to account for the effect of the stay-at-home orders, spread of virus variants, and other concomitant factors; a potential for a delayed reporting of cases; and variability in mitigation measures by age group.

►► ***MMWR.*** **Published online February 26, 2021.** Full text

## Sputnik V: Why hasn't the EU approved Russia's COVID vaccine yet?

Source: https://www.euronews.com/2021/02/20/sputnik-v-why-hasn-t-the-eu-approved-russia-s-covid-vaccine-yet

Feb 20 – The Russian coronavirus vaccine Sputnik V is still waiting for the green light from the European Medicines Agency (EMA) before it can be deployed in all 27 EU member states.

So far, the vaccine has only been rolled out in Hungary after prime minister Viktor Orbán, criticising the EU for potentially endangering lives, gave it a six-month emergency use authorisation.

It has also been deployed in non-EU European countries, including Serbia and Bosnia-Herzegovina. In all, Russian authorities say that the vaccine has been adopted by 31 countries.

While a study by the scientific journal The Lancet has shown that Sputnik V is **91.6 per cent** effective against symptomatic cases of COVID-19, Moscow and Brussels continue to clash over the alleged slowness of the Amsterdam-based European regulator.

### So, why is it taking so long to approve its use?

**EU 'committed to ensuring data submitted in full'**

According to the EMA, Sputnik V is subject to the same decision-making process as all other COVID-19 vaccines - but the issue being that the full data sets have been yet to be seen to move the lengthy process along.

The first step is a "continuous review" of data and clinical trials. A formal application for a one-year conditional marketing authorisation must follow afterward.

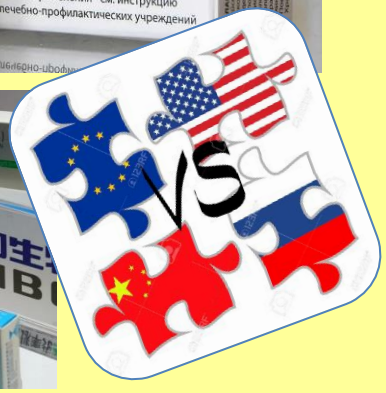
"They have to submit all the data, go through the whole review process, just like any other vaccine," European Commission President Ursula von der Leyen said of the Sputnik V vaccine on February 17.

The time elapsed between the continuous review and authorisation has so far been between two and four months.

At present, three vaccines are authorised in the EU: those of Pfizer-BioNTech, Moderna and AstraZeneca. A fourth, from Johnson & Johnson, is subject to an application for authorisation. Two others, those of Novavax and CureVac, have started their continuous review process.

The EMA insists that Sputnik V has not even started the continuous review phase yet and has indicated that it so far hasn't received any applications for continuing review or marketing authorisation for the vaccine, "despite reports to the contrary", it said in a "clarification" on February 10.

The regulator confirmed by email to AFP that the situation had not changed on February 18.
It also said that the EMA experts themselves "must first give their agreement before developers can submit their request for access to the ongoing review process".
The EMA said, however, that a request for a "scientific opinion" had been filed for Sputnik V in order to prepare a possible marketing authorisation application.
The developers and supporters of Sputnik V insist that a request for continued review has already been submitted.


**Disputed claims and distrust**
The Russian sovereign wealth fund, which was involved in the development of the vaccine, said that the Russian authorities "filed an application for registration" on January 19.
The fund also rejected "misdirected" reports that the vaccine's developers had sent documentation to the wrong agency, something it disputed by publishing a letter from the EMA on its Twitter account.
The fund insisted that it was "working with the EMA to launch an ongoing review" and said that the agency had a few days ago "appointed rapporteurs for the Sputnik V file".
As this is the first vaccine developed by a non-Western country to be deployed in the EU, senior officials said Sputnik's production sites outside the EU should also be inspected.
"They don't produce in Europe, so of course there should be an inspection process at the production sites," said von der Leyen.
**Meanwhile, Brussels has been wary of Russian and Chinese vaccines, fearing that Moscow and Beijing might try to use them as a tool to extend their influence in the EU.**
**Von der Leyen herself questioned why Moscow is so keen to roll out the vaccine in the EU.**
"Overall, I have to say that we are still wondering why Russia, in theory, is offering millions and millions of doses, but not making enough progress in vaccinating its own population," she said.
The Russians have been quick to counter this, instead blasting what they called **"political vaccine nationalists in the West"** for not approving vaccines from Russia or China.
In a thread on Twitter, the vaccine's developers posted: "The world needs Russian, Chinese, Western vaccines. COVAX, run by UK and US, should be more inclusive and include Russian and Chinese vaccines. Political biases and narrow minds make us weaker. Together we are stronger!"

**EDITOR'S COMMENT:** When the pandemic will be, sooner or later, under control it would be of value to shift research towards a vaccine against stupidity – a viral disease more serious than all other combined

## Johnson & Johnson Covid vaccine: FDA approves single-shot jab

Source: https://www.bbc.com/news/world-us-canada-56226979

Feb 28 – **US regulators have formally approved the single-shot Johnson & Johnson coronavirus vaccine, the third jab to be authorised in the country.**
The vaccine is set to be a cost-effective alternative to the Pfizer and Moderna vaccines, and can be stored in a refrigerator instead of a freezer.
Trials found it prevented serious illness but was 66% effective overall when moderate cases were included. The vaccine is made by the Belgian firm Janssen.
The company has agreed to provide the US with 100 million doses by the end of June. The first doses could be available to the US public as early as next week.
The UK, EU and Canada have also ordered doses, and 500 million doses have also been ordered through the Covax scheme to supply poorer nations.


President Joe Biden hailed it as "exciting news for all Americans, and an encouraging development", but warned that the "fight is far from over".
"Though we celebrate today's news, I urge all Americans - keep washing your hands, stay socially distanced, and keep wearing masks," he said in a statement.
"As I have said many times, things are still likely to get worse again as new variants spread, and the current improvement could reverse."
The authorisation by the US Food and Drug Administration (FDA) came after an external committee of experts unanimously backed the vaccine on Friday.

**Results from trials conducted in the US, South Africa and Brazil showed it was more than 85% effective at preventing serious illness, and 66% effective overall when moderate cases were included.**

Notably, there were no deaths among participants who had received the vaccine and no hospital admissions after 28 days post-vaccine.
Overall protection was lower in South Africa and Brazil, where virus variants have become dominant, but defence against severe or critical illness was "similarly high".
South Africa began administering the unapproved Johnson & Johnson jab to healthcare workers as part of a study earlier this month. It came after early trials suggested the Oxford-AstraZeneca vaccine offered "minimal protection" against mild disease from the variant dominant in large parts of the country.
So far the only other country to approve the vaccine for emergency use is Bahrain, which gave it the green light on Thursday.
Because the vaccine will require fewer doses than its two-shot Pfizer and Moderna counterparts, it will also require fewer vaccine appointments and medical staff.

**Who else has ordered the Johnson & Johnson jab?**

- UK - **30 million** doses
- EU - **200 million** doses
- Canada - **38 million** doses
- Covax nations - **500 million** doses

## Covid-19 booster shot: what's in it and how soon will you need it?

Source: https://www.thenationalnews.com/uae/science/covid-19-booster-shot-what-s-in-it-and-how-soon-will-you-need-it-1.1174339

Feb 28 – The race is well under way to vaccinate the global population against coronavirus, delivering in most cases two doses to billions of people around the world.
But already drug makers and governments are considering the likelihood that third doses or "booster shots" will be needed.
Here we look at why that is, what they could consist of and whether there are any potential health risks.

**Do I need a Covid-19 booster shot?**

Although there is limited data available so far, the protection from having two doses is likely to wane over time, so a booster might be needed to ensure the immune response persists.
Many vaccines against long-established diseases, such as hepatitis A, require booster shots if protection is to be sustained.
As reported in *The National* on Friday, Dr Nawal Al Kaabi, chairwoman of the National Covid-19 Clinical Management Committee, suggested that immunity from Covid-19 conferred by China's Sinopharm vaccine is likely to last for four to six months, so there was "a possibility" a booster would be needed.
A third vaccine dose – even if it is of the same vaccine given previously – is also being considered as a strategy to cope with emerging variants, which some of the existing vaccines are not as effective against.
A commuter wears a faces shield and mask across the street from a train station amid the COVID-19 pandemic, in Santa Monica, California. AP Photo
Another approach is to give a booster shot of an amended vaccine aimed specifically at these new variants.
Clinical trials are under way to find the best approach to using boosters.

**Who is testing a third shot and why?**

**Pfizer and BioNTech** said on February 25 that they were testing a third dose of their jointly developed vaccine in the hope that, by strengthening the immune response against the virus, recipients would be better protected against new variants.

People who had two doses during previous early US clinical trials are being offered a third shot of the companies' messenger RNA (mRNA) vaccine six to 12 months after receiving the initial doses. **This third dose is the same as the first two.**

Researchers will later analyse whether extracts from participants' blood, which should contain increased quantities of antibodies against the virus, can "neutralise Sars-CoV-2 strains of interest".

**Moderna** also revealed last week that it was testing the effects of a third dose of its existing mRNA Covid-19 vaccine against "variants of concern". **This booster shot is half the strength of the first two doses.**

**Are any booster shots different to the original Covid-19 vaccine?**

Several Covid-19 vaccine developers are reformulating existing shots to cope with new variants. Amended vaccines might be administered as boosters to previously immunised people.

"Efforts are under way to develop a new generation of vaccines that will allow protection to be redirected to emerging variants as booster jabs, if it turns out that it is necessary to do so," said Prof Sarah Gilbert, the University of Oxford scientist who leads researchers working on the Oxford-AstraZeneca vaccine.

Similarly, Moderna is trying out a booster designed to cope with the South African variant, to be used at half or less the strength of the original two doses.

The company is also testing a shot containing its original vaccine and the amended version together, again as a booster at half or less the original strength.

In addition, the amended vaccine and the vaccine mix are each being trialled as standalone vaccines.

Pfizer and BioNTech developed "a potential new variant-specific vaccine" that is likely to be used as a booster.

The companies are talking to drug regulators about trials that would fast-track approval for the shot in a similar way to the system for new influenza vaccines.

Recently announced trials involve testing boosters after initial immunisation with a vaccine from the same company.

However, other trials are happening in which a single dose of the Oxford-AstraZeneca vaccine is being tested with a single dose of either Russia's Sputnik V or the Pfizer-BioNTech vaccine, raising the likelihood that three-dose regimes involving vaccines from different developers might be tested in future.

**Are there health risks in having several doses?**

Safety is one factor being analysed in the Pfizer-BioNTech and Moderna trials of booster shots.

It is thought unlikely that having three doses of a coronavirus vaccine would create health problems.

"I don't think you can see any harm," said Prof John Oxford, emeritus professor of virology at the University of London.

"You might worry that you would get too much of an [immune system] response, but I don't see any reason why that should be possible."

He said some childhood immunisations were given routinely in several doses without causing safety issues.

For example, children in the UK receive five doses against tetanus, diphtheria and polio, administered when they are aged eight weeks, 12 weeks, 16 weeks, three years four months, and 14 years. Several other childhood vaccines are also given in several shots, some at the same time as the tetanus, diphtheria and polio vaccines.

**EDITOR'S COMMENT:** I do understand a third dose similar to the initial two doses of the vaccine. I do not understand a third dose that is half the strength of the first two administed. It would be great if Moderna could enlighten us!

## Yuval Noah Harari: Lessons from a year of Covid

Source: https://www.ft.com/content/f1b30f2c-84aa-4595-84f2-7816796d6841

In a year of scientific breakthroughs — and political failures — what can we learn for the future?

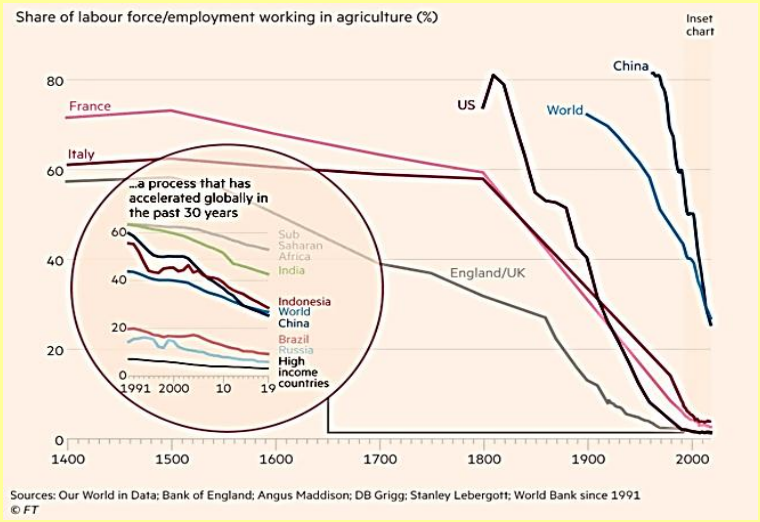
How can we summarise the Covid year from a broad historical perspective? Many people believe that the terrible toll coronavirus has taken demonstrates humanity's helplessness in the face of nature's might. In fact, 2020 has shown that humanity is far from helpless.

Epidemics are no longer uncontrollable forces of nature. Science has turned them into a manageable challenge. Why, then, has there been so much death and suffering? Because of bad political decisions. In previous eras, when humans faced a plague such as the Black Death, they had no idea what caused it or how it could be stopped. When the 1918 influenza struck, the best scientists in the world couldn't identify the deadly virus, many of the countermeasures adopted were useless, and attempts to develop an effective vaccine proved futile. It was very different with Covid-19. The first alarm bells about a potential new epidemic began sounding at the end of December 2019. By January 10 2020, scientists had not only isolated the responsible virus, but also sequenced its genome and published the information online. Within a few more months it became clear which measures could slow and stop the chains of infection. Within less than a year several effective vaccines were in mass production. In the war between humans and pathogens, never have humans been so powerful.

**Moving life online**

Alongside the unprecedented achievements of biotechnology, the Covid year has also underlined the power of information technology. In previous eras humanity could seldom stop epidemics because humans couldn't monitor the chains of infection in real time, and because the economic cost of extended lockdowns was prohibitive. In 1918 you could quarantine people who came down with the dreaded flu, but you couldn't trace the movements of pre-symptomatic or asymptomatic carriers. And if you ordered the entire population of a country to stay at home for several weeks, it would have resulted in economic ruin, social breakdown and mass starvation. In contrast, in 2020 digital surveillance made it far easier to monitor and pinpoint the disease vectors, meaning that quarantine could be both more selective and more effective. Even more importantly, automation and the internet made extended lockdowns viable, at least in developed countries. While in some parts of the developing world the human experience was still reminiscent of past plagues, in much of the developed world the digital revolution changed everything.

Consider agriculture. For thousands of years food production relied on human labour, and about 90 per cent of people worked in farming. Today in developed countries this is no longer the case. In the US, only about 1.5 per cent of people work on farms, but that's enough not just to feed everyone at home but also to make the US a leading food exporter. Almost all the farm work is done by machines, which are immune to disease. Lockdowns therefore have only a small impact on farming.




Multi-line chart with smaller detail chart showing employment in agriculture from 1400s for various coutnries. Inset chart is detailed from 1991

Imagine a wheat field at the height of the Black Death. If you tell the farmhands to stay home at harvest time, you get starvation. If you tell the farmhands to come and harvest, they might infect one another. What to do? Now imagine the same wheat field in 2020. A single GPS-guided combine can harvest the entire field with far greater efficiency — and with zero chance of infection. While in 1349 an average farmhand reaped about 5 bushels per day, in 2014 a combine set a record by harvesting 30,000 bushels in a day. Consequently Covid-19 had no significant impact on global production of staple crops such as wheat, maize and rice.

To feed people it is not enough to harvest grain. You also need to transport it, sometimes over thousands of kilometres. For most of history, trade was one of the main villains in the story of pandemics. Deadly pathogens moved around the world on merchant ships and long-distance caravans. For example, the Black Death hitchhiked from east Asia to the Middle East along the Silk Road, and it was Genoese merchant ships that then carried it to Europe. Trade posed such a deadly threat because every wagon needed a wagoner, dozens of sailors were required to operate even small seagoing vessels, and crowded ships and inns were hotbeds of disease.

In 2020, global trade could go on functioning more or less smoothly because it involved very few humans. A largely automated present-day container ship can carry more tons than the merchant fleet of an entire early modern kingdom. In 1582, the English merchant fleet had a total carrying capacity of 68,000 tons and required about 16,000 sailors. The container ship OOCL Hong Kong, christened in 2017, can carry some 200,000 tons while requiring a crew of only 22. True, cruise ships with hundreds of tourists and aeroplanes full of passengers played a major role in the spread of

Covid-19. But tourism and travel are not essential for trade. The tourists can stay at home and the business people can Zoom, while automated ghost ships and almost human-less trains keep the global economy moving. Whereas international tourism plummeted in 2020, the volume of global maritime trade declined by only 4 per cent.

Automation and digitalisation have had an even more profound impact on services. In 1918, it was unthinkable that offices, schools, courts or churches could continue functioning in lockdown. If students and teachers hunker down in their homes, how can you hold classes? Today we know the answer. The switch online has many drawbacks, not least the immense mental toll. It has also created previously unimaginable problems, such as lawyers appearing in court as cats. But the fact that it could be done at all is astounding. In 1918, humanity inhabited only the physical world, and when the deadly flu virus swept through this world, humanity had no place to run. Today many of us inhabit two worlds — the physical and the virtual. When the coronavirus circulated through the physical world, many people shifted much of their lives to the virtual world, where the virus couldn't follow.

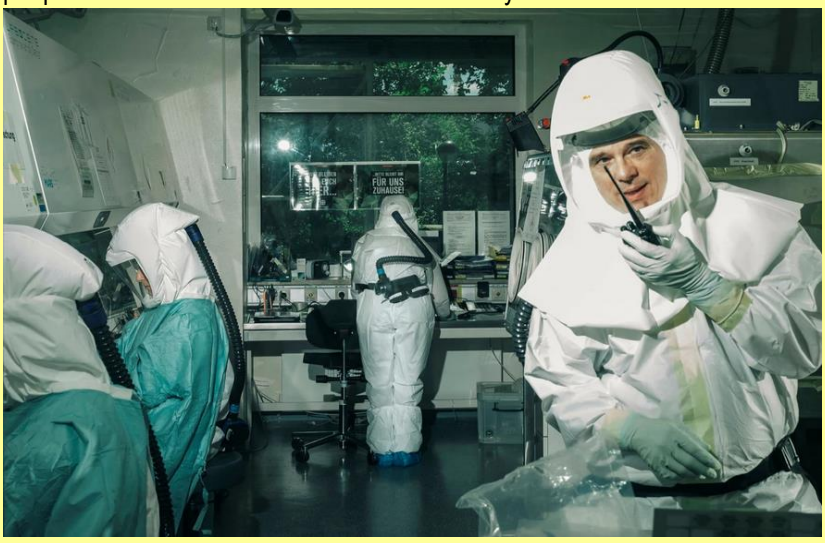
Of course, humans are still physical beings, and not everything can be digitalised. The Covid year has highlighted the crucial role that many low-paid professions play in maintaining human civilisation: nurses, sanitation workers, truck drivers, cashiers, delivery people. It is often said that every civilisation is just three meals away from barbarism. In 2020, the delivery people were the thin red line holding civilisation together. They became our all-important lifelines to the physical world.

**The internet holds on**

As humanity automates, digitalises and shifts activities online, it exposes us to new dangers. One of the most remarkable things about the Covid year is that the internet didn't break. If we suddenly increase the amount of traffic passing on a physical bridge, we can expect traffic jams, and perhaps even the collapse of the bridge. In 2020, schools, offices and churches shifted online almost overnight, but the internet held up. We hardly stop to think about this, but we should. After 2020 we know that life can go on even when an entire country is in physical lockdown. Now try to imagine what happens if our digital infrastructure crashes. Information technology has made us more resilient in the face of organic viruses, but it has also made us far more vulnerable to malware and cyber warfare. People often ask: "What's the next Covid?" An attack on our digital infrastructure is a leading candidate. It took several months for coronavirus to spread through the world and infect millions of people. Our digital infrastructure might collapse in a single day. And whereas schools and offices could speedily shift online, how much time do you think it will take you to shift back from email to snail-mail?

**What counts?**

The Covid year has exposed an even more important limitation of our scientific and technological power. Science cannot replace politics. When we come to decide on policy, we have to take into account many interests and values, and since there is no scientific way to determine which interests and values are more important, there is no scientific way to decide what we should do. For example, when deciding whether to impose a lockdown, it is not sufficient to ask: "How many people will fall sick with Covid-19 if we don't impose the lockdown?". We should also ask: "How many people will experience depression if we do impose a lockdown? How many people will suffer from bad nutrition? How many will miss school or lose their job? How many will be battered or murdered by their spouses?" Even if all our data is accurate and reliable, we should always ask: "What do we count? Who decides what to count? How do we evaluate the numbers against each other?" This is a political rather than scientific task. It is politicians who should balance the medical, economic and social considerations and come up with a comprehensive policy.



Researchers at Munich's Bundeswehr Institute of Microbiology, a military research facility that diagnosed the first German Covid-19 case © Rafael Heygster/Helena Manhartsberger

Similarly, engineers are creating new digital platforms that help us function in lockdown, and new surveillance tools that help

us break the chains of infection. But digitalisation and surveillance jeopardise our privacy and open the way for the emergence of unprecedented totalitarian regimes. In 2020, mass surveillance has become both more legitimate and more common. Fighting the epidemic is important, but is it worth destroying our freedom in the process? It is the job of politicians rather than engineers to find the right balance between useful surveillance and dystopian nightmares.

Three basic rules can go a long way in protecting us from digital dictatorships, even in a time of plague. First, whenever you collect data on people — especially on what is happening inside their own bodies — this data should be used to help these people rather than to manipulate, control or harm them. My personal physician knows many extremely private things about me. I am OK with it, because I trust my physician to use this data for my benefit. My physician shouldn't sell this data to any corporation or political party. It should be the same with any kind of "pandemic surveillance authority" we might establish.

Second, surveillance must always go both ways. If surveillance goes only from top to bottom, this is the high road to dictatorship. So, whenever you increase surveillance of individuals, you should simultaneously increase surveillance of the government and big corporations too. For example, in the present crisis governments are distributing enormous amounts of money. The process of allocating funds should be made more transparent. As a citizen, I want to easily see who gets what, and who decided where the money goes. I want to make sure that the money goes to businesses that really need it rather than to a big corporation whose owners are friends with a minister. If the government says it is too complicated to establish such a monitoring system in the midst of a pandemic, don't believe it. If it is not too complicated to start monitoring what you do — it is not too complicated to start monitoring what the government does.

Third, never allow too much data to be concentrated in any one place. Not during the epidemic, and not when it is over. A data monopoly is a recipe for dictatorship. So, if we collect biometric data on people to stop the pandemic, this should be done by an independent health authority rather than by the police. And the resulting data should be kept separate from other data silos of government ministries and big corporations. Sure, it will create redundancies and inefficiencies. But inefficiency is a feature, not a bug. You want to prevent the rise of digital dictatorship? Keep things at least a bit inefficient.

**Over to the politicians**

The unprecedented scientific and technological successes of 2020 didn't solve the Covid-19 crisis. They turned the epidemic from a natural calamity into a political dilemma. When the Black Death killed millions, nobody expected much from the kings and emperors. About a third of all English people died during the first wave of the Black Death, but this did not cause King Edward III of England to lose his throne. It was clearly beyond the power of rulers to stop the epidemic, so nobody blamed them for failure. But today humankind has the scientific tools to stop Covid-19. Several countries, from Vietnam to Australia, proved that even without a vaccine, the available tools can halt the epidemic. These tools, however, have a high economic and social price. We can beat the virus — but we aren't sure we are willing to pay the cost of victory. That's why the scientific achievements have placed an enormous responsibility on the shoulders of politicians.

Unfortunately, too many politicians have failed to live up to this responsibility. For example, the populist presidents of the US and Brazil played down the danger, refused to heed experts and peddled conspiracy theories instead. They didn't come up with a sound federal plan of action and sabotaged attempts by state and municipal authorities to halt the epidemic. The negligence and irresponsibility of the Trump and Bolsonaro administrations have resulted in hundreds of thousands of preventable deaths. In the UK, the government seems initially to have been more preoccupied with Brexit than with Covid-19. For all its isolationist policies, the Johnson administration failed to isolate Britain from the one thing that really mattered: the virus. My home country of Israel has also suffered from political mismanagement. As is the case with Taiwan, New Zealand and Cyprus, Israel is in effect an "island country", with closed borders and only one main entry gate — Ben Gurion Airport. However, at the height of the pandemic the Netanyahu government has allowed travellers to pass through the airport without quarantine or even proper screening and has neglected to enforce its own lockdown policies.

Both Israel and the UK have subsequently been in the forefront of rolling out the vaccines, but their early misjudgments cost them dearly. In Britain, the pandemic has claimed the lives of 120,000 people, placing it sixth in the world in average mortality rates. Meanwhile, Israel has the seventh highest average confirmed case rate, and to counter the disaster it resorted to a "vaccines for data" deal with the American corporation Pfizer. Pfizer agreed to provide Israel with enough vaccines for the entire population, in exchange for huge amounts of valuable data, raising concerns about privacy and data monopoly, and demonstrating that citizens' data is now one of the most valuable state assets. While some countries performed much better, humanity as a whole has so far failed to contain the pandemic, or to devise a global plan to defeat the virus. The early months of 2020 were like watching an accident in slow motion. Modern communication made it possible for people all over the world to see in real time the images first from Wuhan, then from Italy, then from more and more countries — but

no global leadership emerged to stop the catastrophe from engulfing the world. The tools have been there, but all too often the political wisdom has been missing.

**Foreigners to the rescue**

One reason for the gap between scientific success and political failure is that scientists co-operated globally, whereas politicians tended to feud. Working under much stress and uncertainty, scientists throughout the world freely shared information and relied on the findings and insights of one another. Many important research projects were conducted by international teams. For example, one key study that demonstrated the efficacy of lockdown measures was conducted jointly by researchers from nine institutions — one in the UK, three in China, and five in the US. In contrast, politicians have failed to form an international alliance against the virus and to agree on a global plan. The world's two leading superpowers, the US and China, have accused each other of withholding vital information, of disseminating disinformation and conspiracy theories, and even of deliberately spreading the virus. Numerous other countries have apparently falsified or withheld data about the progress of the pandemic.

The lack of global co-operation manifests itself not just in these information wars, but even more so in conflicts over scarce medical equipment. While there have been many instances of collaboration and generosity, no serious attempt was made to pool all the available resources, streamline global production and ensure equitable distribution of supplies. In particular, "vaccine nationalism" creates a new kind of global inequality between countries that are able to vaccinate their population and countries that aren't. It is sad to see that many fail to understand a simple fact about this pandemic: as long as the virus continues to spread anywhere, no country can feel truly safe. Suppose Israel or the UK succeeds in eradicating the virus within its own borders, but the virus continues to spread among hundreds of millions of people in India, Brazil or South Africa. A new mutation in some remote Brazilian town might make the vaccine ineffective, and result in a new wave of infection. In the present emergency, appeals to mere altruism will probably not override national interests. However, in the present emergency, global co-operation isn't altruism. It is essential for ensuring the national interest.

**Anti-virus for the world**

Arguments about what happened in 2020 will reverberate for many years. But people of all political camps should agree on at least three main lessons. First, we need to safeguard our digital infrastructure. It has been our salvation during this pandemic, but it could soon be the source of an even worse disaster. Second, each country should invest more in its public health system. This seems self-evident, but politicians and voters sometimes succeed in ignoring the most obvious lesson. Third, we should establish a powerful global system to monitor and prevent pandemics. In the age-old war between humans and pathogens, the frontline passes through the body of each and every human being. If this line is breached anywhere on the planet, it puts all of us in danger. Even the richest people in the most developed countries have a personal interest to protect the poorest people in the least developed countries. If a new virus jumps from a bat to a human in a poor village in some remote jungle, within a few days that virus can take a walk down Wall Street.

Bioscientia's laboratories, where coronavirus tests are diagnosed, evaluated and archived © Rafael Heygster

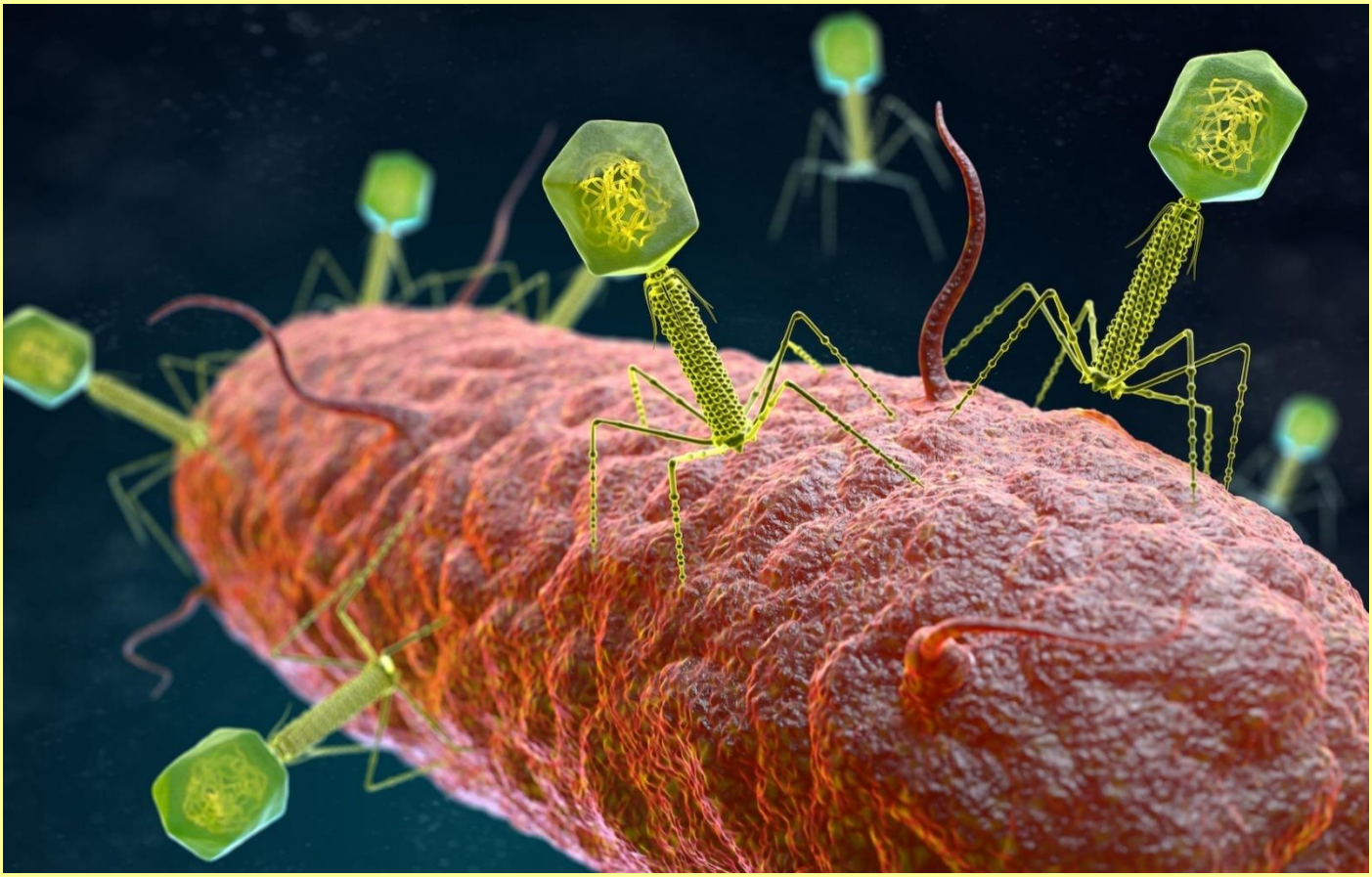
The skeleton of such a global anti-plague system already exists in the shape of the World Health Organization and several other institutions. But the budgets supporting this system are meagre, and it has almost no political teeth. We need to give this system some political clout and a lot more money, so that it won't be entirely dependent on the whims of self-serving politicians. As noted earlier, I don't believe that unelected experts should be tasked with making crucial policy decisions. That should remain the preserve of

politicians. But some kind of independent global health authority would be the ideal platform for compiling medical data, monitoring potential hazards, raising alarms and directing research and development. Many people fear that Covid-19 marks the beginning of a wave of new pandemics. But if the above lessons are implemented, the shock of Covid-19 might actually result in pandemics becoming less common. Humankind cannot prevent the appearance of new pathogens. This is a natural evolutionary process that has been going on for billions of years, and will continue in the future too. But today humankind does have the knowledge and tools necessary to prevent a new pathogen from spreading and becoming a pandemic.
If Covid-19 nevertheless continues to spread in 2021 and kill millions, or if an even more deadly pandemic hits humankind in 2030, this will be neither an uncontrollable natural calamity nor a punishment from God. It will be a human failure and — more precisely — a political failure.

***Yuval Noah Harari*** *is author of 'Sapiens', 'Homo Deus', '21 Lessons for the 21st Century' and 'Sapiens: A Graphic History'.*

## Scientists Find 140,000 Virus Species in The Human Gut, And Most Are Unknown

Source: https://www.sciencealert.com/scientists-identify-140-000-virus-species-in-the-human-gut-and-most-are-unknown



Feb 28 – The coronavirus pandemic has had the world fixated on viruses like no time in living memory, but new evidence reveals humans never even notice the vast extent of viral existence – even when it's inside us.
A new database project compiled by scientists has identified over 140,000 viral species that dwell in the human gut – a giant catalogue that's all the more stunning given over half of these viruses were previously unknown to science.
If tens of thousands of newly discovered viruses sounds like an alarming development, that's completely understandable. But we shouldn't misinterpret what these viruses within us actually represent, researchers say.

"It's important to remember that not all viruses are harmful, but represent an integral component of the gut ecosystem," explains biochemist Alexandre Almeida from the European Molecular Biology Laboratory's Bioinformatics Institute (EMBL-EBI) and the Wellcome Sanger Institute.

"These samples came mainly from healthy individuals who didn't share any specific diseases."

The new virus catalogue – called the Gut Phage Database (GPD) – was complied by analyzing over 28,000 individual metagenomes – publicly available records of DNA-sequencing of gut microbiome samples collected from 28 countries – along with almost 2,900 reference genomes of cultured gut bacteria.

The results revealed 142,809 viral species that reside in the human gut, constituting a specific kind of virus known as a bacteriophage, which infects bacteria, in addition to single-celled organisms called archaea.

In the mysterious environment of the gut microbiome – inhabited by a diverse mixture of microscopic organisms, encompassing both bacteria and viruses – bacteriophages are thought to play an important role, regulating both bacteria and the health of the human gut itself.

"Bacteriophages … profoundly influence microbial communities by functioning as vectors of horizontal gene transfer, encoding accessory functions of benefit to host bacterial species, and promoting dynamic co-evolutionary interactions," the researchers write in their new paper.

For a long time, our knowledge of this phenomenon was stalled by limitations in our understanding of bacteriophage species.

In recent years, new advancements in metagenomic analyses have significantly expanded our awareness of the viral variety we're looking at here – and perhaps none more so than the Gut Phage Database, which the researchers describe as a "massive expansion of human gut bacteriophage diversity".

"To our knowledge, this set represents the most comprehensive and complete collection of human gut phage genomes to date," the study authors write.

"Having a comprehensive database of high-quality phage genomes paves the way for a multitude of analyses of the human gut virome at a greatly improved resolution, enabling the association of specific viral clades with distinct microbiome phenotypes."

Already, the database is updating what we know about viral behavior.

The research shows over one-third (36 percent) of viral clusters identified are not restricted to infecting a single species of bacteria, which means they can create gene flow networks across phylogenetically distinct bacterial species.

In addition, the researchers found 280 globally distributed viral clusters, including one newly identified clade, called Gubaphage, which appears to be the second most prevalent virus clade in the human gut, following what is known as the crAssphage group.

Given certain similarities between the two, the researchers initially thought the Gubaphage might belong to a proposed family of crAssphage-like viruses, before determining the clades were, in fact, distinct.

There is still so much to learn, and not just on the Gubaphage – but about more multitudes of viruses than we ever dared to dream.

Thanks to research efforts like this, though, tomorrow's discoveries are closer, and new insights will come faster.

"Bacteriophage research is currently experiencing a renaissance," says microbiologist Trevor Lawley from the Wellcome Sanger Institute.

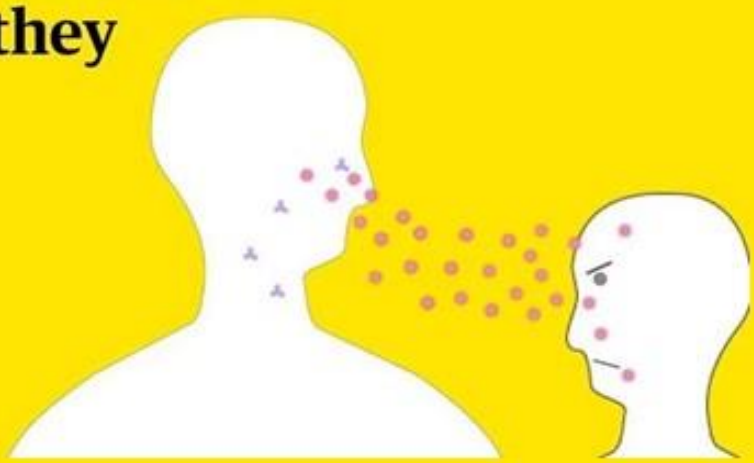
"This high-quality, large-scale catalogue of human gut viruses comes at the right time to serve as a blueprint to guide ecological and evolutionary analysis in future virome studies."

**▶▶ The findings are reported in *Cell*.**

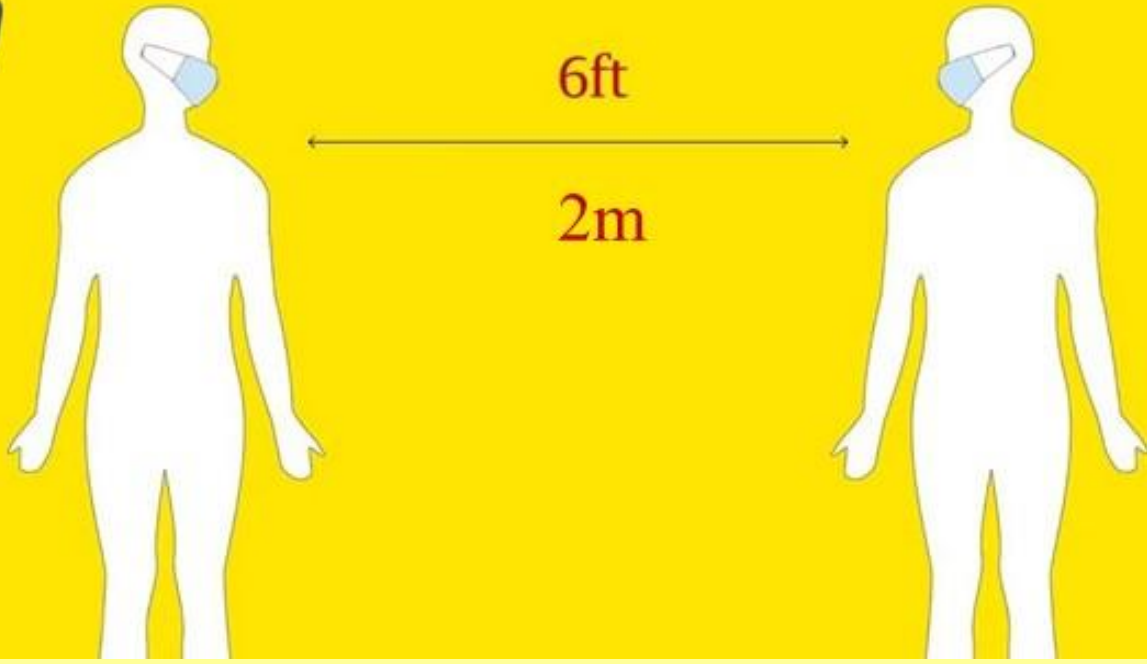
But vaccinated people **may still carry enough virus in their noses to infect others.**

So if a vaccinated person breathes or sneezes **they could still infect someone else**, even if they feel fine.

**A vaccinated person probably won't develop symptoms,** even if the virus multiplies in the nose.



**This means vaccinated people still have to wear masks and socially distance,** even if their individual risk is much lower.



# Estimating risk of mechanical ventilation and in-hospital mortality among adult COVID-19 patients admitted to Mass General Brigham: The VICE and DICE scores

**By Christopher J. Nicholson, Luke Wooster, Haakon H. Sigurslid, et al.**

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Source: https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00045-6/fulltext

## Abstract

### Background

Risk stratification of COVID-19 patients upon hospital admission is key for their successful treatment and efficient utilization of hospital resources. We sought to evaluate the risk factors on admission (including comorbidities, vital signs, and initial laboratory assessment) associated with ventilation need and in-hospital mortality in COVID-19.

### Methods

We established a retrospective cohort of COVID-19 patients from Mass General Brigham hospitals. Demographic, clinical, and admission laboratory data were obtained from electronic medical records of patients admitted to the hospital with laboratory-confirmed COVID-19 before May 19, 2020. Multivariable logistic regression analyses were used to construct and validate the Ventilation in COVID Estimator (VICE) and Death in COVID Estimator (DICE) risk scores.

### Findings

The entire cohort included 1042 patients (median age, 64 years; 56.8% male). The derivation and validation cohorts for the risk scores included 578 and 464 patients, respectively. We found four factors to be independently predictive for mechanical ventilation requirement (diabetes mellitus, $SpO_2$:$FiO_2$ ratio, C-reactive protein, and lactate dehydrogenase), and 10 factors to be predictors of in-hospital mortality (age, male sex, coronary artery disease, diabetes mellitus, chronic statin use, $SpO_2$:$FiO_2$ ratio, body mass index, neutrophil to lymphocyte ratio, platelet count, and procalcitonin). Using these factors, we constructed the VICE and DICE risk scores, which performed with C-statistics of 0.84 and 0.91, respectively. Importantly, the chronic use of a statin was associated with protection against death due to COVID-19. The VICE and DICE score calculators have been placed on an interactive website freely available to healthcare providers and researchers (https://covid-calculator.com/).

### Interpretation

The risk scores developed in this study may help clinicians more appropriately determine which COVID-19 patients will need to be managed with greater intensity.

# Blood tests offer early indicator of severe COVID-19, study says

Source: https://news.yale.edu/2021/02/26/blood-tests-offer-early-indicator-severe-covid-19-study-says

Feb 26 – When patients with COVID-19 arrive in emergency rooms, there are relatively few ways for doctors to predict which ones are more likely to become critically ill and require intensive care and which ones are more likely to enjoy a quick recovery.

New Yale research could help them identify important early clues. In a recent study, researchers report that a series of biomarkers, or biological signals, associated with white blood cell activation and obesity can predict severe outcomes in COVID-19 patients.

"Patients with high levels of these markers were much more like to require care in the intensive care unit, require ventilation, or die due to their COVID-19," said Dr. Hyung Chun, the lead author, an associate professor of medicine in cardiovascular medicine and pathology and director of translational research at the Yale Pulmonary Vascular Disease Program.

Previously, a few laboratory studies had identified possible indicators of severe COVID-19, including D-dimer levels, a measure of blood coagulation, and levels of proteins known as cytokines, which are released as part of inflammatory responses in the body. However, until now, no laboratory marker could predict which patients with COVID-19 would eventually become critically ill prior to showing clinical signs and symptoms of severe disease.

For the new study, Yale researchers used proteomic profiling — a screen for multiple proteins within the blood — to analyze samples taken from 100 patients who would go on to experience different levels of COVID-19 severity. In all cases, the blood samples were collected on the patients' first day of admission. The researchers also analyzed clinical data for over 3,000 additional patients with COVID-19 within the Yale New Haven Hospital system.

**They found that five proteins (resistin, lipocalin-2, HGF, IL-8, and G-CSF) that are associated with neutrophils, a type of white blood cell, were elevated in the COVID-19**

**patients who later became critically ill. Many of these proteins had previously been associated with obesity but not with COVID-19 or other viral illnesses.**

Notably, the elevated neutrophil biomarkers for patients who would go on to experience more serious symptoms were evident before those symptoms appeared. All COVID-19 patients who were admitted or transferred to the ICU had elevated neutrophil activation markers, while these biomarkers remained low for patients who never developed severe illness. None of the patients with lower neutrophil biomarker levels died.

"This is one of the first demonstrations that a set of biomarkers in the blood of COVID patients can predict eventual ICU admission, even before such patients become critically ill," said study author Dr. Alfred Lee, associate professor of medicine in hematology, director of the Yale Medical Oncology-Hematology Fellowship Program, and a member of the Yale Cancer Center.

Having early knowledge of these indicators could significantly improve patient treatment, the researchers said.

"If a diagnostic test [for these biomarkers] could be ordered early, it could give us a better sense of who is more likely to become critically ill and will benefit from a higher level of care and consideration for therapies that affect the immune system early on in their hospitalization," said Chun. "Many of these drugs do carry potential side effects, and these tests may help identify those patients who would benefit the most."

The study also underscores the connection between COVID-19 and obesity, researchers said. The Centers for Disease Control and Prevention notes that obesity and severe obesity increase risk of severe illness from COVID-19. Obesity triples the risk of hospitalization from COVID-19, and levels of body mass index has been found to correlate with the risk of death from COVID-19.

Neutrophils are inflammatory cells, said Lee, so it makes sense that they would be elevated in the context of both obesity — which involves chronic, low-grade inflammation — and COVID-19, which causes hyperinflammation in the most severe cases, leading to tissue damage and organ failure.

"There are also signs that neutrophils might participate in thrombosis or blood clotting," said Lee, another troubling hallmark of COVID-19.

The researchers will expand their study into the relationship between biomarkers and COVID-19 by looking at patients who have recovered from acute illness.

"We are hoping these findings motivate other groups to look at their own patient populations," said Chun, adding that they'll need additional validation studies that would support developing diagnostic tests for these biomarkers.

The research involved collaborators from across many different Yale departments, including Matthew L. Meizlish, an M.D.-Ph.D. student; Dr. Alex Pine, an assistant professor of medicine in hematology and staff physician at the VA Medical Center in West Haven; Jason Bishai, a graduate student; Hanming Zhang and C-Hong Chang, postdoctoral fellows; and David van Dijk, an assistant professor of medicine in cardiology.

"The evolution of our findings really shows the power of collaboration, which has emerged as one hopeful aspect of this devastating pandemic that we will continue to harness for the benefit of the patients," said Lee.

▶▶ The findings appear in the Feb. 26 edition of Blood Advances.

## 5 Pandemic Mistakes We Keep Repeating

**By Zeynep Tufekci**

Source: https://www.theatlantic.com/ideas/archive/2021/02/how-public-health-messaging-backfired/618147/

Feb 26 – When the polio vaccine was declared safe and effective, the news was met with jubilant celebration. Church bells rang across the nation, and factories blew their whistles. "Polio routed!" newspaper headlines exclaimed. "An historic victory," "monumental," "sensational," newscasters declared. People erupted with joy across the United States. Some danced in the streets; others wept. Kids were sent home from school to celebrate.

One might have expected the initial approval of the coronavirus vaccines to spark similar jubilation—especially after a brutal pandemic year. But that didn't happen. Instead, the steady drumbeat of good news about the vaccines has been met with a chorus of relentless pessimism.

The problem is not that the good news isn't being reported, or that we should throw caution to the wind just yet. It's that neither the reporting nor the public-health messaging has reflected the truly amazing reality of these vaccines. There is nothing wrong with realism and caution, but effective communication requires a sense of proportion—distinguishing between due alarm and alarmism; warranted, measured caution and doombait; worst-case scenarios and

claims of impending catastrophe. We need to be able to celebrate profoundly positive news while noting the work that still lies ahead. However, instead of balanced optimism since the launch of the vaccines, the public has been offered a lot of misguided fretting over new virus variants, subjected to misleading debates about the inferiority of certain vaccines, and presented with long lists of things vaccinated people still cannot do, while media outlets wonder whether the pandemic will ever end.

This pessimism is sapping people of energy to get through the winter, and the rest of this pandemic. Anti-vaccination groups and those opposing the current public-health measures have been vigorously amplifying the pessimistic messages—especially the idea that getting vaccinated doesn't mean being able to do more—telling their audiences that there is no point in compliance, or in eventual vaccination, because it will not lead to any positive changes. They are using the moment and the messaging to deepen mistrust of public-health authorities, accusing them of moving the goalposts and implying that we're being conned. Either the vaccines aren't as good as claimed, they suggest, or the real goal of pandemic-safety measures is to control the public, not the virus.

Five key fallacies and pitfalls have affected public-health messaging, as well as media coverage, and have played an outsize role in derailing an effective pandemic response. These problems were deepened by the ways that we—the public—developed to cope with a dreadful situation under great uncertainty. And now, even as vaccines offer brilliant hope, and even though, at least in the United States, we no longer have to deal with the problem of a misinformer in chief, some officials and media outlets are repeating many of the same mistakes in handling the vaccine rollout.

The pandemic has given us an unwelcome societal stress test, revealing the cracks and weaknesses in our institutions and our systems. Some of these are common to many contemporary problems, including political dysfunction and the way our public sphere operates. Others are more particular, though not exclusive, to the current challenge—including a gap between how academic research operates and how the public understands that research, and the ways in which the psychology of coping with the pandemic have distorted our response to it.

Recognizing all these dynamics is important, not only for seeing us through this pandemic—yes, it is going to end—but also to understand how our society functions, and how it fails. We need to start shoring up our defenses, not just against future pandemics but against all the myriad challenges we face—political, environmental, societal, and technological. None of these problems is impossible to remedy, but first we have to acknowledge them and start working to fix them—and we're running out of time.

The past 12 months were incredibly challenging for almost everyone. Public-health officials were fighting a devastating pandemic and, at least in this country, an administration hell-bent on undermining them. The World Health Organization was not structured or funded for independence or agility, but still worked hard to contain the disease. Many researchers and experts noted the absence of timely and trustworthy guidelines from authorities, and tried to fill the void by communicating their findings directly to the public on social media. Reporters tried to keep the public informed under time and knowledge constraints, which were made more severe by the worsening media landscape. And the rest of us were trying to survive as best we could, looking for guidance where we could, and sharing information when we could, but always under difficult, murky conditions.

Despite all these good intentions, much of the public-health messaging has been profoundly counterproductive. In five specific ways, the assumptions made by public officials, the choices made by traditional media, the way our digital public sphere operates, and communication patterns between academic communities and the public proved flawed.

**Risk Compensation**

One of the most important problems undermining the pandemic response has been the mistrust and paternalism that some public-health agencies and experts have exhibited toward the public. A key reason for this stance seems to be that some experts feared that people would respond to something that increased their safety—such as masks, rapid tests, or vaccines—by behaving recklessly. They worried that a heightened sense of safety would lead members of the public to take risks that would not just undermine any gains, but reverse them.

The theory that things that improve our safety might provide a false sense of security and lead to reckless behavior is attractive—it's contrarian and clever, and fits the "here's something surprising we smart folks thought about" mold that appeals to, well, people who think of themselves as smart. Unsurprisingly, such fears have greeted efforts to persuade the public to adopt almost every advance in safety, including seat belts, helmets, and condoms.

But time and again, the numbers tell a different story: Even if safety improvements cause a few people to behave recklessly, the benefits overwhelm the ill effects. In any case, most people are already interested in staying safe from a dangerous pathogen. Further, even at the beginning of the pandemic, sociological theory predicted that wearing masks would be associated with increased adherence to *other* precautionary measures—people interested in staying safe are interested in staying safe—and empirical research quickly confirmed exactly that. Unfortunately, though, the theory of risk compensation—and

its implicit assumptions—continue to haunt our approach, in part because there hasn't been a reckoning with the initial missteps.

**Rules in Place of Mechanisms and Intuitions**

Much of the public messaging focused on offering a series of clear rules to ordinary people, instead of explaining in detail the mechanisms of viral transmission for this pathogen. A focus on explaining transmission mechanisms, and updating our understanding over time, would have helped empower people to make informed calculations about risk in different settings. Instead, both the CDC and the WHO chose to offer fixed guidelines that lent a false sense of precision.

In the United States, the public was initially told that "close contact" meant coming within six feet of an infected individual, for 15 minutes or more. This messaging led to ridiculous gaming of the rules; some establishments moved people around at the 14th minute to avoid passing the threshold. It also led to situations in which people working indoors with others, but just outside the cutoff of six feet, felt that they could take their mask off. None of this made any practical sense. What happened at minute 16? Was seven feet okay? Faux precision isn't more informative; it's misleading.

All of this was complicated by the fact that key public-health agencies like the CDC and the WHO were late to acknowledge the importance of some key infection mechanisms, such as aerosol transmission. Even when they did so, the shift happened without a proportional change in the guidelines or the messaging—it was easy for the general public to miss its significance.

Frustrated by the lack of public communication from health authorities, I wrote an article last July on what we then knew about the transmission of this pathogen—including how it could be spread via aerosols that can float and accumulate, especially in poorly ventilated indoor spaces. To this day, I'm contacted by people who describe workplaces that are following the formal guidelines, but in ways that defy reason: They've installed plexiglass, but barred workers from opening their windows; they've mandated masks, but only when workers are within six feet of one another, while permitting them to be taken off indoors during breaks.

Perhaps worst of all, our messaging and guidelines elided the difference between outdoor and indoor spaces, where, given the importance of aerosol transmission, the same precautions should not apply. This is especially important because this pathogen is overdispersed: Much of the spread is driven by a few people infecting many others at once, while most people do not transmit the virus *at all*.

After I wrote an article explaining how overdispersion and super-spreading were driving the pandemic, I discovered that this mechanism had also been poorly explained. I was inundated by messages from people, including elected officials around the world, saying they had no idea that this was the case. None of it was secret—numerous academic papers and articles had been written about it—but it had not been integrated into our messaging or our guidelines despite its great importance.

Crucially, super-spreading isn't equally distributed; poorly ventilated indoor spaces can facilitate the spread of the virus over longer distances, and in shorter periods of time, than the guidelines suggested, and help fuel the pandemic.

Outdoors? It's the opposite.

There is a solid scientific reason for the fact that there are relatively few documented cases of transmission outdoors, even after a year of epidemiological work: The open air dilutes the virus very quickly, and the sun helps deactivate it, providing further protection. And super-spreading—the biggest driver of the pandemic— appears to be an exclusively indoor phenomenon. I've been tracking every report I can find for the past year, and have yet to find a confirmed super-spreading event that occurred solely outdoors. Such events might well have taken place, but if the risk were great enough to justify altering our lives, I would expect at least a few to have been documented by now.

And yet our guidelines do not reflect these differences, and our messaging has not helped people understand these facts so that they can make better choices. I published my first article pleading for parks to be kept open on April 7, 2020—but outdoor activities are *still* banned by some authorities today, a full year after this dreaded virus began to spread globally.

We'd have been much better off if we gave people a realistic intuition about this virus's transmission mechanisms. Our public guidelines should have been more like Japan's, which emphasize avoiding the three C's—closed spaces, crowded places, and close contact—that are driving the pandemic.

**Scolding and Shaming**

Throughout the past year, traditional and social media have been caught up in a cycle of shaming—made worse by being so unscientific and misguided. *How dare you go to the beach?* newspapers have scolded us for months, despite lacking evidence that this posed any significant threat to public health. It wasn't just talk: Many cities closed parks and outdoor recreational spaces, even as they kept open indoor dining and gyms. Just this month, UC Berkeley and the University of Massachusetts at Amherst both banned students from taking even solitary walks outdoors.

Even when authorities relax the rules a bit, they do not always follow through in a sensible manner. In the United Kingdom, after some locales finally started allowing children to play on playgrounds—something that was already way overdue—they quickly ruled that parents must not socialize while their kids have a normal moment. Why not? Who knows?
On social media, meanwhile, pictures of people outdoors without masks draw reprimands, insults, and confident predictions of super-spreading—and yet few note when super-spreading fails to follow.
While visible but low-risk activities attract the scolds, other actual risks—in workplaces and crowded households, exacerbated by the lack of testing or paid sick leave—are not as easily accessible to photographers. Stefan Baral, an associate epidemiology professor at the Johns Hopkins Bloomberg School of Public Health, says that it's almost as if we've "designed a public-health response most suitable for higher-income" groups and the "Twitter generation"—stay home; have your groceries delivered; focus on the behaviors you can photograph and shame online—rather than provide the support and conditions necessary for more people to keep themselves safe.
And the viral videos shaming people for failing to take sensible precautions, such as wearing masks indoors, do not necessarily help. For one thing, fretting over the occasional person throwing a tantrum while going unmasked in a supermarket distorts the reality: Most of the public has been complying with mask wearing. Worse, shaming is often an ineffective way of getting people to change their behavior, and it entrenches polarization and discourages disclosure, making it harder to fight the virus. Instead, we should be emphasizing safer behavior and stressing how many people are doing their part, while encouraging others to do the same.

**Harm Reduction**

Amidst all the mistrust and the scolding, a crucial public-health concept fell by the wayside. *Harm reduction* is the recognition that if there is an unmet and yet crucial human need, we cannot simply wish it away; we need to advise people on how to do what they seek to do more safely. Risk can never be completely eliminated; life requires more than futile attempts to bring risk down to zero. Pretending we can will away complexities and trade-offs with absolutism is counterproductive. Consider abstinence-only education: Not letting teenagers know about ways to have safer sex results in more of them having sex with no protections.
As Julia Marcus, an epidemiologist and associate professor at Harvard Medical School, told me, "When officials assume that risks can be easily eliminated, they might neglect the other things that matter to people: staying fed and housed, being close to loved ones, or just enjoying their lives. Public health works best when it helps people find safer ways to get what they need and want."
Another problem with absolutism is the "abstinence violation" effect, Joshua Barocas, an assistant professor at the Boston University School of Medicine and Infectious Diseases, told me. When we set perfection as the only option, it can cause people who fall short of that standard in one small, particular way to decide that they've already failed, and might as well give up entirely. Most people who have attempted a diet or a new exercise regimen are familiar with this psychological state. The better approach is encouraging risk reduction and layered mitigation—emphasizing that every little bit helps—while also recognizing that a risk-free life is neither possible nor desirable.
Socializing is not a luxury—kids need to play with one another, and adults need to interact. *Your kids can play together outdoors, and outdoor time is the best chance to catch up with your neighbors* is not just a sensible message; it's a way to decrease transmission risks. Some kids will play and some adults will socialize no matter what the scolds say or public-health officials decree, and they'll do it indoors, out of sight of the scolding.
And if they don't? Then kids will be deprived of an essential activity, and adults will be deprived of human companionship. Socializing is perhaps the most important predictor of health and longevity, after not smoking and perhaps exercise and a healthy diet. We need to help people socialize more safely, not encourage them to stop socializing entirely.

**The Balance Between Knowledge And Action**

Last but not least, the pandemic response has been distorted by a poor balance between knowledge, risk, certainty, and action.
Sometimes, public-health authorities insisted that we did not know enough to act, when the preponderance of evidence already justified precautionary action. Wearing masks, for example, posed few downsides, and held the prospect of mitigating the exponential threat we faced. The wait for certainty hampered our response to airborne transmission, even though there was almost no evidence for—and increasing evidence against—the importance of fomites, or objects that can carry infection. And yet, we emphasized the risk of surface transmission while refusing to properly address the risk of airborne transmission, despite increasing evidence. The difference lay not in the level of evidence and scientific support for either theory—which, if anything, quickly tilted in favor of airborne transmission, and not fomites, being crucial—but in the fact that fomite transmission had been a key part of the medical canon, and airborne transmission had not.

Sometimes, experts and the public discussion failed to emphasize that we were balancing risks, as in the recurring cycles of debate over lockdowns or school openings. We should have done more to acknowledge that there were no good options, only trade-offs between different downsides. As a result, instead of recognizing the difficulty of the situation, too many people accused those on the other side of being callous and uncaring.

And sometimes, the way that academics communicate clashed with how the public constructs knowledge. In academia, publishing is the coin of the realm, and it is often done through rejecting the null hypothesis—meaning that many papers do not seek to prove something conclusively, but instead, to reject the possibility that a variable has no relationship with the effect they are measuring (beyond chance). If that sounds convoluted, it is—there are historical reasons for this methodology and big arguments within academia about its merits, but for the moment, this remains standard practice.

At crucial points during the pandemic, though, this resulted in mistranslations and fueled misunderstandings, which were further muddled by differing stances toward prior scientific knowledge and theory. Yes, we faced a novel coronavirus, but we should have started by assuming that we could make some reasonable projections from prior knowledge, while looking out for anything that might prove different. That prior experience should have made us mindful of seasonality, the key role of overdispersion, and aerosol transmission. A keen eye for what was different from the past would have alerted us earlier to the importance of presymptomatic transmission.

Thus, on January 14, 2020, the WHO stated that there was "no clear evidence of human-to-human transmission." It should have said, "There is increasing likelihood that human-to-human transmission is taking place, but we haven't yet proven this, because we have no access to Wuhan, China." (Cases were already popping up around the world at that point.) Acting as if there was human-to-human transmission during the early weeks of the pandemic would have been wise and preventive.

Later that spring, WHO officials stated that there was "currently no evidence that people who have recovered from COVID-19 and have antibodies are protected from a second infection," producing many articles laden with panic and despair. Instead, it should have said: "We expect the immune system to function against this virus, and to provide some immunity for some period of time, but it is still hard to know specifics because it is so early."

Similarly, since the vaccines were announced, too many statements have emphasized that we don't yet know if vaccines prevent transmission. Instead, public-health authorities should have said that we have many reasons to expect, and increasing amounts of data to suggest, that vaccines will blunt infectiousness, but that we're waiting for additional data to be more precise about it. That's been unfortunate, because while many, many things have gone wrong during this pandemic, the vaccines are one thing that has gone very, very right.

As late as April 2020, Anthony Fauci was slammed for being too optimistic for suggesting we might plausibly have vaccines in a year to 18 months. We had vaccines much, much sooner than that: The first two vaccine trials concluded a mere eight months after the WHO declared a pandemic in March 2020.

Moreover, they have delivered spectacular results. In June 2020, the FDA said a vaccine that was merely 50 percent efficacious in preventing symptomatic COVID-19 would receive emergency approval—that such a benefit would be sufficient to justify shipping it out immediately. Just a few months after that, the trials of the Moderna and Pfizer vaccines concluded by reporting not just a stunning 95 percent efficacy, but also a complete elimination of hospitalization or death among the vaccinated. Even severe disease was practically gone: The lone case classified as "severe" among 30,000 vaccinated individuals in the trials was so mild that the patient needed no medical care, and her case would not have been considered severe if her oxygen saturation had been a single percent higher.

These are exhilarating developments, because global, widespread, and rapid vaccination is our way out of this pandemic. Vaccines that drastically reduce hospitalizations and deaths, and that diminish even severe disease to a rare event, are the closest things we have had in this pandemic to a miracle—though of course they are the product of scientific research, creativity, and hard work. They are going to be the panacea and the endgame.

And yet, two months into an accelerating vaccination campaign in the United States, it would be hard to blame people if they missed the news that things are getting better.

Yes, there are new variants of the virus, which may eventually require booster shots, but at least so far, the existing vaccines are standing up to them well—very, very well. Manufacturers are already working on new vaccines or variant-focused booster versions, in case they prove necessary, and the authorizing agencies are ready for a quick turnaround if and when updates are needed. Reports from places that have vaccinated large numbers of individuals, and even trials in places where variants are widespread, are exceedingly encouraging, with dramatic reductions in cases and, crucially, hospitalizations and deaths among the vaccinated. Global equity and access to vaccines remain crucial concerns, but the supply is increasing.

Here in the United States, despite the rocky rollout and the need to smooth access and ensure equity, it's become clear that toward the end of spring 2021, supply will be more than sufficient. It may sound hard to believe today, as many who are desperate for vaccinations await their turn, but in the near future, we may have to discuss what to do with excess doses.

So why isn't this story more widely appreciated?

Part of the problem with the vaccines was the timing—the trials concluded immediately after the U.S. election, and their results got overshadowed in the weeks of political turmoil. The first, modest headline announcing the Pfizer-BioNTech results in *The New York Times* was a single column, "Vaccine Is Over 90% Effective, Pfizer's Early Data Says," below a banner headline spanning the page: "BIDEN CALLS FOR UNITED FRONT AS VIRUS RAGES." That was both understandable—the nation was weary—and a loss for the public.

Just a few days later, Moderna reported a similar 94.5 percent efficacy. If anything, that provided even more cause for celebration, because it confirmed that the stunning numbers coming out of Pfizer weren't a fluke. But, still amid the political turmoil, the Moderna report got a mere two columns on *The New York Times*' front page with an equally modest headline: "Another Vaccine Appears to Work Against the Virus."

So we didn't get our initial vaccine jubilation.

But as soon as we began vaccinating people, articles started warning the newly vaccinated about all they could not do. "COVID-19 Vaccine Doesn't Mean You Can Party Like It's 1999," one headline admonished. And the buzzkill has continued right up to the present. "You're fully vaccinated against the coronavirus—now what? Don't expect to shed your mask and get back to normal activities right away," began a recent Associated Press story.

People might well want to party after being vaccinated. Those shots will expand what we can do, first in our private lives and among other vaccinated people, and then, gradually, in our public lives as well. But once again, the authorities and the media seem more worried about potentially reckless behavior among the vaccinated, and about telling them what not to do, than with providing nuanced guidance reflecting trade-offs, uncertainty, and a recognition that vaccination can change behavior. No guideline can cover every situation, but careful, accurate, and updated information can empower everyone.

Take the messaging and public conversation around transmission risks from vaccinated people. It is, of course, important to be alert to such considerations: Many vaccines are "leaky" in that they prevent disease or severe disease, but not infection and transmission. In fact, completely blocking all infection—what's often called "sterilizing immunity"—is a difficult goal, and something even many highly effective vaccines don't attain, but that doesn't stop them from being extremely useful.

As Paul Sax, an infectious-disease doctor at Boston's Brigham & Women's Hospital, put it in early December, it would be enormously surprising "if these highly effective vaccines didn't also make people less likely to transmit." From multiple studies, we already knew that asymptomatic individuals—those who never developed COVID-19 despite being infected—were much less likely to transmit the virus. The vaccine trials were reporting 95 percent reductions in any form of symptomatic disease. In December, we learned that Moderna had swabbed some portion of trial participants to detect asymptomatic, silent infections, and found an almost two-thirds reduction even in such cases. The good news kept pouring in. Multiple studies found that, even in those few cases where breakthrough disease occurred in vaccinated people, their viral loads were lower—which correlates with lower rates of transmission. Data from vaccinated populations further confirmed what many experts expected all along: Of course these vaccines reduce transmission.

And yet, from the beginning, a good chunk of the public-facing messaging and news articles implied or claimed that vaccines won't protect you against infecting other people or that we didn't know if they would, when both were false. I found myself trying to convince people in my own social network that vaccines weren't useless against transmission, and being bombarded on social media with claims that they were.

What went wrong? The same thing that's going wrong right now with the reporting on whether vaccines will protect recipients against the new viral variants. Some outlets emphasize the worst or misinterpret the research. Some public-health officials are wary of encouraging the relaxation of any precautions. Some prominent experts on social media—even those with seemingly solid credentials—tend to respond to everything with alarm and sirens. So the message that got *heard* was that vaccines will not prevent transmission, or that they won't work against new variants, or that we don't know if they will. What the public needs to hear, though, is that based on existing data, we expect them to work fairly well—but we'll learn more about precisely how effective they'll be over time, and that tweaks may make them even better.

A year into the pandemic, we're still repeating the same mistakes.

The top-down messaging is not the only problem. The scolding, the strictness, the inability to discuss trade-offs, and the accusations of not caring about people dying not only have an enthusiastic audience, but portions of the public engage in these behaviors themselves.

Maybe that's partly because proclaiming the importance of individual actions makes us feel as if we are in the driver's seat, despite all the uncertainty.

Psychologists talk about the "locus of control"—the strength of belief in control over your own destiny. They distinguish between people with more of an internal-control orientation—who believe that they are the primary actors—and those with an external one, who believe that society, fate, and other factors beyond their control greatly influence what happens to us. This focus on individual control goes along with something called the "fundamental attribution error"—when bad things happen to other people, we're more likely to believe that they are personally at fault, but when they happen to us, we are more likely to blame the situation and circumstances beyond our control.

An individualistic locus of control is forged in the U.S. mythos—that we are a nation of strivers and people who pull ourselves up by our bootstraps. An internal-control orientation isn't necessarily negative; it can facilitate resilience, rather than fatalism, by shifting the focus to what we *can* do as individuals even as things fall apart around us. This orientation seems to be common among children who not only survive but sometimes thrive in terrible situations—they take charge and have a go at it, and with some luck, pull through. It is probably even more attractive to educated, well-off people who feel that they have succeeded through their own actions. You can see the attraction of an individualized, internal locus of control in a pandemic, as a pathogen without a cure spreads globally, interrupts our lives, makes us sick, and could prove fatal.

There have been very few things we could do at an individual level to reduce our risk beyond wearing masks, distancing, and disinfecting. The desire to exercise personal control against an invisible, pervasive enemy is likely why we've continued to emphasize scrubbing and cleaning surfaces, in what's appropriately called "hygiene theater," long after it became clear that fomites were not a key driver of the pandemic. Obsessive cleaning gave us something to do, and we weren't about to give it up, even if it turned out to be useless. No wonder there was so much focus on telling others to stay home—even though it's not a choice available to those who cannot work remotely—and so much scolding of those who dared to socialize or enjoy a moment outdoors.

And perhaps it was too much to expect a nation unwilling to release its tight grip on the bottle of bleach to greet the arrival of vaccines—however spectacular—by imagining the day we might start to let go of our masks.

The focus on individual actions has had its upsides, but it has also led to a sizable portion of pandemic victims being erased from public conversation. If our own actions drive everything, then some other individuals must be to blame when things go wrong for them. And throughout this pandemic, the mantra many of us kept repeating—"Wear a mask, stay home; wear a mask, stay home"—hid many of the real victims.

Study after study, in country after country, confirms that this disease has disproportionately hit the poor and minority groups, along with the elderly, who are particularly vulnerable to severe disease. Even among the elderly, though, those who are wealthier and enjoy greater access to health care have fared better.

The poor and minority groups are dying in disproportionately large numbers for the same reasons that they suffer from many other diseases: a lifetime of disadvantages, lack of access to health care, inferior working conditions, unsafe housing, and limited financial resources.

Many lacked the option of staying home precisely because they were working hard to enable others to do what they could not, by packing boxes, delivering groceries, producing food. And even those who could stay home faced other problems born of inequality: Crowded housing is associated with higher rates of COVID-19 infection and worse outcomes, likely because many of the essential workers who live in such housing bring the virus home to elderly relatives.

Individual responsibility certainly had a large role to play in fighting the pandemic, but many victims had little choice in what happened to them. By disproportionately focusing on individual choices, not only did we hide the real problem, but we failed to do more to provide safe working and living conditions for everyone.

For example, there has been a lot of consternation about indoor dining, an activity I certainly wouldn't recommend. But even takeout and delivery can impose a terrible cost: One study of California found that line cooks are the highest-risk occupation for dying of COVID-19. Unless we provide restaurants with funds so they can stay closed, or provide restaurant workers with high-filtration masks, better ventilation, paid sick leave, frequent rapid testing, and other protections so that they can safely work, getting food to go can simply shift the risk to the most vulnerable. Unsafe workplaces may be low on our agenda, but they do pose a real danger. Bill Hanage, associate professor of epidemiology at Harvard, pointed me to a paper he co-authored: Workplace-safety complaints to OSHA—which oversees occupational-safety regulations—during the pandemic were predictive of increases in deaths 16 days later.

New data highlight the terrible toll of inequality: Life expectancy has decreased dramatically over the past year, with Black people losing the most from this disease, followed by members of the Hispanic community. Minorities are also more likely to die of COVID-19 at a younger age. But when the new CDC director, Rochelle Walensky, noted this terrible statistic, she immediately followed up by urging people to "continue to use proven prevention steps to

slow the spread—wear a well-fitting mask, stay 6 ft away from those you do not live with, avoid crowds and poorly ventilated places, and wash hands often."

Those recommendations aren't wrong, but they are incomplete. None of these individual acts do enough to protect those to whom such choices aren't available—and the CDC has yet to issue sufficient guidelines for workplace ventilation or to make higher-filtration masks mandatory, or even available, for essential workers. Nor are these proscriptions paired frequently enough with prescriptions: Socialize outdoors, keep parks open, and let children play with one another outdoors.

Vaccines are the tool that will end the pandemic. The story of their rollout combines some of our strengths and our weaknesses, revealing the limitations of the way we think and evaluate evidence, provide guidelines, and absorb and react to an uncertain and difficult situation.

But also, after a weary year, maybe it's hard for everyone—including scientists, journalists, and public-health officials—to imagine the end, to have hope. We adjust to new conditions fairly quickly, even terrible new conditions. During this pandemic, we've adjusted to things many of us never thought were possible. Billions of people have led dramatically smaller, circumscribed lives, and dealt with closed schools, the inability to see loved ones, the loss of jobs, the absence of communal activities, and the threat and reality of illness and death.

Hope nourishes us during the worst times, but it is also dangerous. It upsets the delicate balance of survival—where we stop hoping and focus on getting by—and opens us up to crushing disappointment if things don't pan out. After a terrible year, many things are understandably making it harder for us to dare to hope. But, especially in the United States, everything looks better by the day. Tragically, at least 28 million Americans have been confirmed to have been infected, but the real number is certainly much higher. By one estimate, as many as 80 million have already been infected with COVID-19, and many of those people now have some level of immunity. Another 46 million people have already received at least one dose of a vaccine, and we're vaccinating millions more each day as the supply constraints ease. The vaccines are poised to reduce or nearly eliminate the things we worry most about—severe disease, hospitalization, and death.

Not all our problems are solved. We need to get through the next few months, as we race to vaccinate against more transmissible variants. We need to do more to address equity in the United States—because it is the right thing to do, and because failing to vaccinate the highest-risk people will slow the population impact. We need to make sure that vaccines don't remain inaccessible to poorer countries. We need to keep up our epidemiological surveillance so that if we do notice something that looks like it may threaten our progress, we can respond swiftly.

And the public behavior of the vaccinated cannot change overnight—even if they are at much lower risk, it's not reasonable to expect a grocery store to try to verify who's vaccinated, or to have two classes of people with different rules. For now, it's courteous and prudent for everyone to obey the same guidelines in many public places. Still, vaccinated people can feel more confident in doing things they may have avoided, just in case—getting a haircut, taking a trip to see a loved one, browsing for nonessential purchases in a store.

But it is time to imagine a better future, not just because it's drawing nearer but because that's how we get through what remains and keep our guard up as necessary. It's also realistic—reflecting the genuine increased safety for the vaccinated.

Public-health agencies should *immediately* start providing expanded information to vaccinated people so they can make informed decisions about private behavior. This is justified by the encouraging data, and a great way to get the word out on how wonderful these vaccines really are. The delay itself has great human costs, especially for those among the elderly who have been isolated for so long.

Public-health authorities should also be louder and more explicit about the next steps, giving us guidelines for when we can expect easing in rules for public behavior as well. We need the exit strategy spelled out—but with graduated, targeted measures rather than a one-size-fits-all message. We need to let people know that getting a vaccine will almost immediately change their lives for the better, and why, and also when and how increased vaccination will change more than their individual risks and opportunities, and see us out of this pandemic.

We should encourage people to dream about the end of this pandemic by talking about it more, and more concretely: the numbers, hows, and whys. Offering clear guidance on how this will end can help strengthen people's resolve to endure whatever is necessary for the moment—even if they are still unvaccinated—by building warranted and realistic anticipation of the pandemic's end.

Hope will get us through this. And one day soon, you'll be able to hop off the subway on your way to a concert, pick up a newspaper, and find the triumphant headline: "COVID Routed!"

***Zeynep Tufekci*** *is a contributing writer at The Atlantic and an associate professor at the University of North Carolina. She studies the interaction between digital technology, artificial intelligence, and society.*

## Qatar: New COVID-19 drive-through vaccination center opened

Source: https://www.qatarday.com/news/local/new-covid-19-drive-through-vaccination-center-opened/84719

Mar 01 – A new COVID-19 Drive-Through Vaccination Center was opened today in Lusail as part of the efforts to combat the COVID-19 pandemic. The vaccination process for visitors in the new center includes registration and assessment, vaccination, and observation.

"Qatar is well on its way in the rollout of its vaccination program and as per our strategy, we are now making drive-through vaccination an option for our population. Our first drive-through PCR testing centers have been very popular and continue to be successful with high visiting volumes. The opening of the Lusail COVID-19 Drive-Through Vaccination Center will further strengthen our ability to protect Qatar's population from the threat of the virus," said Her Excellency Dr. Hanan Mohamed Al Kuwari, Minister of Public Health.

**EDITOR'S COMMENT:** Drive-through vaccination seems to be a fast idea. BUT where do people go after they were given the jab? Do they go home or back to work? Is there a parking lot where they can wait for a period of time? What happens if an adverse reaction occurs? Most probably all these questions have already been answered but there were not obvious in this article.

## Lebanon Authorizes Use of Chinese Vaccine Sinopharm

Source: http://www.naharnet.com/stories/en/279845-lebanon-authorizes-use-of-chinese-vaccine-sinopharm

Mar 01 – A scientific committee formed by caretaker Health Minister Hamad Hassan on Monday granted emergency use authorization (EUA) to the Chinese anti-Covid vaccine Sinopharm.

The committee has been tasked with discussing the registration of vaccines submitted by the private sector.

Following the EUA, private companies can now sell the vaccine in the Lebanese market according to applicable regulations.

The decision was taken in a meeting chaired by Hassan and attended by the committee's members -- Dr. Abdul Rahman al-Bizri, Dr. Maroun Zoghbi, Dr. Rony al-Zaani, Dr. Thuraya Dumyati, the representative of the Lebanese University Dr. Nazih Abu Chahine and the head of the pharmacy dept. at the Health Ministry, Dr. Colette Reaidi.

The Ministry had granted emergency use authorization for the Russian vaccine Sputnik V on February 5.

# Importance of non-pharmaceutical interventions in lowering the viral inoculum to reduce susceptibility to infection by SARS-CoV-2 and potentially disease severity

**By Matthew A Spinelli, MD, Prof David V Glidden, PhD, Efstathios D Gennatas, PhD, et al.**

*The Lancet | February 22, 2021*

Source: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30982-8/fulltext

Adherence to non-pharmaceutical interventions to prevent the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has been highly variable across settings, particularly in the USA. In this Personal View, we review data supporting the importance of the viral inoculum (the dose of viral particles from an infected source over time) in increasing the probability of infection in respiratory, gastrointestinal, and sexually transmitted viral infections in humans. We also review the available evidence linking the relationship of the viral inoculum to disease severity. Non-pharmaceutical interventions might reduce the susceptibility to SARS-CoV-2 infection by reducing the viral inoculum when there is exposure to an infectious source. Data from physical sciences research suggest that masks protect the wearer by filtering virus from external sources, and others by reducing expulsion of virus by the wearer. Social distancing, handwashing, and improved ventilation also reduce the exposure number of viral particles from an infectious source. Maintaining and increasing non-pharmaceutical interventions can help to quell SARS-CoV-2 as we enter the second year of the pandemic. Finally, we argue that even as safe and effective vaccines are being rolled out, non-pharmaceutical interventions will continue to play an essential role in suppressing SARS-CoV-2 transmission until equitable and widespread vaccine administration has been completed.

# Identification and validation of clinical phenotypes with prognostic implications in patients admitted to hospital with COVID-19: a multicentre cohort study

**By Belén Gutiérrez-Gutiérrez, PhD, María Dolores del Toro, PhD, Alberto M Borobia, PhD, et al.**

Source: https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00019-0/fulltext

Feb 23 – The clinical presentation of COVID-19 in patients admitted to hospital is heterogeneous. We aimed to determine whether clinical phenotypes of patients with COVID-19 can be derived from clinical data, to assess the reproducibility of these phenotypes and correlation with prognosis, and to derive and validate a simplified probabilistic model for phenotype assignment. Phenotype identification was not primarily intended as a predictive tool for mortality.

## Methods

In this study, we used data from two cohorts: the COVID-19@Spain cohort, a retrospective cohort including 4035 consecutive adult patients admitted to 127 hospitals in Spain with COVID-19 between Feb 2 and March 17, 2020, and the COVID-19@HULP cohort, including 2226 consecutive adult patients admitted to a teaching hospital in Madrid between Feb 25 and April 19, 2020. The COVID-19@Spain cohort was divided into a derivation cohort, comprising 2667 randomly selected patients, and an internal validation cohort, comprising the remaining 1368 patients. The COVID-19@HULP cohort was used as an external validation cohort. A probabilistic model for phenotype assignment was derived in the derivation cohort using multinomial logistic regression and validated in the internal validation cohort. The model was also applied to the external validation cohort. 30-day mortality and other prognostic variables were assessed in the derived phenotypes and in the phenotypes assigned by the probabilistic model.

## Findings

**Three distinct phenotypes** were derived in the derivation cohort (n=2667)—**phenotype A** (516 [19%] patients), phenotype B (1955 [73%]) and phenotype C (196 [7%])—and reproduced in the internal validation cohort (n=1368)—phenotype A (233 [17%] patients), **phenotype B** (1019 [74%]), and phenotype C (116 [8%]). Patients with phenotype A were younger, were less frequently male, had mild viral symptoms, and had normal inflammatory parameters. Patients with phenotype B included more patients with obesity, lymphocytopenia, and moderately elevated inflammatory parameters. Patients with phenotype C included older patients with more comorbidities and even higher inflammatory parameters than phenotype B. We developed a simplified probabilistic model (validated in the internal validation cohort) for phenotype assignment, including 16 variables. In the derivation cohort, 30-day mortality rates were 2·5% (95% CI 1·4–4·3) for patients with phenotype A, 30·5% (28·5–32·6) for patients with phenotype B, and 60·7% (53·7–67·2) for patients with phenotype C (log-rank test p<0·0001).

The predicted phenotypes in the internal validation cohort and external validation cohort showed similar mortality rates to the assigned phenotypes (internal validation cohort: 5·3% [95% CI 3·4–8·1] for phenotype A, 31·3% [28·5–34·2] for phenotype B, and 59·5% [48·8–69·3] for phenotype C; external validation cohort: 3·7% [2·0–6·4] for phenotype A, 23·7% [21·8–25·7] for phenotype B, and 51·4% [41·9–60·7] for phenotype C).

**Interpretation**

Patients admitted to hospital with COVID-19 can be classified into three phenotypes that correlate with mortality. We developed and validated a simplified tool for the probabilistic assignment of patients into phenotypes. These results might help to better classify patients for clinical management, but the pathophysiological mechanisms of the phenotypes must be investigated.

## The psychological pandemic: Can we confront our death anxiety?

**By Robert Jay Lifton and Charles B. Strozier**

Source: https://thebulletin.org/2021/03/the-psychological-pandemic-can-we-confront-our-death-anxiety/

Mar 01 – The COVID-19 pandemic creates universal death anxiety. We cannot see or touch or smell the virus that has now killed 500,000 Americans. It is everywhere and nowhere—making its lethal, invisible contamination seem almost a supernatural force.

"The Angel of Death," sculpture on a funeral gondola, Venice. Photo by Paolo Monti, 1951.

Patients in psychotherapy provide a valuable window into COVID death anxiety. Their voices change, one of us (Strozier) has found, and become suffused with dread as they shift from ordinary conflicts involving the self, relationships, and work, to the virus. They feel stalked by it but unable to find the inner resources to deal with its ubiquitous effects.

Two patients, men in their thirties, began their therapy because of their fathers' deaths from the virus. But both were overwhelmed by the death of endless numbers of fathers throughout the society, which made it difficult for each to mourn his own loss.

Others are overcome by anxiety that even their most rigorous attempts to follow rules and regulations cannot keep them safe. One dreams almost nightly of forgetting to wear his mask, or of the rubber band on his mask breaking, or of being out of hand sanitizer. Another, an elderly cancer survivor, expresses constant fear of contagion and is terrified to take the elevator in his building.

Another cancer survivor was made so anxious by COVID news that she turned off her TV and cut off other sources of information. She then had a life-affirming dream of becoming pregnant, but, upon awakening, quickly rejected the thought because of her fear of the virus.

Unmanageable death anxiety can lead to psychosis, as in the case of a woman who pivoted from ordinary unhappiness at her divorce to paranoid hallucinations and delusions that she was living in a police state, and authorities were imposing restrictions in order to kill her.

Nor are therapists immune from pandemic death anxiety—as one of us (Strozier) painfully learned when a close relative came down with an illness that, at first, seemed to resemble symptoms of the virus. Strozier's anxiety was intensified when a close colleague died of COVID after 70 days in an intensive care unit, and when a best friend survived the virus but continued to struggle with its lingering effects, what is now called long-haul COVID.

The personal and the collective reverberate. COVID death anxiety inundates American society. But we also live in the shadow of the apocalyptic twins of nuclear and climate threat, which further fuel the newly terrorizing COVID anxiety.

In addition, the Black Lives Matter movement focuses particularly on African American death anxiety rendered concrete by the recording of George Floyd being suffocated and killed by

a white policeman's knee on his neck. That anxiety is also fed by the higher rates of virus deaths in communities of color.
What does a society do with such massive death anxiety? We have witnessed two antithetical responses.
The destructive Trumpist approach includes several levels of avoidance. Some simply deny the threat of the virus, but others recognize the pandemic and even describe it in lurid terms without psychologically experiencing its effects. They can invoke collective forms of psychic numbing, the active suppression of feeing that one of us (Lifton) originally invoked in connection with nuclear threat. They can also call forth the psychanalytic defense mechanism called derealization, rendering the actual and dangerous unreal. Derealization feeds the false Trump narrative of brilliant handling of the pandemic. Trumpist avoidance can contribute to malignant versions of death anxiety that result in bizarre and violent behavior, including verbal and physical attacks on those advocating masks and other precautions.
In contrast, President Biden and his administration have acknowledged widespread death anxiety, not by calling it that but by conducting two powerful national ceremonies of mourning—the first just before taking office and the second on Feburary 22 in response to the staggering figure of 500,000 Americans killed by the virus. This collective ritual could enable Americans to share and better cope with their death-dominated world, their common grief and loss.
Political actions can be the best means of confronting and overcoming our country's death-haunted psychological state. The new administration's urgent focus on containing the pandemic, mostly by disseminating vaccines but also by other elements of a comprehensive national plan, is a way to save tens or hundreds of thousands of lives. Though frequently erratic and incompletely successful, these responses are also a means of helping Americans with their all-consuming death anxiety.
The political and psychological are synergistic. The administration's task could not be more daunting. But wise political decisions can mitigate the worst effects of collective death anxiety, while a decrease in national dread makes for better, fairer, and more rational politics. Confronting death anxiety together can be a source of personal and collective renewal.

***Robert Jay Lifton*** *is a psychiatrist and author, currently at Columbia University, whose books include* Death in Life: Survivors of Hiroshima, *which won a National Book Award, and most recently* Losing Reality: On Cults, Cultism, and the Mindset of Political and Religious Zealotry.
***Charles B. Strozier*** *is a historian and psychoanalyst, emeritus professor at John Jay College of the City University of New York, and author of* Apocalypse: On the Psychology of Fundamentalism in America.

## COVID Found Mutating Inside a Baby Born with The Virus, in a World First

**By Mehreen Zaigham**
Source: https://www.sciencealert.com/covid-found-mutating-inside-a-baby-infected-before-birth-in-world-first

Mar 02 – A pregnant woman with suspected COVID-19 was rushed by ambulance to Skåne University Hospital, in Malmo, Sweden, suffering from sudden severe abdominal pain. The doctors noticed that the unborn infant had an abnormally low heart rate, which can be a sign that the baby is not getting enough oxygen.
The doctors performed an emergency caesarean section and delivered the baby within minutes. Blood tests from the baby confirmed it had severely low oxygen, and throat swabs showed that both mother and baby were suffering from COVID.
Using throat swabs from the mother and the newborn, the genome of the virus was sequenced to confirm the possibility that the infant had been infected with COVID while still in the womb.
My colleagues and I – part of a study team at the hospital – found that the viral genome in the mother and the baby was identical. Since the baby had been isolated from the mother directly after the caesarean and had not come in contact with other family members when these tests were done, the findings confirmed that the baby was indeed infected before it was born.
However, a few days later, new genetic sequencing showed that the baby's virus population had changed and contained a mutated version of the virus along with the original virus strain from the mother.
To the best of our knowledge, this is the first case of a genetic change of the coronavirus in the unique setting of mother-to-foetus transmission before birth.
Although it is common for viruses to mutate, this mutation (called A107G) happened just five days after the baby was delivered.
The genetic changes may have been stimulated by the baby coming in contact with the external environment outside the mother's womb. However, it was surprising how quickly this single mutation occurred.

The most important findings were the changes we saw in the placenta. The placenta takes blood and nutrients to the foetus and takes away waste and is critical for the growth and wellbeing of the foetus. We found that half the tissue was damaged.
There was widespread inflammation, and we found coronavirus protein on both the mother's and foetus's side of the placenta. We also found coronavirus protein in all areas that were damaged by inflammation.
The mother made a quick recovery from her COVID infection and was discharged four days after delivery, but the baby needed neonatal care since it was born prematurely (week 34 of pregnancy).
The baby developed antibodies against the virus and had no severe symptoms after delivery. It was, therefore, the baby's own immune system that neutralised the virus as we did not find any antibodies in the mother's breast milk.

**Rare but needs monitoring**
Our study, which has just been published in *The British Journal of Obstetrics and Gynaecology*, is among only a handful of scientific papers that have investigated coronavirus transmission through the placenta.
Previous studies have reported rapid placental failure and abnormal foetal heart rhythm, similar to what we found. But with thousands of pregnant women infected worldwide, mother-to-baby transmission in the womb seems to be a rare complication of COVID during pregnancy.
Scientists think that this is because of the placental barrier that protects the baby in the womb from most infections. Also, the vital receptor needed for coronavirus entry into cells, called an ACE-2 receptor, only exists in low levels in the placenta.
In rare cases, coronavirus can damage the placenta – leading to a lack of oxygen in the unborn child – even if the mother has a mild case of COVID in late pregnancy.
Our findings suggest that perhaps we should rethink how we monitor pregnant women who have COVID, and they should be considered a more important risk group than we do today.

***Mehreen Zaigham** is a Postdoctoral Research Fellow, Obstetric & Gynecology @ Skåne University Hospital, Lund University.*

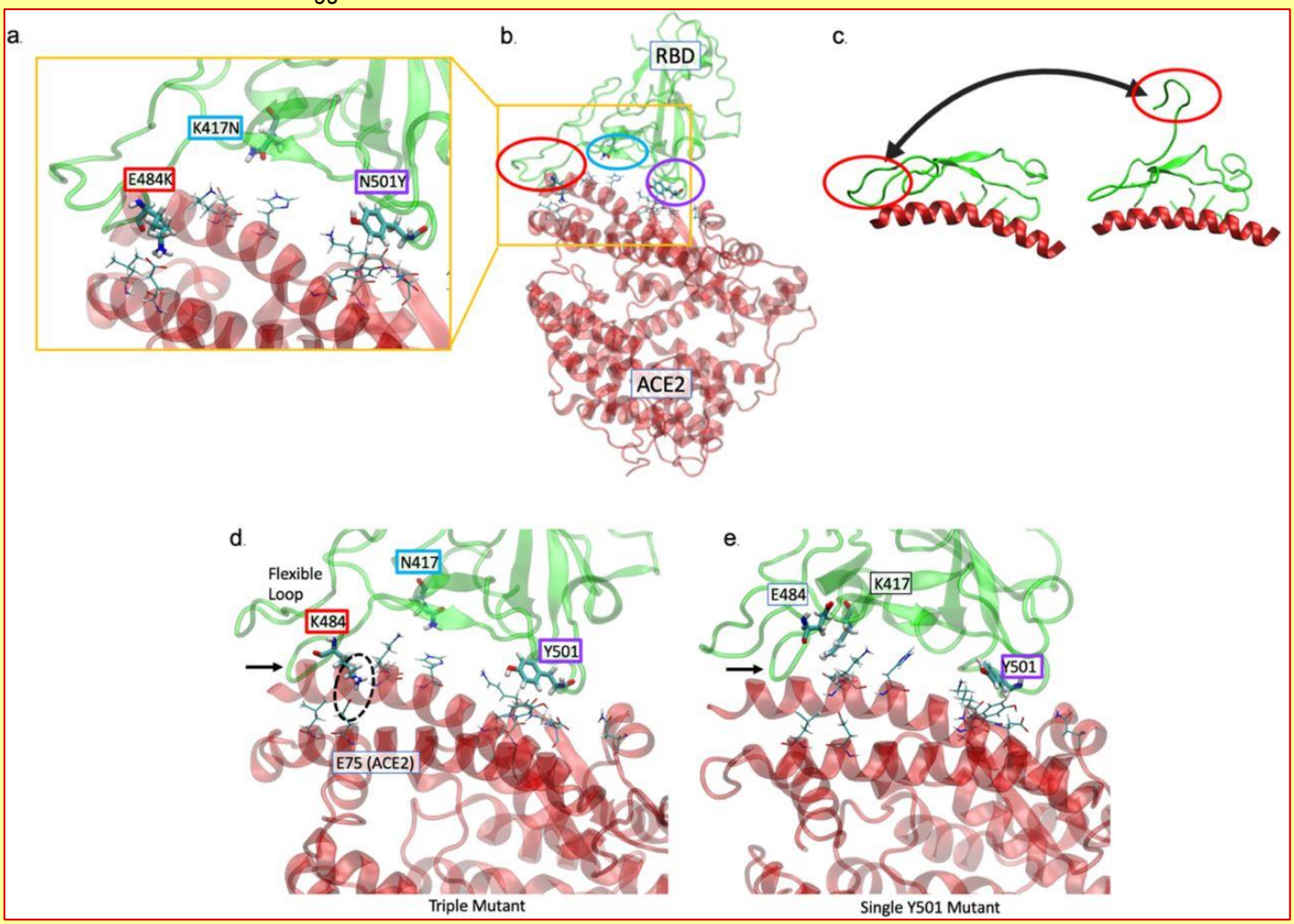
## There's Another New Variant of SARS-CoV-2 Spreading Fast. Here's What We Know So Far

**By Sharon Peacock**
Source: https://www.sciencealert.com/b1525-is-a-new-covid-variant-authorities-are-watching-here-s-what-we-know

Mar 01 – A coronavirus variant called **B1525** has become one of the most recent additions to the global variant watch list and has been included in the list of variants under investigation by Public Health England.

Scientists are keeping a watchful eye on this variant because it has several mutations in the gene that makes the spike protein – the part of the virus that latches onto human cells. These changes include the presence of the increasingly well-known mutation called E484K, which allows the virus to partly evade the immune system, and is found in the variants first identified in South Africa (B1351) and Brazil (P1).

While there is no information on what this means for B1525, there is growing evidence that **E484K** may impact how effective COVID vaccines are. But there is no suggestion so far that B1525 is more transmissible or that it leads to more severe disease.




*The K484 substitution in the novel South African variant increases affinity of the spike receptor binding domain (S RBD) for ACE2. (a, b) The positions of the E484K (red), K417N (cyan), and N501K (purple) substitutions at the interface of the 501Y.V2 variant S RBD - hACE2 interface are shown. hACE2 residues nearest to the mutated RBD residues are rendered as thin sticks. The E484K mutation is located in a highly flexible loop region of the interface, K417N in a region with lower probability of contact, and N501K at a second point of high-affinity contact. (c) The range of movement available to the loop containing residue 484 is shown by PCA of MD simulation of a first-wave sequence[11,13]. (d) MD simulation performed in the presence of all 3 substitutions reveals the loop region is tightly associated (black arrow) with hACE2. A key contact ion pair is circled. (e) In comparison to K484, when E484 ('wildtype') is present with only the Y501 variant, the loop is not as tightly associated (arrow).*

*There are other mutations in B1525 that are also noteworthy, such as Q677H. Scientists have repeatedly detected this change – at least six times* in different lineages in the US, suggesting that it gives the virus an advantage, although the nature of any benefit has not been identified yet.

The B1525 variant also has several deletions – where "letters" (G, U, A and C) of the virus's RNA are missing from its genome.

These letters are also missing in B117, the variant first detected in Kent, England. Research by Ravindra Gupta, a clinical microbiologist at the University of Cambridge, found that these deletions may increase infectivity twofold in laboratory experiments.

**Recently emerged**

As with many variants, B1525 appears to have emerged quite recently. The earliest example in the shared global database of coronavirus genomes, called Gisaid, dates from 15 December 2020. It was identified in a person in the UK.

And like many variants, B1525 had already travelled the world before it came to global attention. A total of 204 sequences of this variant in Gisaid can be traced to 18 countries as of 20 February 2021.

**Two countries (Denmark and the UK) account for more than half of the cases, but these two countries are also sequencing lots of coronavirus genomes. Other countries that have entered at least one genome of this variant in the online database are Nigeria, the US, France, Canada, Ghana, Australia, Japan, Italy, Netherlands, Jordan, Singapore, Finland, Switzerland, Mayotte, Belgium and Spain.**

On February 25, the Republic of Ireland reported its first case of B1525.

A total of 31 B1525 genomes have been submitted to Gisaid by Nigeria.

In a statement on 19 February 2021 on variants of coronavirus from the Nigeria Centre for Disease Control, it was reported that the first detected B1525 genome was from a sample collected on 23 November 2020 from a patient in Lagos State, but the sample wasn't immediately updated to the database, hence the UK sample being the first recorded one.

So far, the variant has been detected among cases in five states in Nigeria. B1525 cases have also been reported in other countries in travelers from Nigeria. So the mutation may have first emerged in Nigeria.

Knowing if a certain variant is common in a population is useful for public health and policy decisions in a given country. But because the evolution of the coronavirus is occurring worldwide, it's best to avoid relating a variant to a country to avoid stigma.

**Different pattern of frequency**

Another way of defining the frequency of specific variants is to determine how often they occur compared with other variants in circulation at the same time. Looking at the frequency of B1525 sequences detected since the date that the first example of this variant was detected in that country, a different pattern of frequency emerges.

In Denmark, as of 20 February 2021, it accounted for 59 out of 12,222 sequences; in the UK, 57 of 100,063 sequences; and in Nigeria, 31 of 144 sequences.

This suggests that the variant is probably quite common in Nigeria, but rare in Denmark and the UK. A lack of sequence data may mask the frequency in other countries.

However, these types of calculations can be biased if viruses isolated from travelers are more likely to be sequenced.

Whichever way we choose to measure the frequency of B1525, it remains, at this point, a rare variant.

But it joins a growing list of coronavirus variants that need to be studied in detail in the laboratory and in infected people to find out if it's a variant we should be concerned about, and if so, where it sits on the leader-board of variants to watch and respond to.

***Sharon Peacock*** *is Director, COVID-19 genomics UK Consortium (COG-UK) and Professor of Public Health & Microbiology @ University of Cambridge.*

## New evidence shows coronavirus can infect and kill heart muscle cells

Source: https://newatlas.com/medical/covid19-heart-damage-virus-infects-muscle-cells/

Mar 02 – A robust new study has demonstrated how SARS-CoV-2, the coronavirus that causes COVID-19, can infect and directly damage heart tissue. The research suggests previously reported cases of heart damage in COVID-19 patients are not due to inflammation in response to an infection but the virus itself interfering with heart muscles.

Although COVID-19 was initially deemed a respiratory illness, consistent reports in 2020 indicated patients suffered from notable cardiovascular complications. The common early consensus was the heart problems associated with COVID-19 were a secondary result of widespread inflammation that accompanies the disease.

“Early on in the pandemic, we had evidence that this coronavirus can cause heart failure or cardiac injury in generally healthy people, which was alarming to the cardiology community,” explains Kory Lavine, senior author on the new study. “Even some college athletes who had been cleared to go back to competitive athletics after COVID-19 infection later showed scarring in the heart. There has been debate over whether this is due to direct infection of the heart or due to a systemic inflammatory response that occurs because of the lung infection.”

To better understand how SARS-CoV-2 interacts with human heart tissue, the new research engineered heart muscle models using stem cells. These *in vitro* models allowed the researchers to definitively demonstrate how the virus specifically infects heart muscle cells.
The modeling also revealed the virus directly destroys the heart cells responsible for muscle contraction, called cardiomyocytes. This particular heart cell damage can occur in the absence of any inflammation or be amplified by any resultant inflammation.
"Inflammation can be a second hit on top of damage caused by the virus, but the inflammation itself is not the initial cause of the heart injury," adds Lavine.
Lavine suggests SARS-CoV-2 seems to influence the heart in an unusual way, unlike other viruses. Whereas other viruses such as influenza are known to affect the heart, this one attracts a different kind of immune cell which could help explain why heart damage can linger for months in COVID-19 survivors.
"In general, the immune cells seen responding to other viruses tend to be associated with a relatively short disease that resolves with supportive care," says Lavine. "But the immune cells we see in COVID-19 heart patients tend to be associated with a chronic condition that can have long-term consequences."
Enduring heart problems are increasingly being recognized in recovered COVID-19 patients. A recent study tracking hospitalized COVID-19 patients in the months after discharge discovered 50 percent suffered some form of continuing heart damage.
Lavine and colleagues from the Washington University School of Medicine in St. Louis are urgently working on developing new animal models to better study the impact of COVID-19 on the heart. It is unclear exactly how long-lasting this heart damage may be, or what impact it has on one's future cardiovascular health.
"Even young people who had very mild symptoms can develop heart problems later on that limit their exercise capacity," adds Lavine. "We want to understand what's happening so we can prevent it or treat it."

▶▶ **The new research was published in the journal** *JACC: Basic to Translational Science*.

## Indoor Air Quality Study Shows Aircraft in Flight May Have Lowest Particulate Levels

Source: https://rh.gatech.edu/news/644903/indoor-air-quality-study-shows-aircraft-flight-may-have-lowest-particulate-levels

Mar 02 – If you're looking for an indoor space with a low level of particulate air pollution, a commercial airliner flying at cruising altitude may be your best option. A newly reported study of air quality in indoor spaces such as stores, restaurants, offices, public transportation — and commercial jets — shows aircraft cabins with the lowest levels of tiny aerosol particles.
Conducted in July 2020, the study included monitoring both the number of particles and their total mass across a broad range of indoor locations, including 19 commercial flights in which measurements took place throughout departure and arrival terminals, the boarding process, taxiing, climbing, cruising, descent, and deplaning. The monitoring could not identify the types of the particles and therefore does not provide a direct measure of coronavirus exposure risk.
"We wanted to highlight how important it is to have a high ventilation rate and clean air supply to lower the concentration of particles in indoor spaces," said Nga Lee (Sally) Ng, associate professor and Tanner Faculty Fellow in the School of Chemical and Biomolecular Engineering and the School of Earth and Atmospheric Sciences at the Georgia Institute of Technology. "The in-flight cabin had the lowest particle mass and particle number concentration."
The study, believed to be the first to measure both size-resolved particle mass and number in commercial flights from terminal to terminal and a broad range of indoor spaces, has been accepted for publication in the journal *Indoor Air* and posted online at the journal's website. Supported by Delta Air Lines, the research may be the first to comprehensively measure particle concentrations likely to be encountered by passengers from terminal to terminal.
As scientists learn more about transmission of the coronavirus, the focus has turned to aerosol particles as an important source of viral spread indoors. Infected people can spread the virus as they breathe, talk, or cough, creating particles ranging in size from less than a micron — one millionth of a meter — to 1,000 microns. The larger particles quickly fall out of the air, but the smaller ones remain suspended.
"Especially in poorly ventilated spaces, these particles can be suspended in the air for a long period of time, and can travel to every corner of a room," Ng said. "If they are viral particles, they can infect people who may be at a considerable distance from a person emitting the particles."

To better understand the circulation of airborne particles, Delta approached Ng to conduct a study of multiple indoor environments, with a strong focus on air travel conditions. Using handheld instruments able to measure the total number of particles and their mass, Georgia Tech researchers examined air quality in a series of Atlanta area restaurants, stores, offices, homes, and vehicles — including buses, trains, and private automobiles.


They trained Delta's staff to conduct the same type of measurements in terminals, boarding areas, and a variety of aircraft through all phases of flight. The Delta staff recorded their locations as they moved through the terminals, and the instruments produced measurements consistent with the restaurants and stores they passed on their way to and from boarding and departure gates.

"The measurements started as soon as they stepped into the departure terminal," Ng said. "We were thinking about the whole trip, what a person would encounter from terminal to terminal."

In flight, aircraft air is exchanged between 10 and 30 times per hour. Some aircraft bring in exclusively outside air, which at cruising altitude is largely free of pollutant particles found in air near the ground. Other aircraft mix outdoor air with recirculated air that goes through HEPA filters, which remove more than 99% of particles.

**In all, the researchers evaluated measurements from 19 commercial flights with passenger loads of approximately 50%. The flights included a mix of short- and medium-length flights, and aircraft ranging from the CRJ-200 and A220 to the 757, A321, and 737.**

Among all the spaces measured, restaurants had the highest particle levels because of cooking being done there. Stores were next, followed by vehicles, homes, and offices. The average sub-micron particle number concentration measured in restaurants, for instance, was 29,400 particles per cubic centimeter, and in offices it was 2,473 per cubic centimeter.

"We have quite a comprehensive data set to look at the size distribution of particles across these different spaces," Ng said. "We can now compare indoor air quality in a variety of different spaces."

Because of the portable instruments used, the researchers were unable to determine the source of the particles, which could have included both biological and non-biological sources. "Further studies can include direct measurements of viral loads and tracing particle movements in indoor spaces," she added.

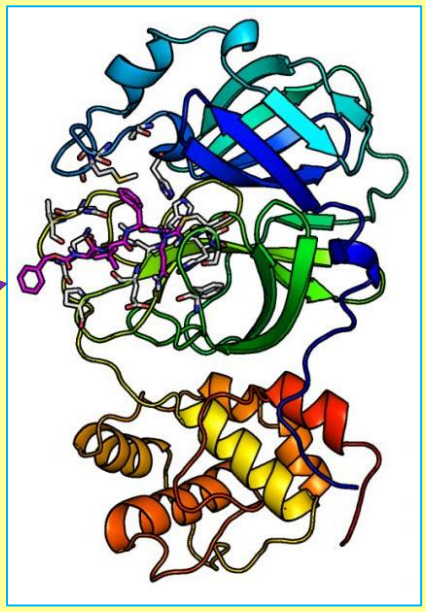
Jonathan Litzenberger, Delta's managing director of Global Cleanliness Strategy, said the research helps advance the company's goals of protecting its customers and employees.

"Keeping the air clean and safe during flight is one of the most foundational layers of protection Delta aims to provide to our customers and employees," he said. "We are always working to better understand the travel environment and confirm that the measures we are implementing are working."
Overall, the study highlights the importance of improving indoor air quality as a means of reducing coronavirus transmission.
"Regardless of whether you are in an office or an aircraft, having a higher ventilation rate and good particle filtration are the keys to reducing the total particle concentration," said Ng. "That should also reduce the concentration of any viral particles that may be present."
In addition to Ng, the researchers included Jean C. Rivera-Rios, Taekyu Joo, Masayuki Takeuchi, and Thomas M. Orlando from Georgia Tech; and Tracy Bevington, John W. Mathis, Clifton D. Pert, Brandon A. Tyson, Tyler M. Anderson-Lennert, and Joshua A. Smith from Delta Air Lines.

## Researchers discover SARS-CoV-2 inhibitors

Source: https://www.eurekalert.org/pub_releases/2021-03/uob-rds030321.php

Mar 03 – A research team of pharmacists at the University of Bonn has discovered two families of active substances that can block the replication of the SARS-CoV-2 coronavirus. The drug candidates are able to switch off the the key enzyme of the virus, the so-called main protease. The study is based on laboratory experiments. Extensive clinical trials are still required for their further development as therapeutic drugs. The results have now been published in the journal *Angewandte Chemie*.



In order for the SARS-CoV-2 coronavirus to replicate, it relies on the main protease as a key enzyme. The virus first has its genome translated from RNA into a large protein strand. The viral main protease then cuts this protein chain into smaller pieces, from which the new virus particles are formed. "The main protease is an extremely promising starting point for coronavirus drug research," says Prof. Dr. Christa E. Müller of the Pharmaceutical Institute at the University of Bonn. "If this enzyme is blocked, viral replication in the body's cells is stopped." The researcher is a member of the Transdisciplinary Research Area "Life and Health" at the University of Bonn.

Image with one of the newly developed inhibitors in the active centre. The individual domains of the protein are shown in different colours, the inhibitor in pink. (V. Namasivayam/Pharmazeutisches Institut/Uni Bonn)

The pharmaceutical chemists designed a large number of potential inhibitors based on the structure of the main protease and the mechanism by which the important virus-replicating enzyme works. "A suitable inhibitor must bind sufficiently tightly to the main protease to be able to block its active site," says Prof. Dr. Michael Gütschow, who heads an independent research group on such inhibitors at the Pharmaceutical Institute of the University of Bonn.

**Fluorescent test system**

Then the experimental phase began. The researchers developed a new test system for high-throughput screening. They offered the main protease a substrate to which a reporter molecule was coupled. When the protease catalytically cleaved this coupling, the fluorescence of the product was measurable. However, if a simultaneously administered inhibitor successfully blocked the activity of the protease, there was no fluorescence. "For most of the test compounds, we observed no enzyme inhibition. But on rare occasions in our comprehensive tests, fluorescence was suppressed: These were the hits we had hoped for in our search for inhibitors of the viral protease," reports Gütschow.

**Like chewing gum at the catalytic center**

The researchers' high-throughput screening showed two classes of drugs that appeared to be particularly promising. Customized compounds of both classes were then newly synthesized. They stick to the main protease like chewing gum and block the crucial catalytic center, which prevents the main protease from preparing the virus replication. "Some of the

compounds even have another effect," Müller reports. "They also inhibit a human enzyme that helps the virus enter body cells."
The participants contributed very different expertise to the study. "Only through great collaboration have we been able to design, synthesize and biochemically characterize suitable drug candidates," says Gütschow. "The best compounds represent promising lead structures for drug development," according to Müller. However, extensive clinical trials have yet to prove whether these candidates also inhibit SARS coronavirus-2 replication in humans, Gütschow adds.

## What Happens When People Get Infected With 2 Strains of COVID at Once?

**By Maitreyi Shivkumar**
Source: https://www.sciencealert.com/people-are-getting-infected-with-different-covid-variants-at-once-here-s-why-it-s-a-conern

Mar 04 – Scientists in Brazil recently reported that two people were simultaneously infected with two different variants of SARS-CoV-2, the virus that causes COVID-19.
This co-infection seemed to have no effect on the severity of patients' illness, and both recovered without needing to be hospitalized.
Although this is one of the few such cases recorded with SARS-CoV-2 – and the study is yet to be published in a scientific journal – scientists have observed infections with multiple strains with other respiratory viruses, such as influenza.
This has raised questions about how these viruses may interact in an infected person, and what it could mean for generating new variants.
Viruses are masters of evolution, constantly mutating and creating new variants with every cycle of replication. Selective pressures in the host, such as our immune response, also drive these adaptations.
Most of these mutations won't have a significant effect on the virus. But ones that give an advantage to the virus – for example, by increasing its ability to replicate or evade the immune system – are cause for concern and need to be closely monitored.
The occurrence of these mutations is down to the error-prone replication machinery that viruses use. RNA viruses, such as influenza and hepatitis C, generate a relatively large number of errors each time they replicate. This creates a "quasi-species" of the virus population, rather like a swarm of viruses, each with related but non-identical sequences.
Interactions with the host cells and immune system determine the relative frequencies of the individual variants, and these coexisting variants may affect how the disease progresses or how well treatments work.
Compared with other RNA viruses, coronaviruses have lower mutation rates. This is because they are equipped with a proofreading mechanism that can correct some of the errors that occur during replication.
Still, there is evidence of viral genetic diversity in patients infected with SARS-CoV-2.
The detection of multiple variants in a person could be the result of co-infection by the different variants, or the generation of mutations within the patient after the initial infection.
One way to discriminate these two scenarios is by comparing the sequences of the variants circulating in the population with those in the patient.
In the Brazilian study mentioned above, the variants identified corresponded to different lineages that had been previously detected in the population, implying co-infection by the two variants.

**Mixing it all up**

This co-infection has opened concerns of SARS-CoV-2 acquiring new mutations even more rapidly.
This is because coronaviruses can also undergo large changes in their genetic sequence by a process called recombination. When two viruses infect the same cell, they can swap large parts of their genomes with each other and create completely new sequences. This is a known phenomenon in RNA viruses. New variants of influenza are generated by a similar mechanism called "reassortment".
The genome of influenza virus, unlike coronavirus, comprises eight segments or strands of RNA.
When two viruses infect the same cell, these segments mix and match to produce viruses with a new combination of genes. Interestingly, pigs can be infected with different strains of influenza viruses, and have been referred to as "mixing vessels" that shuffle them into new strains. The 2009 H1N1 pandemic virus emerged from a reassortment of a human, avian, and two swine influenza viruses.
With coronaviruses, which only contain one RNA strand in each virus particle, recombination can only occur between RNA strands derived from one or more viruses in the same cell.
Evidence of recombination has been found both in the laboratory and in a patient infected with SARS-CoV-2, suggesting that this could drive the generation of new variants. In fact,

the ability of SARS-CoV-2 to infect human cells is proposed to have developed via recombination of the spike protein between closely related animal coronaviruses.
It is important to note that this requires the two viruses to infect the same cell. Even if a person is infected with several variants, if they replicate in different parts of the body, they will not interact with each other.
Indeed, this was seen in patients, where different quasi-species of coronaviruses were found in the upper and lower respiratory tracts, suggesting that viruses in these sites were not directly mixing with each other.
The evidence so far does not suggest that infection with more than one variant leads to more severe disease. And although possible, very few cases of co-infection have been reported.
More than 90 percent of the infections in the UK currently are by B117 – the so-called Kent variant. With such a high prevalence of one variant in the population, co-infections are not likely to occur.
Still, monitoring this landscape allows scientists to track the emergence of these new variants of concern and understand and respond to any changes in their transmission or vaccine efficacy.


***Maitreyi Shivkumar** is Senior Lecturer in Molecular Biology @ De Montfort University.*

## EMA starts rolling review of the Sputnik V COVID-19 vaccine

Source: https://www.ema.europa.eu/en/news/ema-starts-rolling-review-sputnik-v-covid-19-vaccine

Mar 04 – EM A's human medicines committee (CHMP) has started a rolling review of Sputnik V (Gam-COVID-Vac), a COVID-19 vaccine[1] developed by Russia's Gamaleya National Centre of Epidemiology and Microbiology. The EU applicant for this medicine is R-Pharm Germany GmbH.
The CHMP's decision to start the rolling review is based on results from laboratory studies and clinical studies in adults. These studies indicate that Sputnik V triggers the production of antibodies and immune cells that target the SARS-CoV-2 coronavirus and may help protect against COVID-19.


EMA will evaluate data as they become available to decide if the benefits outweigh the risks. The rolling review will continue until enough evidence is available for formal marketing authorisation application.
EMA will assess Sputnik V's compliance with the usual EU standards for effectiveness, safety and quality. While EMA cannot predict the overall timelines, it should take less time than normal to evaluate an eventual application because of the work done during the rolling review.
EMA will communicate further when the marketing authorisation application for the vaccine has been submitted.

**How is the vaccine expected to work?**
Sputnik V is expected to work by preparing the body to defend itself against infection with the SARS-CoV-2 virus. This virus uses proteins on its outer surface, called spike proteins, to enter the body's cells and cause COVID-19.
**Sputnik V is made up of two different viruses belonging to the adenovirus family, Ad26 and Ad5.** These adenoviruses have been modified to contain the gene for making the SARS-CoV-2 spike protein; they cannot reproduce in the body and do not cause disease. **The two adenoviruses are given separately: Ad26 is used in the first dose and Ad5 is used in the second to boost the vaccine's effect.**
Once it has been given, the vaccine delivers the SARS-CoV-2 gene into cells in the body. The cells will use the gene to produce the spike protein. The person's immune system will

treat this spike protein as foreign and produce natural defences − antibodies and T cells − against this protein.
If, later on, the vaccinated person comes into contact with SARS-CoV-2, the immune system will recognise the spike protein on the virus and be prepared to attack it: antibodies and T cells can work together to kill the virus, prevent its entry into the body's cells and destroy infected cells, thus helping to protect against COVID-19.

**What is a rolling review?**
A rolling review is a regulatory tool that EMA uses to speed up the assessment of a promising medicine during a public health emergency. Normally, all data on a medicine or vaccine's effectiveness, safety and quality and all required documents must be ready at the start of the evaluation in a formal application for marketing authorisation. In the case of a rolling review, EMA's human medicines committee (CHMP) reviews data as they become available from ongoing studies. Once the CHMP decides that sufficient data are available, the company can submit a formal application. By reviewing the data as they become available, the CHMP can come to an opinion on the medicine's authorisation sooner.
During the rolling review, and throughout the pandemic, EMA and its scientific committees are supported by the COVID-19 EMA pandemic task force (COVID-ETF). This group brings together experts from across the European medicines regulatory network to advise on the development, authorisation and safety monitoring of medicines and vaccines for COVID-19 and facilitate quick and coordinated regulatory action.

**EDITOR'S COMMENT:** Finally, the overall public health pressure led to overcome ideolepsy and stupidity about a Russian vaccine. And it is the only time that there is a logic explanation regarding the question "why two doses?"

## Dual use biotechnologies with terrorism potential

**By the Editor-in-Chief of C²BRNE Diary**

Certain biotechnologies with bioterrorism potential are presented below. It should be noted that their dual use is restricted due to the highly specialized equipment and knowledge required. But it should be kept in mind that weapons of mass disruption and destruction are not eyed only from rogue nations and terrorist organizations.

- **Artificial synthesis of viruses:** Small viruses are being synthesized, based on the availability of genetic code (e.g., poliovirus 2002)[1]. For larger viruses like smallpox[2], technologies are being explored to introduce DNA changes into the genome of other family members of poxviruses, which may lead to a change in the host range of these viruses to include humans.

- **Combinatorial Chemistry and High-Throughput Screening (HTS):** With the aid of specialized hardware and software, mixing and matching of chemical building blocks generate large collections of structurally related compounds (libraries). HTS rapidly tests the compound library for a desired biological activity. Thousands of structurally related molecules can be screened in a

[1] Cello, J, Aniko V. Paul, A, Wimmer, E (2002). Chemical Synthesis of Poliovirus cDNA: Generation of Infectious Virus in the Absence of Natural Template. *Science*; Vol.297, issue 5583, pp.1016-1018. Available at: https://science.sciencemag.org/content/297/5583/1016
[2] Kupferschmidt, K (2018). A paper showing how to make a smallpox cousin just got published. Critics wonder why. *Science*. Available at: https://www.sciencemag.org/news/2018/01/paper-showing-how-make-smallpox-cousin-just-got-published-critics-wonder-why

matter of weeks. Both the G-series and V-series nerve agents were discovered accidentally during industrial pesticide research and then developed into military CW agents by the German and British armies, respectively.[3]

- **Bioinformatics:** Bioinformatics is the application of large-scale data analysis techniques to the life sciences (biology and medicine in conjunction with computer science, statistics, mathematics, and physics). Misuse could help create pathogen strains with increased virulence or drug resistance.

- **CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats)/Cas9 (CRISPR-associated protein 9):** A genomic processing technology[4] that permits permanent modification of the organisms' genes therefore can be used as a basis for "manufacturing" new BWAs even at "garage" level.

- **Fusion protein misuse:** Insertion of a toxin in a protein, enabling it to identify and kill specific cells (e.g., cancer[5]) but also, if properly modified, to kill cells essential to human body functions.

- **Genetic engineering:** Through reverse genetic engineering, researchers can introduce viral RNA into bacterial cells, where it can then be manipulated much more easily (e.g., in connection with yellow fever virus, H1N1, influenza A, rabies, coronaviruses, H1N1, influenza A, H5N1).

- **Genomics and Proteomics[6]:** Use of advanced sequencing technologies (genomics) has led to mapping of the molecular signatures of bioregulatory systems of the body and enhanced insight how these regulatory pathways respond to disease-induced disturbances. Proteomics (the study of an entire collection of proteins produced by one sell in an organism) can differentiate strains and greatly enhances our knowledge of host-pathogen interactions, protein-protein interactions, as well as host response to infection and pathogenesis. Intervening into certain pathways and interactions can result in a difficult to handle biological attack.

- **Human Genome Project** (HGP: 1990-2003): An international project that enabled us, for the first time, to read nature's complete genetic blueprint for building a human being[7]. HGP provides sufficient data on ethnic genetic differences between population groups raising fears for future "ethnic bombs" (micro-organisms attacking known receptor sites or target DNA sequences inside cells by viral vectors). A Taiwanese study has discovered that Severe Acute Respiratory Syndrome (SARS) can be associated with specific genetic profiles.[8]

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[3] Tucker, J.B. (2010). Double-Edged Innovations: Preventing the Misuse of Emerging Biological/Chemical Technologies. (Chapter 6) Defense Threat Reduction Agency Advanced, Systems and Concepts Office. Available at: https://apps.dtic.mil/dtic/tr/fulltext/u2/a556984.pdf

[4] Cropper. N. (2020). CRISPR is Making Bioweapons More Accessible. American Security Project. Available at: https://www.americansecurityproject.org/crispr-is-making-bioweapons-more-accessible/

[5] Frankel. A.E., Powell. B.L., Duesbery. N.S., et al. (2002). Anthrax fusion protein therapy of cancer. Curr Protein Pept Sci; Aug;3(4):399-407. Available at: https://pubmed.ncbi.nlm.nih.gov/12370003/

[6] Maxwell. A. (2014). Proteomics and Bioterrorism: Identifying Anthrax Biomarkers. *ThermoFisher Scientific*. Available at: https://www.thermofisher.com/blog/proteomics/proteomics-and-bioterrorism-identifying-anthrax-biomarkers/

[7] The Human Genome Project. American Human Genome Research Institute. Available at: https://www.genome.gov/human-genome-project

[8] New Arab-Specific SARS Has Origins in Israeli Biological Weapons. Discussion in 'Arab Defence Forum' started by Arabi, Oct. 8, 2012. *Pakistan Defense*. Available at: https://defence.pk/pdf/threads/new-arab-specific-sars-has-origins-in-israeli-biological-weapons.211993/

- **Mechanism of action of micro-organisms:** Using molecular biology, certain mechanisms of virulence and infection have been identified raising fears for deliberate manipulation of these mechanisms (i.e., via transferring genetic traits into naturally infectious micro-organisms or altering their immunogenicity invalidating both vaccines and diagnostic methodologies).

- **Micro-encapsulation:** Prolongation of the shelf life of micro-organisms or proteins in the body or the environment by coating or enclosing them in a biopolymer capsule might also protect from UV light. Although micro-encapsulation might be helpful for curative purposes its misuse will be extremely harmful.

- **Nanotechnology** is the creation and use of functional structures ranging between 1 and 100 nm [9] ($10^{-9}$m). Toxin-nano-particles could easily pass through human biological barriers revealing a new class of BWAs. Anthrax spores used in mailed letters for the purpose of assassination were covered with rare, high technology hyalo-polymer[10] nanomaterials to avoid aggregation in order to keep the right size for effective inhalation[11]. During the Saddam Hussein era, Iraqi scientists used bentonite for covering anthrax spores; alternatively, tiny silicone particles (diameter: 5-70 nm) can be equally effective.[12]

- **Penetration enhancers:** Also called sorption promoters or accelerants are substances with the ability to penetrate the skin or human mucous membranes improving the absorption of drugs while lowering the threshold at which micro-organisms or toxins become harmful and this might lead to new routes for the delivery of BWAs.

- **Plant Pests and Diseases:** The use of modern technologies to improve the quality and quantity of farm products as well as food products raises possibilities also for modifications leading to agro-terrorism.

- **Protein engineering:** After 1980, a number of useful and valuable proteins were developed. But during this process it became possible to combine different epitopes of two different protein toxins to create a hybrid protein with higher toxicity, difficult to detect (e.g., combination of highly toxic but sensitive botulinum toxin with stable and robust staphylococcal enterotoxin results in a hybrid botulinum toxin that is heat and adverse environments' resistant[13]; combination of catalytic epitope of tetanus with the anthrax biding epitope resulting in a hybrid toxin affecting a wide spectrum of cells in lab animals[14]).

- **RNA interference (RNAi):** Technology suppressing cellular production of certain proteins in the physiological processes in order to halt undesirable processes or stimulate desirable ones which can be of importance in therapeutic use (e.g., use of aptamers (short, single-stranded nucleic acids) and tadpoles (protein-DNA chimeras) for inhibition of blood clot formation or age-related

[9] 1 nm = 1/80.000 human hair or the length of 10 hydrogen molecules in a row.

[10] Polymers are substances with a high molecular mass, composed of a large number of repeating units (monomers). Biological macromolecules or natural polymers include carbohydrates, starch, cellulose, glycogen and chitin. Synthetic polymers (smart polymers) made out of glycolic and lactic acids and other biodegradable materials can be used for a variety of purposes related to biotechnology and biomedicine (i.e., molecular imprinted polymers in combination with peptides used in diagnosis of mycotoxins).

[11] Lake. E. (2003). Were the anthrax spores coated with silica or not? The logic of the coating arguments. Anthrax Investigation. Available at: http://www.anthraxinvestigation.com/coatings.html

[12] The first responder. *Aristatek;* May 1, 2009 - Vol. VIII Issue 5. Available at: *https://www.aristatek.com/Newsletter/MAY09/MAY09ts.aspx*

[13] Friedman. M. and Rasooly. R. (2013). Review of the Inhibition of Biological Activities of Food-Related Selected Toxins by Natural Compounds. Toxins (Basel). 2013 Apr; 5(4): 743–775. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3705290/

[14] Arora. N., Williamson. L.C., Leppla. S.H., Halpern. J.L. (1994). Cytotoxic effects of a chimeric protein consisting of tetanus toxin light chain and anthrax toxin lethal factor in non-neuronal cells. J Biol Chem 269: 26165–26171. Available at: https://pubmed.ncbi.nlm.nih.gov/7929330/

ocular degenerative conditions)[15]. Silencing of certain immune-involved genes could lead to conditions that mimic natural disease.

- **Bioregulators:** Naturally occurring organic compounds that regulate diverse cellular processes in all organisms (e.g., breathing; blood pressure; heart rate; sleep; mood control) in very low doses with very rapid effects. Bio-regulators (e.g., angiotensins; bombesin; bradykinin; endorphins; substance-P) are considered to pose a serious threat of being used for illicit purposes due to the increased understanding of inter- and intracellular processes and control of central biological processes of mammalian systems, including human. [16]

## Case Study: How to Accelerate COVID-19 Vaccine Development

**By Vivienne Raper, PhD**

Source: https://www.genengnews.com/topics/bioprocessing/case-study-how-to-accelerate-covid-19-vaccine-development/

Feb 24 – The University of Queensland (UQ) is among the many academic facilities that joined the global effort to develop COVID-19 vaccines. Here, Trent Munro, PhD, program director of the UQ's rapid response vaccine pipeline, explains to *GEN* contributing writer Vivienne Raper, PhD, how they manufactured millions of potential doses within a few months.

[15] Globalization, Biosecurity, and the Future of the Life Sciences. National Academies Press, 2006; pp. 169-170.

[16] Bajgar.J., Kassa. J., Fusek. J., and Jun. D. (2020). Chapter 27 – Other toxic chemical as potential chemical warfare agents. Handbook of Toxicology of Chemical Warfare Agents. Edited by Ramesh C. Gupta. Academic Press, Mar 31, 2020; pp.407-408.

***GEN:* How did your program start?**

**Munro**: Pre-COVID-19, the Coalition for Epidemic Preparedness Innovations (CEPI) wanted to test how rapidly a few different platform techs could respond to a new virus. They invested in us because we had a plug-and-play platform. When COVID-19 hit, we weren't ready, but we had everything in place from a knowledge point-of-view.

***GEN:* How did you rapidly large-scale manufacturing?**

**Munro**: We developed commercial partnerships with Lonza, Cytiva, Patheon-Thermo Fisher Scientific, and CSL Behring. Those four groups were able to take our vaccine out of the lab to be used—potentially—for hundreds of millions of doses.

Most people in a lab environment would have struggled to put those pieces together, but I'd just come from a long stint in industry where I'd worked in process development, so I had a clear sense of what needed to be done to make it industry friendly.

I knew we had to solve the upstream issues to be industry-relevant, and on the downstream side we needed a partner to create a chromatography resin for large-scale GMP. We already had a stable cell line, which used Chinese Hamster Ovary (CHO) cells, and it fit in with a lot of installed infrastructure for bioproduction.

There was a lot of willingness from companies to work with us. For example, we spoke to Lonza about their GS Xceed platform and, after emailing overnight, we were working with it within a week.

Looking back, we were lucky that everything worked beyond our expectations. The Cytiva resin just plugged-and-played, and the Lonza system created high-quality material from the get-go.

***GEN:* So, what happens next?**

**Munro**: The punchline is that our program was halted in December because the portion of the vaccine which stabilized it, was creating antibodies against GP41. The response was so good that the antibodies against the stabilized domain interfered with HIV screening. That was enough to create concern around vaccine hesitancy and led to us not pushing into Phase III.

Before that happened, our partner CSL had completed multiple large-scale cGMP runs and millions of potential doses, which—for a mammalian CHO cell line—is difficult to do.

## HEP-based ventilator to be adapted for clinical use

Source: https://cerncourier.com/a/hep-based-ventilator-to-be-adapted-for-clinical-use/


Jan 27 – A versatile ventilator to help combat COVID-19 developed by members of the LHCb collaboration is to be re-engineered for manufacture and clinical use. The High-Performance Low-cost Ventilator (HPLV) is designed to assist patients in low- and middle-income countries suffering from severe respiratory problems as a result of COVID-19. Following the award of £760,000 by UK Research and Innovation, announced in December, Ian Lazarus of the Science and Technology Facilities Council's Daresbury Laboratory and co-workers aim to produce and test plans for the creation of an affordable, reliable and easy to operate ventilator that does not rely so heavily on compressed gases and mains electricity supply.

"I am proud to be leading the HPLV team in which we have brought together experts from medicine, science, engineering and knowledge transfer with a shared goal to make resilient high-quality ventilators available in areas of the world that currently don't have enough of them," said Lazarus in a press release.

While the majority of people who contract COVID-19 suffer mild symptoms, in some cases the disease can cause severe breathing difficulties and pneumonia. For such patients, the availability of ventilators that deliver oxygen to the lungs while removing carbon dioxide is critical. Commercially available ventilators are typically costly, require considerable experience to use, and often rely on the provision of high-flow oxygen and medically pure compressed air, which are not readily available in many countries.

The HPLV takes as its starting point the High Energy physics Ventilator (HEV), which was inspired by an initiative at the University of Liverpool and developed at CERN in March 2019 during the first COVID-19 lockdown. The idea emerged when physicists and engineers in LHCb's vertex locator (VELO) group realised that the systems which are routinely used to supply and control gas at desired temperatures and pressures in particle-physics detectors are well matched to the techniques required to build and operate a ventilator (*CERN Courier* May/June 2020 p8). HPLV will see the hardware and software of HEV adapted to make it ready for regulatory approval and manufacture. Project partners at the Federal Institute of Rio de Janeiro in Brazil – in collaboration with CERN, the University of Birmingham, the University of Liverpool and the UK's Medical Devices Testing and Evaluation Centre – will now identify difficulties encountered when ventilating patients and pass that information to the design team to ensure that the HPLV is fit for purpose.

"We warmly welcome the HPLV initiative, and look forward to working together with the outstanding HPLV team for our common humanitarian goal," says Paula Collins, who co-leads the HEV project with CERN and LHCb colleague Jan Buytaert. The HPLV is one of several HEV offshoots involving 25 academic partners, she explains. "In December we also saw the first HEV prototypes to be constructed outside CERN, at the Swiss company Jean Gallay SA, which specialises in engineering for aerospace and energy. We have continued our outreach worldwide, and in particular wish to highlight an agreement being built up with a company in India that plans to modify the HEV design for local needs. None of this would have been possible without the incredible support and advice received from the medical community."

## Those fever scanners that everyone is using to fight covid can be wildly inaccurate

Source: https://www.washingtonpost.com/technology/2021/03/05/fever-scanner-flaws-covid/


A thermal scanner shows the estimated body temperatures of travelers in Seoul. (Ahn Young-Joon/AP)

Mar 04 – Temperature-scanning devices that check for fevers in schools, workplaces and public venues across the United States distort the results in a way that could overlook the telltale sign of a coronavirus infection, according to new research that casts doubt on the systems' effectiveness in helping people resume normal life.

The thermal cameras and "temperature tablet" kiosks have been heralded as a critical first line of defense against new pandemic outbreaks. But in a new study of the scanners by the surveillance research organization IPVM, researchers warn that the tools are dangerously ineffective, raising the risk that infected people could be waved through medical screening checkpoints and go on to spread the virus unchecked.

**On Thursday night, shortly after The Washington Post discussed the research findings with the Food and Drug Administration, the agency issued a public alert warning that improper use of the devices could lead to inaccurate measurements and "present potentially serious public health risks."**

The agency also announced that it was sending official "warning letters" to one of the discussed companies, as well as three others, for selling "unapproved, uncleared, and unauthorized thermal imaging systems."

In the letter to the company, Certify Global, FDA officials said use of the devices carried the risk of incorrect detection, particularly if used to scan multiple people simultaneously, and that a person with an undetected fever may "be less likely to adhere to infection prevention and control guidelines."
The researchers found that seven widely used scanners attempt to compensate for the imprecisions of lower-cost sensors and the unpredictable factors of real-world tests by "normalizing" the readings of people's temperatures.
But that "compensating algorithm," they argue, severely undermines the devices' medical usefulness. A feverish person with a core temperature of 100.4 degrees, their research found, could be assessed by the test devices as having a temperature of 98 degrees, well within the healthy range.
"The utility of these devices as fever screeners is now highly questionable, and arguably a risk to public health, because they actively report fevers as normal," said Conor Healy, the lead researcher of the study set for publication in the Journal of Biomedical Optics.
Representatives of the tested companies Certify, Dahua, Meridian and ZKTeco disputed the findings, saying their systems don't manipulate temperature readings but in some cases use software techniques to "self-calibrate" to their environment.
"The deviation setting is not intended to 'distort' results. It's designed to allow customers to receive alerts only when actual threats exist," said Larry Reed, the chief executive of ZKTeco, which makes a "SpeedFace" thermal-imaging system that sells for about $3,800. "On a hot summer day in Arizona, [non-feverish] employees might trigger the device alarm all day if it's set at 101 degrees and the employees are scanned upon immediately entering the building."
Peter Plassmann, a thermography expert whose U.K.-based company Thermetrix designs thermal-imaging systems for medical use, said the research highlights how companies have sought to bolster their business by oversimplifying how well the devices are supposed to work.
"That's generally the problem with infrared imaging: It's so deceptively easy," he said. "You point the camera at somebody, you get a nice colorful image and you get a temperature reading. Great. But in reality, it's all rubbish. There are so many factors you need to consider."
Companies have promoted the thermal-imaging systems for their ability to measure temperatures more quickly and at a safer distance than traditional and infrared thermometers that measure temperature from a person's forehead, ear or mouth.
The scanners use infrared sensors to analyze the heat radiating from a person's skin — a close but imperfect reflection of their core body temperature — and some systems are advertised as being able to assess multiple people in a passing crowd.
The FDA typically requires thermal scanners and other medical-use devices be tested for safety and effectiveness under a process known as 510(k) clearance. But in April, the agency said it would no longer require premarket reviews or object to unvetted devices that did not "create an undue risk."
A surge of new thermal scanners followed, said the researchers, who counted more than 200 companies now making or advertising such devices. Many of the companies first jumped into the market last year without any previous experience in thermal-imaging or medical devices.
The FDA has said the change was a necessary move to address fears of device shortages. But the researchers said they worry that such untested systems are now widely distributed across the country and could fuel a "false sense of security" that could imperil public health.
Thermal scanners face a huge flaw in their ability to detect coronavirus infections: Approximately 40 percent of infected people won't have a fever at all, the Centers for Disease Control and Prevention estimated last year. And a person's temperature can shift wildly based on many factors, including if they're overweight, stressed, menopausal or wearing heavy clothing, or if they recently exercised, stepped out of a hot car, or drank alcohol or caffeine.
But because there is no immediate alternative for detection, many officials have seen the fever scans as perhaps their only way of identifying someone who could spark a new outbreak. Some companies and local governments have spent tens of thousands of dollars per camera to bolster their defenses.
The FDA has worked to adjust Americans' expectations about how useful the systems can be. The agency says in official guidelines that thermal scanners are "not effective at determining if someone definitively has covid-19"; that they "have not been shown to be accurate when used to take the temperature of multiple people at the same time"; that their accuracy depends heavily on "careful set-up and operation"; and that "their effectiveness as part of efforts to reduce the spread of disease has been mixed."
Bill Maisel, the chief medical officer and director of the Office of Device Evaluation at the FDA's Center for Devices and Radiological Health, said the research identified several systems that "didn't have the level of accuracy that we would expect." Even after the premarket review change last year, he said, the FDA still required all devices to meet certain performance expectations. The agency, he added, regularly monitors for problematic systems and works with the companies to address errors when their products are found to underperform.

The devices, he said, should play only a limited role when assessing risks during the pandemic, and they are no replacement for social distancing, mask-wearing or more traditional medical screening.
Thermal-imaging devices are "imperfect, and they are particularly imperfect when screening for covid," he said. "The inaccuracy of devices is one of the aspects that contributes to the imperfection."
The IPVM researchers did not test traditional thermometers, and their findings confirmed that some FDA-cleared devices returned near-perfect accuracy. But all of the thermal scanners they tested appeared to deliberately "normalize" high temperature readings into a healthier, non-fever-like range: Colder readings were pulled higher, while hotter readings were pulled down.
The tested systems relied on lower-cost hardware with dramatically lower precision: Several scanners used a sensor with a resolution of about 1,000 pixels — far more limited than the 76,000-pixel sensor found in one of the FDA-vetted machines they used as a control device.
To get an accurate temperature reading, international guidelines for medical electrical equipment say the systems should only be used in controlled environments with regularly calibrated devices on people who are consistently "prepared": People walking in from an indoor waiting room, for example, would offer very different results than others who had lined up waiting in the sun.
But the companies, Healy said, appeared to navigate that challenge by making the systems appear to work consistently across a wide range of ever-changing conditions.
The systems, Healy said, were designed "to maintain an appearance of normal function despite poor device capabilities or screening conditions, enabling manufacturers to cover up performance issues while selling to a much wider set of use-cases."
IPVM is a surveillance research group that examines camera hardware, imaging devices and other technical tools for its members, largely in the security industry. Its researchers examined the systems in a temperature-controlled warehouse laboratory in Pennsylvania.
The tested companies are not household names, but they form the technical backbone of the screening systems used in schools, retail stores and workplaces nationwide. The devices range in price, from $600 to $13,000, and are promoted as being able to conduct person-by-person entry scans or assess visitors en masse.
Certify, a Maryland-based seller of devices found in casinos and hotels, advertises on its website that it offers "the #1 Fever Detection & Thermal Scanning Solution in the Marketplace" and can "replace manual scanning."
Certify spokeswoman Jasmine Neisser said the system does not alter high temperatures but does set a minimum temperature level that will return a 96-degree reading if the scan fails. The system, she said, "uses world-class manufactured sensors for thermal applications, which are rigorously tested for accuracy."
Certify Vice President Tim Goodwin had said in a LinkedIn post that devices like the SnapXT Pro, its $2,000 thermal scanner with an eight-inch touch screen, could be found in "more than 75 percent of NFL stadiums." An NFL spokesperson disputed that claim, saying the devices are used in about a dozen of the league's 30 stadiums nationwide. (Neisser said that the comment related to the number of open stadiums when the post was written last year and that at the time Certify devices had been deployed in five of the eight stadiums then open to visitors.)
Plassmann said the medical-equipment industry standards for deploying such systems, which cover everything from the lighting and humidity of screening rooms to how much time people should acclimate before their test, are often ignored in the real world, where unpredictable conditions and public circumstances can vary wildly and skew the results.
He said he has seen an influx of companies that offer glossy marketing materials but little commitment to the best practices for public health use, and he said he is concerned that their widespread deployment could undermine efforts to guard against new outbreaks. "It needs to be done properly," he said, "or it can do more harm than good."

## DHS IG finds holes in U.S. bioterrorism detection system

Source: https://www.axios.com/homeland-security-ig-biological-threat-detection-1a8877ed-d4f4-4f6a-9aee-2b8d55c88aa3.html

The U.S. program responsible for detecting and responding to threats of bioterrorism lacks detection equipment in more than half the country and was unable to spot multiple biological agents known as possible threats, the Department of Homeland Security's inspector general said in a report released Thursday.
**Why it matters:** If the country does not improve the program, called BioWatch, the "United States' ability to prepare, detect, and respond to a potential bioterrorism attack is impeded, which could result in significant loss of human life," the IG said.

**Context:** The BioWatch Program was formed under the George W. Bush administration in 2003 after numerous anthrax attacks against news media offices and members of Congress killed five people and infected several others in 2001.

- BioWatch claims to operate a nationwide aerosol detection system, but the IG said it "does not operate a nationwide early warning system."

BioWatch – San Francisco

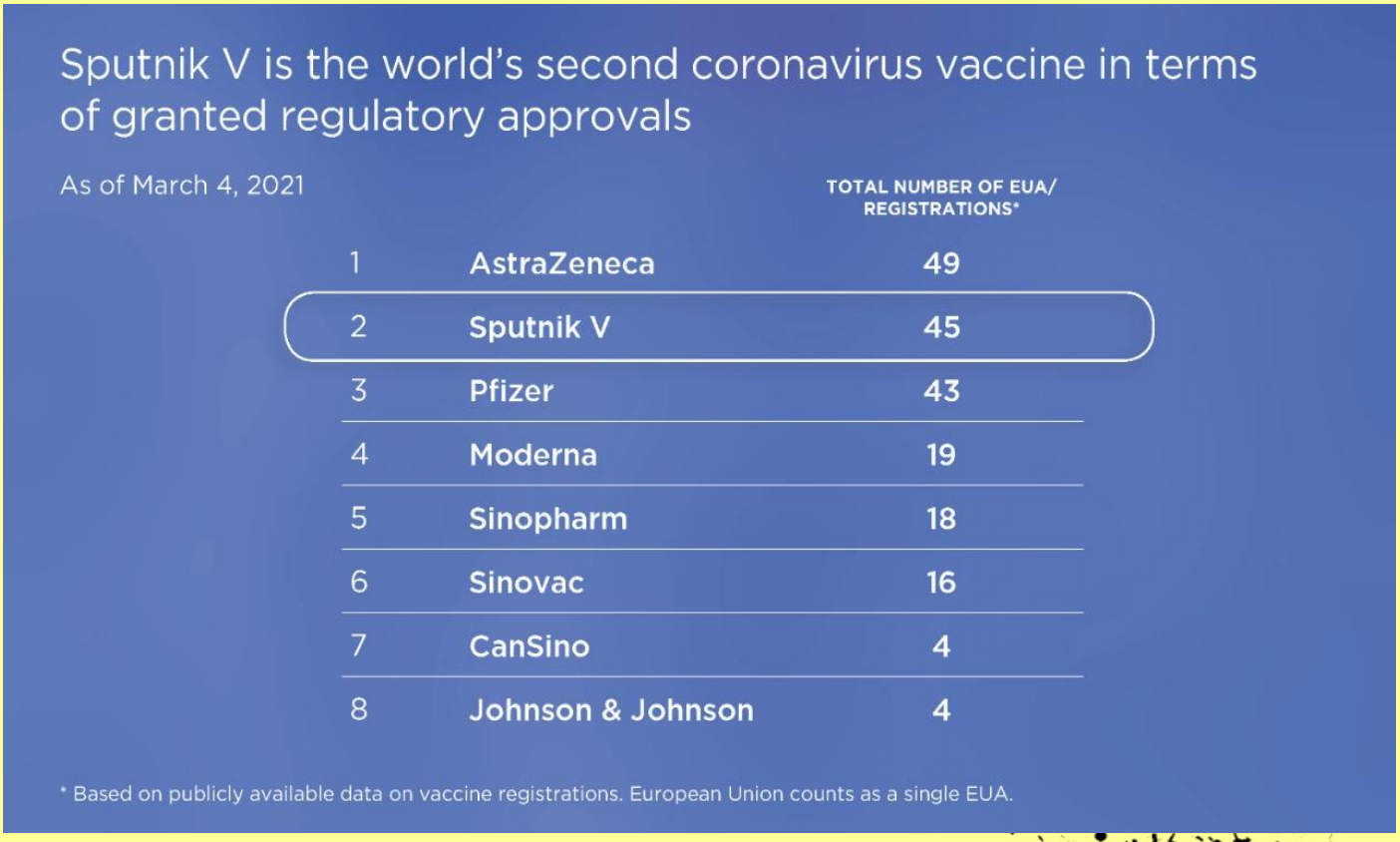
**The big picture:** The IG's audit of the program found it had equipment to detect bioterrorism agents in 22 of 50 states, leaving 56% of the U.S. without coverage.

- The IG also said BioWatch only monitors 6 of 14 biological agents known to be threats because it has not updated its detection capabilities.
- BioWatch left equipment exposed and unguarded at 34 of 35 detection sites across the country, meaning the tools could be disarmed in a security breach.

**What they're saying:** "Until [Countering Weapons of Mass Destruction Office] addresses these information sharing weaknesses, the Nation's readiness to respond to a potential bioterrorism attack that may result in significant loss of life is at risk," the IG office said.

- "BioWatch's limited footprint puts the Nation at a disadvantage to timely identify and respond to potential biological attacks."

## Vaccines' ranking



# MEDICAL SHOCKER: Scientists at Sloan Kettering discover mRNA inactivates tumor-suppressing proteins, meaning it can promote cancer

Source: https://www.afinalwarning.com/500036.html

Mar 02 – There's a secret layer of information in your cells called messenger RNA, that's located between DNA and proteins, that serves as a critical link. Now, in a medical shocker to the whole world of vaccine philosophy, scientists at Sloan Kettering found that mRNA itself carries cancer CAUSING changes – changes that genetic tests don't even analyze, flying completely under the radar of oncologists across the globe. So now, it's time for independent laboratories that are not vaccine manufacturers (or hired by them) to run diagnostic testing on the Covid vaccine series and find out if these are cancer-driving inoculations that, once the series is complete, will cause cancer tumors in the vaccinated masses who have all rushed out to get the jab out of fear and propaganda influence. Welcome to the world of experimental and dirty vaccines known as mRNA "technology."

**Previously unknown cancer driving messengers are hiding in RNA, not DNA**

This mind-blowing discovery should be published on every medical news site, newspaper, television news broadcast and on the CDC website, but unless you are reading this article and use DuckDuckGo as your search engine, you probably wouldn't ever see it. That's because Google is in on the fix, with Big Pharma and the VIC – the vaccine industrial complex. So, here's a more in-depth explanation of what we're looking at, for real, regarding mRNA and vaccines. The information carrying molecule, messenger RNA, can instruct human cells ultimately in the same way as cancer drivers, playing a major role in causing cancer to thrive while inactivating natural tumor-suppressing proteins the human body creates to save you from cancer. This is the complete opposite of what the CDC and the vaccine manufactures are telling everyone right now about the Covid vaccines, and this is based on clinical research by molecular biologists at the Sloan Kettering Institute. Even sequencing the DNA in cancer cells doesn't reveal these changes, that's how sneaky the vaccines are. It's like a Trojan horse that tells your cells to allow these changes to be made, as if they were safe, but they're not. All assumptions being made about mRNA being 'safe' right now have been completely turned 180 degrees with this research. Consider this very carefully if you have not yet been vaccinated with mRNA technology, and you may want to 'lawyer-up' if you already got the jabs.

**After your Covid vaccination, RNA is transported out of your cell's nucleus, and will no longer function properly as a cancer tumor suppressor**

Bill Gates and the Vaccine Industrial Complex are very sinister, as we all know, but to create vaccines that truncate (disable by cutting short) cancer tumor suppressors, and destroy the human body's ability to protect against cancer, well, that's just complete insanity. Truncated tumor-suppressor proteins are similar to the DNA mutations that cause cancer cells to mutate and multiply uncontrollably. Will America see cancer cases skyrocket over the next few years due to Covid vaccines? Only time will tell, but right now, science is revealing that it's likely. Pay close attention. Therefore, anyone who is scared to death of the Covid vaccines is pro-science rather than anti-science, because the science shows the mRNA technology is very dangerous, especially concerning proteins that fuel cancer tumors. Let's say that again: Science shows mRNA technology can fuel cancer tumor growth.

**Substantial amount of people with blood cancer have the SAME inactivation of tumor-suppressor genes at the mRNA level**

Scientists also discovered that a substantial amount of people with blood cancer, a.k.a. chronic lymphocytic leukemia (CLL), have the same exact inactivation of tumor-suppressor genes at the mRNA level. In fact, the mRNA changes they detected could possibly account for the missing DNA mutations, and that spells out bad news for everyone who thinks the Covid vaccine series is "safe and effective." It's effective alright, at suppressing anti-cancer proteins, one might conclude. Even if just half (partial truncation) mRNA changes in human cells take place, it's enough to "completely override the function of the normal versions that are present," according to the Sloan Kettering team of scientists. These changes can also apply to 100 different genes at the same time, so the changes can add up quickly and cause horrific health repercussions. Of course, mainstream media will dismiss any connections made by these discoveries, but they're paid to regurgitate pharma talk, so that's not surprising at all. It is important to note that mRNA changes, according to researchers, are not limited to blood cancer, but have been linked to acute lymphatic cancer and breast cancer. Could this mean we're looking at a new population control mechanism hidden in messenger RNA? About 20,000 people in the US develop "CLL" chronic lympthocytic leukemia each year. How many will

quietly begin developing it now, and then have it suddenly "show up" five years from now? Symptoms include fatigue, enlarged lymph nodes, and night sweats. Did you get mRNA vaccinated and experience those symptoms already? Are those symptoms on the warning label – the vaccine insert? Did you read them? There's only one "treatment" offered right now for CLL by the Pharma Industrial Complex, and that's stem cell bone marrow transplantation. Oh, but it's only recommended if your CLL is "likely" to advance. Do your mRNA vaccines now qualify you as "likely" to advance with CLL? Tune your internet dial to Vaccines.news for updates on human challenge trials for people interested in suppressing genes that fight cancer. No wonder Mark Zuckerberg is scared to death about the Covid vaccine.

▶▶ **Read also:** **Fertility warning**: 34 cases of spontaneous miscarriage and stillbirth reported after experimental mRNA vaccines
More than **1,170 people have died** after coronavirus vaccines in the U.S. alone (so far)

## Coronavirus quarantine camp in Toronto runs out of food and water for prisoners

Source: https://pandemic.news/2021-03-05-coronavirus-quarantine-camp-toronto-runs-out-of-food-water.html

Mar 05 – Canada's new Wuhan coronavirus (COVID-19) quarantine "rules" for travelers returning from outside its borders are making headlines, and not in a good way.

Angry mobs are reportedly forming in the lobbies of hotels that have been turned into makeshift *concentration camps* where those entering from abroad are being forced to stay, on their own dime, for a minimum of three days.

Hotels like the Sheraton Gateway Hotel in Toronto are apparently running out of food and water to feed and hydrate their prisoner "guests" who, despite testing "negative" for the Chinese virus, are still being ordered by Justin Trudeau to remain at a total cost of around $2,000 per person.

Guests say they are having to wait hours to get any kind of nourishment from staff, and what they receive is often subpar at best.

"We are not animals" shouted one angry woman who was captured in video footage arguing with staff at the Sheraton.

Another man is heard yelling that he had to wait in line for "more than two hours" just to get some WuFlu rations for the night.

**On top of having to pay these exorbitant nightly rates to stay at the hotel quarantine camps, food and beverages cost even more. One man showed a box of beans and rice, along with a salad and a Diet Pepsi, all of which cost him a whopping $47.23.**

"This is criminal," the man states in a video he posted to Twitter.

Another hotel guest likewise complained about the "suffering" caused by the "bad quality food." Not only is the food quality poor, but this person added that vegetarians are receiving chicken sandwiches and other "restricted" items.

At the nearby Holiday Inn quarantine, guests complained about a lack of water, cold food and no eating utensils.

"I was so hungry," one woman told *CTV News*. "I called so many times," she added, explaining that when she finally received some food, they left without giving her the beverage she ordered.

**Trudeau's Chinese virus impositions are causing women to get raped**

Another problem at these quarantine hotels is sexual assault. With so many people crammed into the buildings and minimal security, the facilities are breeding grounds for rape.

One woman told the media that a predator forced his way into her room and started taking off his clothes while touching himself. Early on, there was no security anywhere in the proximity to help her.

Another predator was found to be disguised as a quarantine security guard. He, too, was accused of sexually assaulting a woman during a "check," which presumably refers to a temperature check.

It is a good thing Canada is not doing Wuhan coronavirus (COVID-19) anal swabs like communist China is, otherwise sexual assault incidents would be even more prominent.

While Canadian law does not technically require anyone to follow Trudeau's new "order," as of yet there has not been a reported case of anyone challenging it in order to get it dismissed in court.

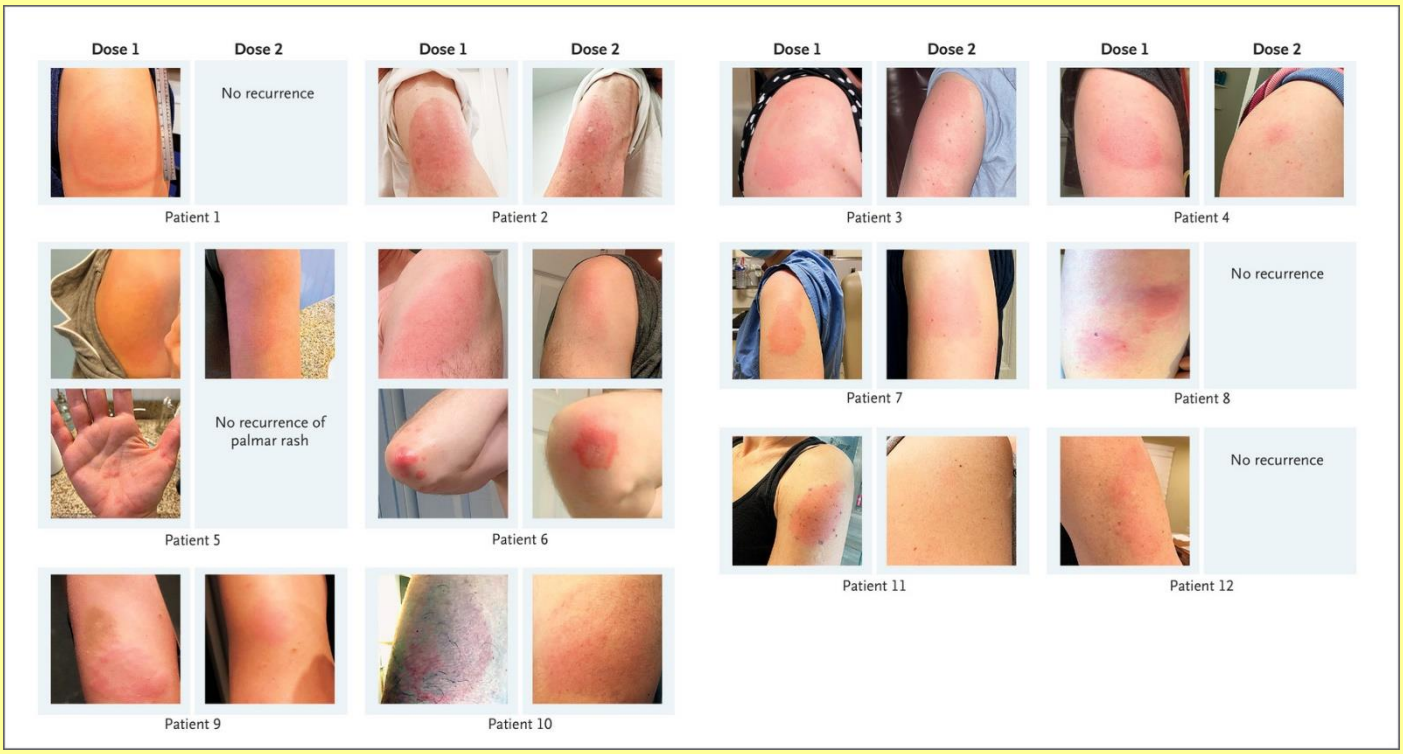
One man was actually dragged against his will into one of these internment camps straight out of the airport and forcibly tested. Should he decide to sue, he very well could end up setting a precedent against this type of draconian abuse of civil liberties.

"These are people who had to test negative before even getting on the plane," pointed out one *RT* commenter. "Once they land in Canada, they have to take a second test and wait in these detention hotels for 3 days for which they are paying $2000 per person and more for a family or couple."
"If the second test is also negative, they can spend the next 14 days at home during which time the police and private security will come to their homes to check on them. Only Trudeau knows what happens if they test positive."

## Researchers examine a few delayed skin reactions after Moderna vaccine

Source: https://www.aha.org/news/headline/2021-03-04-researchers-examine-few-delayed-skin-reactions-after-moderna-vaccine

Mar 04 – A research letter published yesterday in the New England Journal of Medicine looks at delayed injection-site skin reactions to the Moderna COVID-19 vaccine four to 11 days after 12 people received the first dose. All 12 received a second dose, since delayed injection-site or hypersensitivity reactions are not contraindications for subsequent vaccination. Three of them experienced a similar skin reaction and three a lesser reaction one to three days after the second dose, the authors said. Most received treatment for their symptoms, which resolved two to 11 days after onset. Delayed injection-site reactions occurred in 0.8% of the 30,420 participants in a phase 3 clinical trial of the vaccine, the study notes.




"We hope this letter encourages additional reporting and communication regarding the epidemiologic characteristics, causes, and implications of these delayed cutaneous reactions, since this information might allay the concerns of patients, encourage completion of vaccination, and minimize the unnecessary use of antibiotic agents," the authors said.

## Choices in a Crisis — Individual Preferences among SARS-CoV-2 Vaccines

**By Daniel B. Kramer, M.D., M.P.H., Douglas J. Opel, M.D., M.P.H., Efthimios Parasidis, J.D., M.B.E., and Michelle M. Mello, J.D., Ph.D.**

Source: https://www.nejm.org/doi/full/10.1056/NEJMp2102146?query=recirc_top_ribbon_article_5

The extraordinarily swift development of effective vaccines against SARS-CoV-2 offers new optimism about combating the Covid-19 pandemic. So far, vaccine demand far exceeds supply, and people generally cannot choose which vaccine they receive. In the United States, this lack of choice has generated little debate given the similar mechanism of action,

number of required doses, safety profile, and efficacy of the two vaccines approved in December 2020, both based on mRNA technology. However, the Food and Drug Administration (FDA) has now granted emergency use authorization (EUA) for a third vaccine and may consider additional vaccines for EUA. As real-world experience with vaccination accumulates, meaningful differences in effectiveness against new SARS-CoV-2 variants and adverse reaction rates may emerge, along with new information about relative effectiveness in preventing transmission. Thus, the question of whether individual vaccinees should be able to choose which vaccine they receive will become increasingly salient.

**Three key arguments may support incorporating individual preferences into the growing infrastructure for vaccine deployment**. **First**, the principle of patient autonomy anchors medical interventions in respect for personhood and self-determination. The arrival of multiple vaccine options presents an opportunity to allow people to make informed choices based on their preferences, including the relative weight they attach to efficacy, avoiding adverse effects, waiting times, and convenience. This opportunity is particularly relevant for vaccines authorized under EUAs, without full FDA licensure and its associated assurance. Some people may, for example, favor a newly authorized single-dose vaccine over an existing multidose vaccine that comes with more real-world safety experience. Notwithstanding the imperative to promote the public's health by reducing illnesses and deaths due to severe Covid-19, people may reasonably expect to exercise their own discretion and align their decisions with their values. Circumstances in which individual choices are overridden or liberty is restricted — vaccination mandates, for example — are controversial precisely because of the central place of autonomy in medical decision making.

**Second**, affording people some choice might increase overall vaccination acceptance. Multiple reports have documented that the U.S. public's level of willingness to be vaccinated falls short of recommended targets for achieving herd immunity and reducing community spread; and willingness to receive a SARS-CoV-2 vaccine may vary with particular vaccine attributes.[1] Vaccine nationalism is also relevant: surveys reveal that some Americans are more accepting of vaccines developed in the United States, while some United Kingdom residents are more willing to receive "the English jab."[2] Allowing choice may help overcome reluctance tied to particular vaccine characteristics and facilitate the critical public health aim of high uptake.

**Third,** allowing choice acknowledges that the genuine differences among available vaccines, regardless of how they are viewed by public health officials, may be meaningful to the public. From this perspective, restricting choice fails to take seriously patients' concerns about new platforms or available safety data. Acknowledgment of these preferences and vaccine variations could complement accurate, transparent, and truthful messaging and promote public trust.

We believe that public health officials should anticipate these good-faith concerns and provide clear recommendations regarding accommodation of individual preferences. Nevertheless, at this point in the pandemic, we find countervailing considerations more compelling, and we recommend restricting patient choice. **The key guideposts for this position are expediency, equity, and equanimity.**

First, to achieve the primary goal of protecting the public's health, it is essential to vaccinate as many people as possible as quickly as possible. Indeed, current policies that aim to reduce direct patient costs for SARS-CoV-2 vaccines illustrate the uniquely compelling need to streamline administration. The formidable logistic burdens of facilitating vaccine choice could substantially reduce efficiency in vaccine administration. Organizations administering vaccines already face challenges in estimating dose supply and demand on a given day or week in order to calculate utilization and avoid waste. Adding another variable into "the last mile" would introduce more scheduling chaos if choosier patients made and canceled multiple appointments in attempts to secure their preferred vaccine. If allowing choice of vaccines means that some currently eligible Americans will wait longer, there could be a consequential delay in protecting the most vulnerable and achieving herd immunity. With new variants on the march, time is of the essence.

Relatedly, many aspects of patient autonomy have been justifiably restricted during the pandemic — elective surgeries have been delayed, for instance, and visitation practices curtailed. Situations of emergency, shortage, and overwhelmed hospitals are not compatible with receiving access to care completely on a patient's own terms. Allocating vaccines expediently during a public health crisis is similarly ethically defensible and operationally essential.

In addition, accommodating individual vaccine preferences would most likely exacerbate current inequities in vaccine administration and the pandemic burden. Covid-19 has exposed and extended preexisting inequalities in access to health care, economic fragility, and social conditions arising from structural racism and other factors.[3] Members of vulnerable communities already face considerable hurdles in obtaining any vaccination appointment. Reports abound of interstate and intrastate "vaccine tourism," tracking predictably along economic and racial/ethnic lines.[4] If these dynamics continue and choice of vaccines is facilitated, better-resourced patients can be expected to claim vaccination slots for the "better" vaccines, notwithstanding their lower risk for severe disease. The United States has not explicitly allowed wealthy citizens to simply buy their way to the front of the queue, but incorporating individual preference may have a similar effect. Policymakers therefore have a clear opportunity to draw a bright line affirming the importance of equity in vaccine allocation.

Finally, all SARS-CoV-2 vaccines with authorized use based on phase 3 trial data appear to have high efficacy in preventing severe disease. Though they may not have identical efficacy profiles, the public should nonetheless be reassured that, within the context of a historic crisis, each authorized vaccine works. A forceful statement from public health officials affirming this efficacy may help to promote equanimity, offering a calming antidote to the inevitable misinformation maelstrom about vaccines.

Efficacy reports from studies performed in varied locations, at different times, and in different populations must be interpreted with humility. The news reports that may drive individual preferences do not always convey the information necessary for meaningfully evaluating products' respective benefits and risks. For example, people may recall a headline announcing that the rate of anaphylaxis from the Pfizer-BioNTech vaccine is higher than that of the Moderna vaccine, without recognizing that both rates are extremely low (a few cases per million doses).[5] In promoting equanimity, health officials can also help the public avoid taking an overly narrow view of risks and benefits: otherwise, some people may focus only on the vaccines, overlooking the harms of delaying vaccination until their preferred product is available.

Absent such communications, individual choices could become targets for misinformation campaigns, inflamed by social media, leading to increased confusion and mistrust and inefficient vaccine allocation. It is critical to prevent a shadow pandemic of false or misleading information with many of the same characteristics of SARS-CoV-2 itself: rapid, self-amplifying spread across borders, nimble mutation, tangible harm, and few effective treatments. In addition, although to date manufacturers have not advertised their SARS-CoV-2 vaccines directly to consumers, individual preference could be a powerful incentive for launching ads that could influence behavior without improving the quality of decisions.

**We believe that policymakers, health systems, and other implementing organizations should communicate to patients that they will receive, and only really need, one choice of vaccine.** At the same time, restrictions on choice (except those driven by genuine allergies or similar contraindications) should be paired with a commitment to tracking real-world outcomes, being transparent about those data, and using them to inform future policy. Though individual choice should not be effectuated by organizations administering vaccines, vaccine allocation schemes could reasonably consider features of particular vaccines that make them better or worse for delivery in certain settings, such as cold storage capacity or ease of use in communities disproportionately affected by the pandemic.

In most aspects of U.S. health care, patient preferences are paramount, and currently Americans remain free to decline vaccination against SARS-CoV-2. But among the willing, a policy limiting choice among vaccines will bring efficiencies to the fair distribution of a critically scarce resource.

**EDITOR'S COMMENT:** This is a very complicated issue with conflicting parameters. The first one has to do with the need to vaccinate as many as possible as fast as possible. The second has to do with the right of the people to be aware of the vaccine they are offered free from the state but also to choose an alternative and pay for it if they do not agree. And yes! Many people have the background enabling them to have an opinion about what is good for them and which vaccine is better or safer than the other. Experts and gov officials do NOT know everything and there are many other experts that are more proficient but left out of the system for various reasons. There are tons of info on the Internet and many can decode what is true and what is not. I remember a case with a late fellow allergist many years ago. He was coming out from a side room with a filled syringe and was supposed to give aeroallergen immunotherapy. In fact, he was injecting cortisone and his patients had no idea about the company of the drug, the composition or the dosage schene followed. In 2021, when my wife was vaccinated, again a nurse came out from a side room with a prefilled syringe and did the jab. I told her to ask to see the box and the vial but the wife thought that this might insult both the nurse and the physician present. Clarity and good practice will help ease any objections or hesitations – so simple but not always applicable.

## No, The COVID-19 Vaccines Don't Cause Infertility. Here's Why

Source: https://www.sciencealert.com/no-covid-19-doesn-t-cause-infertility-here-s-why

Mar 06 – Recent posts (read above) on social media have claimed that the newly approved COVID-19 vaccines cause infertility. The biological mechanism by which the vaccines work, on top of data from animal and human studies, strongly suggest that this is not true.

When the World Health Organisation declared COVID-19 a pandemic in March 2020, few could anticipate how severely this virus would impact our daily life. Even before this announcement, research groups and pharmaceutical companies across the globe were embarking on the difficult process of developing a COVID-19 vaccine.

Their efforts have finally begun to pay off as vaccines have begun to be approved for public use. Unfortunately, each new vaccine is met with an explosion of misinformation, making it increasingly difficult for people to find reliable information to help them decide whether to get vaccinated.

**We asked 8 experts in vaccinology and reproductive biology to clear up a recent claim – 'Do the COVID-19 vaccines cause infertility?' – here is what we found...**

**How do the COVID-19 vaccines work?**

All of the COVID-19 vaccines work in the same way that all vaccines work, by activating the body's natural immune response. The vaccines expose a harmless version or a small part of the virus to the immune system, triggering it to make antibodies that can fight off future infection.

The differences between the vaccines lie in how they make the COVID-causing SARS-CoV-2 virus harmless or which part of the virus they use. Many of the COVID-19 vaccines have opted for using the spike protein as their main ingredient.

The spike protein is on the surface of the virus and is the target of the immune response during infection. The 'next generation' vaccines such as those from Pfizer, Moderna, and AstraZeneca use genetic material, RNA, to code for the spike protein.

**Where did the concern about infertility come from?**

Concerns that the COVID-19 vaccines cause infertility were raised through a series of social media posts, most of which have been removed after being flagged as misinformation.

**Whilst most claims were vague in their explanation of how the vaccines caused infertility, there were many posts that connected the Pfizer vaccine to a protein found in the placenta called syncytin-1. These posts claimed either that the vaccine contained synctin-1 or that the spike protein that is part of the vaccine is similar to syncytin-1. This raised the concern that the vaccine would train the immune system to attack the person's own placenta.**

**Is there a connection between the COVID-19 vaccines and syncytin-1?**

As all vaccine ingredients are in the public domain, it is easy to check that syncytin-1 is not an ingredient. In terms of the similarity between syncytin-1 and the spike protein, this is not sufficient to cause any issues of an auto-immune response. All proteins are made of long strings of amino acids which are folded into 3D intricate shapes.

Professor Catherine Thornton from Swansea University explains, "For antibodies to mistakenly recognise syncytin-1 as SARS-CoV-2, there would have to be sufficient similarity of amino acids in these strings (which there isn't) and the critical amino acids would need to be clustered together in the 3D molecule in a sufficiently similar and accessible way (which they aren't)."

We know that antibodies against the spike protein of SARS-CoV-2 do not attack the placenta because SARS-CoV-2 antibodies have been found in new-born babies. These antibodies passed through the placenta from their mothers when they were infected during pregnancy.

**Is the next-generation RNA technology a concern for fertility?**

These next-generation vaccines use a piece of genetic code, RNA, instead of the spike protein itself to create an immune response. RNA is used by cells in the human body, in fact it is essential for all known forms of life!

Dr Lee Riley from the University of California adds, "pieces of RNA... rapidly get degraded at the site of injection after the RNA chain is translated into amino acids (building blocks of proteins). So, there is no chance for the RNA to get anywhere else in the body for it to affect fertility."

**What is the data on the COVID-19 vaccines and fertility?**

All of the approved COVID-19 vaccines have passed through various animal testing steps, which have not found any effects on fertility. As of yet, there is no data from human clinical trials that specifically study the effect of COVID-19 vaccines on fertility.

The safety trials excluded pregnant women and participants were asked to avoid becoming pregnant.

Dr William Hausdorff an expert in vaccines explains that "The exclusion was not based on any particular theoretical safety concern, but rather due to a superabundance of caution that is generally seen in vaccine trials."

Despite these criteria, 53 pregnancies occurred in the clinical trials of the Pfizer, Moderna, and AstraZeneca vaccines. The outcomes of these pregnancies were no different in the participants who received the vaccines than those who didn't, indicating that these vaccines seem to have little effect on fertility or pregnancy.

**The COVID-19 vaccines do not affect fertility – all 8 experts agreed.**

# The new environmental threat

# STOP IT!

**129 billions face masks;**
**one mask/day X 31 days =**
**2.8 million masks/min worldwide**

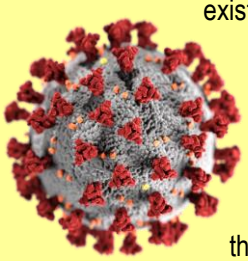
# SARS Variants, Spike Proteins and More All Rest on One Big Fat Assumption

**By Makia Freeman**

Source: https://www.globalresearch.ca/sars-variants-spike-proteins-more-all-rest-1-big-fat-assumption/5738383

*Without virus isolation, the SARS variants brainwashing theme is being increasingly pushed by the NWO (New World Order) social engineers to prop up the pandemic. With more people becoming aware that there is no emergency and there is no pandemic, the COVID manipulators are propagating more lies by inventing **SARS variants** and using them as fuel to continue the scamdemic.*

Feb 26 – Apparently, there are now South African, UK and Californian variants of which you need to be very afraid. However, whether it's new variants, **spike proteins** or other SARS-CoV-2 paraphernalia, all of these stories depend on a basic assumption: that a new virus SARS-CoV-2 exists. You can't have variants of a virus that doesn't exist. You can't have spike proteins on a virus that doesn't exist. Likewise, you can't make a true traditional vaccine (not the gene editing devices of Pfizer and Moderna) of a virus that doesn't exist. So we keep coming back to the same point: SARS-CoV-2 has never been isolated or purified, and thus so much of the current reporting about it is disinformation that cannot be true.



**One Big, Fat, Unfounded Assumption**

As always, Dr. Tom Cowan and Dr. Andrew Kaufman (whom I have quoted extensively in previous articles such as this one and this one) shine light on the true state of affairs. According to them, no true isolation of a virus has EVER happened, either for SARS-CoV-2 or other viruses like HIV. In a recent discussion, they talk about the lack of scientific evidence for the proof of viruses alleged to cause disease in the context of a recently aired debate between Dr. Judy Mikovits and Kaufman. The discussion became a little tense as Kaufman prodded Mikovits to explain how she had ever isolated a virus (as she claims to have repeatedely done), when all she had done was show viruses budding out of the cell (not true isolation). Mikovits replied it had to be that way for retroviruses, because the human body would eat up loose RNA or DNA. Mikovits did however agree and explicitly state that SARS-CoV-2 had never been isolated.

Cowan makes the following point around the 16-minute mark about **virus isolation**:

*"If they [viruses] are not isolated … they don't exist as independent entities. These is simply no way they can cause disease, there's no way we can characterize them, there's no way we can take a segment and say 'that's unique to this', so there's no way we can do a PCR test."*

Kaufman brings up an interesting jaguar analogy around the 26-minute mark. Imagine a European explorer had heard of new wild cats/leopards in the South American jungle, and set out to find one. Since they are stealthy predators, he could not find one, but instead found some teeth. Would that count as proof of a new wild cat (a jaguar)? A scientist claiming discovery a new virus, amidst all the millions of tiny particles that swim around in our cells and bloodstream, is like a European explorer visiting South America for the first time and claiming he found a jaguar just because he found the tooth of a wild cat, despite not having found the skeleton or body of it. Why does a tiny piece of RNA count as proof of an alleged novel virus **SARS-CoV-2**?

**Statement on Virus Isolation (SOVI)**

Cowan, Kaufman and Sally Fallon Morell have together written a short document entitled Statement On Virus Isolation (SOVI) where they definitively explain that, according to *"common sense, the laws of logic and the dictates of science,"* the alleged SARS-CoV-2 virus has never been isolated or purified. The word isolation is often defined differently by virologists trying to justify their methods (adding it to other media like milk and bovine serum, plus mixing it with chemicals like antibiotics). The SOVI statement includes the Oxford definition of the word isolation: *"the action of isolating; the fact or condition of being isolated or standing alone; separation from other things or persons; solitariness."* Therefore, logically, these points follow:

- *the structure and composition of something not shown to exist can't be known, including the presence, structure, and function of any hypothetical spike or other proteins;*
- *the genetic sequence of something that has never been found can't be known;*
- *"variants" of something that hasn't been shown to exist can't be known;*
- *it's impossible to demonstrate that SARS-CoV-2 causes a disease called Covid-19.*

The writers then outline how a person would isolate the virus if they were being scientifically rigorous and careful:

*"In as concise terms as possible, here's the proper way to isolate, characterize and demonstrate a new virus. First, one takes samples (blood, sputum, secretions) from many people (e.g., 500) with symptoms which are unique and specific enough to characterize an illness. Without mixing these samples with ANY tissue or products that also contain genetic material, the virologist macerates, filters and ultracentrifuges i.e. purifies the specimen. This common virology technique, done for decades to isolate bacteriophages and so-called giant viruses in every virology lab, then allows the virologist to demonstrate with electron microscopy thousands of identically sized and shaped particles. These particles are the isolated and purified virus.*
*These identical particles are then checked for uniformity by physical and/or microscopic techniques. Once the purity is determined, the particles may be further characterized. This would include examining the structure, morphology, and chemical composition of the particles. Next, their genetic makeup is characterized by extracting the genetic material directly from the purified particles and using genetic-sequencing techniques, such as Sanger sequencing, that have also been around for decades. Then one does an analysis to confirm that these uniform particles are exogenous (outside) in origin as a virus is conceptualized to be, and not the normal breakdown products of dead and dying tissues. (As of May 2020, we know that virologists have no way to determine whether the particles they're seeing are viruses or just normal break-down products of dead and dying tissues.)"*
That is how it would be done to ensure proper virus isolation. However what has happened since the outbreak of the COVID scamdemic is **scientific fraud** over and over and over again:
*"Instead, since 1954, virologists have taken unpurified samples from a relatively few people, often less than ten, with a similar disease. They then minimally process this sample and inoculate this unpurified sample onto tissue culture containing usually four to six other types of material — **all of which contain identical genetic material as to what is called a "virus."** The tissue culture is starved and poisoned and naturally disintegrates into many types of particles, some of which contain genetic material. Against all common sense, logic, use of the English language and scientific integrity, this process is called "virus isolation." This brew containing fragments of genetic material from many sources is then subjected to genetic analysis, which then creates in a computer-simulation process the alleged sequence of the alleged virus, a so called in silico genome. At no time is an actual virus confirmed by electron microscopy. At no time is a genome extracted and sequenced from an actual virus. This is scientific fraud.*
*The observation that the unpurified specimen — inoculated onto tissue culture along with toxic antibiotics, bovine fetal tissue, amniotic fluid and other tissues — destroys the kidney tissue onto which it is inoculated is given as evidence of the virus' existence and pathogenicity. This is scientific fraud."*

**Mainstream Virology Claims True Virus Isolation is Impossible**
Let's return to what Mikovits said, and what many mainstream virologists say: we can't isolate viruses from their host cell because there's not enough of them, they're too small or they would immediately die if we did so (and therefore must be found within the host cell). So mainstream virology redefines what isolation means when it comes to viruses. Cowan has countered this point repeatedly:
*"From now on, when anyone gives you a paper that suggests the SARS-CoV-2 virus has been isolated, please check the methods sections. If the researchers used Vero cells or any other culture method, you know that their process was not isolation. You will hear the following excuses for why actual isolation isn't done:*

1. *There were not enough virus particles found in samples from patients to analyze.*
2. *Viruses are intracellular parasites; they can't be found outside the cell in this manner.*

*If No. 1 is correct, and we can't find the virus in the sputum of sick people, then on what evidence do we think the virus is dangerous or even lethal? If No. 2 is correct, then how is the virus spread from person to person? We are told it emerges from the cell to infect others. Then why isn't it possible to find it?"*

**Imaginary SARS-CoV-2 Variants and Spike Protein Changes**
Predictably, both the WHO and the CDC are pushing the idea that imaginary variants of an imaginary virus are breaking out worldwide. They are even giving these so-called variants technical names: the supposed UK variant is called B.1.1.7, the supposed Brazil variant is called P.1 and the supposed California variant is B.1.427 and B.1.429 (aka CAL.20C/L452R). The supposed South African variant is B.1.351 or 501Y.V2, allegedly due to its N501Y mutation. N501Y is scientific shorthand for the substitution of one protein building block (amino acid) for another at position 501 in the part of the virus called the spike protein. Speaking of spike protein, we all have all been told since the start of this fake pandemic that this is what made the SARS-CoV-2 virus so deadly, but remember: the spike protein is part of the digital, in silico, computer database genome of the virus. They could have made up anything. There is no proof of a real virus with a real spike protein. It's more technical gobbledygook to give the virus the appearance of existence and reality when it DOES NOT EXIST.

Once this concept is fully grasped, the implications are quite astounding. Even people who have done a great job speaking out against the COVID scamdemic – people like Dr. James Lyons-Weiler and Dr. Judy Mikovits (who deserve kudos for their courage) – are basing their conclusions on the idea that the virus has been isolated and purified when it simply has not. Lyons-Weiler has written scientific paperson the idea of **pathogenic priming** but that idea is based on the premise of an existing virus whose genome has been actually sequenced from a real-life specimen, as opposed to a computer-generated theoretical sequence.

**The Vaccine Can't Possibly Work, Because It's Based on an In Silico, Theoretical Virus**

Vaccines are dangerous inventions, but even if you are pro-vax, the COVID vaccines can't possibly work (the traditional ones not the mRNA ones) because the Big Pharma manufacturers never had a real viral specimen to use to develop them. They are using a theoretical virus as their starting point. This makes all the COVID vaccines even less desirable, and lowers their benefit-to-risk ratio to 0.

**Conclusion**

It is a famous maxim of life that you can know the tree by its fruits. Thus, if the root of a tree is poisoned, so shall be its fruit. The foundational structure of the entire **COVID narrative** is not just shaky but indefensible scientific fraud. Without virus isolation, the additional permutations of the COVID narratives are just more stories of no substance. By now, many people have awoken to the truth that there is not one virus, not one disease called COVID (which is essentially just reclassification of existing disease) and not one cause of that disease. Why would we assume that a deadly "virus" is the only cause of disease – not poor hygiene, poor sanitation, toxic elements, pollution, EMFs (5G), pesticides, synthetic chemicals, stress, emotional imbalance, lack of adequate exercise and deficiency of vital nutrients like vitamins B, C or D? We must keep attacking the entire narrative at its base in order to uncover the truth.

***Makia Freeman*** *is the editor of alternative media / independent news site The Freedom Articles, author of the book Cancer: The Lies, the Truth and the Solutions and senior researcher at ToolsForFreedom.com.*

# What you need to know about buying (and using) Germany's new at-home Covid-19 tests

Source: https://www.thelocal.de/20210304/what-you-need-to-know-about-buying-and-using-germanys-new-at-home-covid-19-tests/

Mar 04 – Starting with discounter Aldi on Saturday, supermarkets, drugstores and pharmacies will soon begin selling rapid Covid-19 tests to take at home. Here's what you need to know.

Aldi Nord and Aldi Süd announced Wednesday that customers will only be allowed to buy one pack at a time to avoid hoarding, and so that as many people as possible can benefit.


A package includes five tests for a nasal swab, with a price of about €25 per package.

**Sales also in drugstores and supermarkets**

Drugstore chains Rossmann and DM plan to start selling the products next Tuesday March 9th. Pharmacies around Germany have said that they also want to begin offering the products soon. Discounter competitor Lidl and the supermarket Rewe and Edeka also have the issue on their radar.

In late February the Federal Institute for Drugs and Medical Devices had granted special approvals for coronavirus self-tests for the first time. For all three products, samples are taken by swabbing the front of the nose.

**Free rapid tests from next week**

On Wednesday a coronavirus summit between Chancellor Angela Merkel and Germany's 16 federal and state governments decided that every German resident would be able to receive a free "conventional" rapid test completed by a medical professional starting next week. Drugstore chain DM has already been accepting sign-ups for in-store testing sites.

Health Minister Jens Spahn had originally announced that free rapid tests would be available to all from March 1st – but this plan has been changed slightly.

In concrete terms, it means at least one rapid test per week will now be offered to people in Germany. It will be carried out by a trained member of staff in test centres or surgeries, for example.

In addition, according to the plans of the federal and state governments, a joint task force is to be set up to procure tests quickly and cheaply.

**How easy is it to test yourself at home?**

There's a big plus for the new rapid DIY tests: the sample with the cotton swab can be taken in the anterior nasal region, and so it's fairly easy to do at home.

The professional rapid tests, on the other hand, collect the sample material far back in the nose or deep in the throat – meaning that a specialist is needed to assist.

No additional laboratory equipment is needed for the rapid tests. The principle is similar to a pregnancy test: after 15 to 20 minutes, test strips indicate whether the patient is coronavirus positive or negative.

The Frankfurt virologist Sandra Ciesek sees few problems with the at-home tests: "I think everyone gets how to do a nasal smear, and if not, there are enough videos to show them how," she said in the NDR podcast Coronavirus Update.

However, rapid tests are not as reliable as PCR tests which are analysed in a lab. According to the Robert Koch Institute (RKI), if the result of an antigen test is positive, the person should isolate and contact their doctor or local health department to arrange for a PCR test.

People are also reminded to continue to stick to distance and hygiene rules even if they have a negative rapid test result.

**What are German politicians saying?**

Free Democratic (FDP) leader Christian Lindner already emphasised in mid-February that coronavirus rapid tests could be a chance for more freedom in the midst of the ongoing and drastic pandemic.

As a so-called "vaccination card for a day," the rapid tests could offer temporary normality and allow more freedoms in the short term, such as visits to restaurants or concerts.

Social Democratic (SPD) health expert Karl Lauterbach even went one step further and told broadcaster WDR that the pandemic could be massively eased with the help of rapid tests. Corresponding studies prove this, he said.

But as with vaccinations, there is a problem with rapid tests: availability. To stop the pandemic, all Germans would have to test themselves twice a week.

That corresponds to 160 million rapid tests per week. Some see this as an utopian goal since the current quota is just 45 million rapid tests per month.

## US Military Developing COVID-19 Solution for Indoors and Aircraft

Source: https://i-hls.com/archives/107343

Mar 03 – One of the major challenges of the COVID-19 pandemic is its detection indoors. The US defense establishment is working on a solution applicable in military and civilian installations. A monitor that would detect COVID-19 proteins in the air will be developed by US Army scientists and the Defense Advanced Research Projects Agency (DARPA). The prototype sensor would help detect the virus with enough speed and accuracy that users could prevent infection from spreading.

"Monitoring pathogens in the environment remains a challenging area of study," said Dr. Matthew Coppock, Army chemist and team leader. "(Army Research Laboratory) has a unique capability to design and synthesize selective biosensor recognition elements using **short synthetic peptides**. …"

Those peptides, short chains of amino acids linked by peptide bonds, mimic the way antibodies attach to the COVID-19 virus.

If successful the sensor could allow for a new way to monitor public health beyond the Department of Defense, such as monitoring for COVID at work sites, travel points and schools, according to armytimes.com.
The foundational work of what's come together so far should also have applications far beyond the COVID-19 virus. That's because, with minimal variations, scientists anticipate they will be able to use the peptides for other diseases.
Military Times reported in July that DARPA studies also monitored the airflow in various types of military aircraft to determine which posed the lowest threat of infection from coronavirus patients. The work measured the flow of coronavirus-sized particles to determine risk factors for those platforms and which aircraft would be preferable if needed for virus-laden transport.
DARPA spokesman told Military Times that the testing looked at six aircraft: C-17, KC-135, C-130J, C-5, KC-46 and KC-10. "DARPA concluded that the aircraft with the most favorable airflow circulation was the KC-10, which provided complete protection to the front compartments through the use of directed airflow and smoke barriers."

## The Potential Future of the COVID-19 PandemicWill SARS-CoV-2 Become a Recurrent Seasonal Infection?

**By Christopher J. L. Murray, MD and Peter Piot, MD**
*JAMA. Published online March 3, 2021*
Source: https://jamanetwork.com/journals/jama/fullarticle/2777343

There is growing optimism and hope that by virtue of ongoing immunization efforts, seasonality (declining infections through August), and naturally acquired immunity, by spring and early summer 2021 in the US there will be a substantial decline in the number of deaths and hospitalizations related to COVID-19. However, this optimism must be tempered by several important factors. The likelihood of achieving herd immunity against SARS-CoV-2 is low simply because not all individuals in the US are eligible to be vaccinated and a quarter of eligible individuals will likely decline to be immunized. Moreover, the vaccines do not provide full immunity against infection, and the currently available vaccines are less effective against variant B.1.351, and possibly other variants. Accordingly, the public and health systems need to plan for the possibility that COVID-19 will persist and become a recurrent seasonal disease.
Herd immunity is a theoretical construct from infectious disease modeling that posits that in a population in which every individual is equally likely to encounter every other individual, transmission will not be sustained when immunity through past infection, vaccination, or both reaches the level of $1 - (1/R)$, where $R$ is the number of infections caused by a single infection in a population in which everyone is susceptible.[1] Reality diverges from this simple notion. First, because COVID-19 is clearly seasonal, like other coronaviruses, the herd immunity level will be lower in the summer and higher in the winter. Second, herd immunity depends on how much interaction individuals have with one another, which will vary by state or city after social distancing mandates are lifted. Third, nonrandom mixing (individuals are not equally likely to interact with one another) can lead to modifications of the level of immunity required to stop transmission. Despite these factors, some public health officials suggest that achieving winter herd immunity in the presence of new more contagious variants will require more than 70% to 80% of individuals to be immune.
Three key considerations will make achieving herd immunity against COVID-19 challenging. First, vaccines will have a reduced effect on preventing infection from the B.1.351 variant. Moderna and Pfizer vaccines have an overall effectiveness against symptomatic disease of approximately 95% for wild-type variants, whereas adenovirus vector vaccines, such as the Janssen/Johnson & Johnson vaccine, have effectiveness closer to 70%. Evidence on vaccine efficacy for preventing infection, however, comes only from 1 group in the AstraZeneca trial that showed 55% protection against infection as measured through weekly nasal swabs vs 70% protection for symptomatic disease.[2] Furthermore, for the 3 vaccines tested against the B.1.351 variant, Janssen, Novavax, and AstraZeneca reported effectiveness estimates for symptomatic disease of 57%,[3] 49%,[4] and a statistically nonsignificant percentage, respectively. If the B.1.351 variant becomes dominant, a simple calculation suggests that the aggregate effectiveness of vaccines for preventing B.1.351 transmission in the US could be only 50% (ie, based on current effectiveness of 90% to prevent symptomatic disease × 20% reduction of efficacy for preventing infection compared with symptomatic disease and assuming an average reduction in efficacy for B.1.351 of 33% [excluding the statistically insignificant protection from the AstraZeneca vaccine]).
Second, not enough individuals will receive the vaccine. Because the vaccines are currently not authorized for use in children, only approximately 75% of US individuals are eligible to be immunized. Perhaps more important in the long run, not all individuals are willing be immunized. Data collected daily through Facebook's Data for Good initiative provide timely information on the proportion of individuals who respond yes or "yes, probably" to the question, Will you take the vaccine if offered it? These positive responses regarding likelihood of vaccine receipt increased in January 2021

and have reached 71%,[5] similar to the 72% response in a nationally representative sample.[6] Even with an effective approved vaccine for children, if B.1.351 or some other variant becomes dominant, the US can expect vaccine-derived immunity to reach only 37.5% (the estimated potential 50% aggregate efficacy for transmission × 75% of individuals receiving the vaccine) in 2021 if all supply and administration difficulties are overcome.

Third, there is concern about the extent to which previous infections from one variant protect individuals from reinfection with some new variants. Novavax reported that in a phase 2b clinical trial in South Africa, the COVID-19 incidence rate in the placebo group, predominantly from variant B.1.351, was 3.9% both among individuals with COVID-19 seropositivity and those who were COVID-19 seronegative.[7] The interpretation by Novavax of this finding has been that past infection provides no immunity against new variants. If that is true, herd immunity can be achieved only through vaccination. But if B.1.351 spreads widely, vaccine-derived immunity will likely be much lower than the levels required to reach herd immunity by the 2021-2022 northern hemisphere winter.

Various models suggest continuing COVID-19 surges are possible even without B.1.351 dominance.[8] A winter surge of infection with B.1.351 dominance may occur in 2021-2022. Hospitalization and death rates, however, may be expected to be lower, assuming vaccines remain more effective for preventing symptomatic disease and remain effective for preventing severe disease and death. For example, the Janssen vaccine was more than 85% effective against severe disease, even in South Africa, with no hospitalizations or deaths reported in the trial, albeit with a very wide CI for these outcomes.[3] If transmission remained similar to what occurred this winter, hospitalizations and deaths should be less in winter 2021-2022. But the magnitude of the winter surge also depends on behavior. Through mask wearing and social distancing, only an estimated 19% of US residents have been infected so far. In the next winter, it will be problematic to maintain social distancing mandates due to public fatigue and the potential lasting effect of the pandemic on the economy. Despite the protection from vaccination, effective *R* in the absence of concerted social distancing and low levels of mask use could be higher next winter than this winter.

If new variants continue to appear, winter surges may become the norm. This prospect requires advance planning and consideration of a range of strategies to mitigate the consequences for communities and health systems**. Five strategies should be considered and vigorously debated in the months ahead.**

**1. Intensify global vaccination efforts.** New variants can appear anywhere and more transmission will increase the likelihood of their emergence. Intensified expansion of vaccination in low- and middle-income countries along with high-income countries could help reduce the harm of recurrent seasonal COVID-19 and could reduce the frequency of new variants.

**2. Monitor the epidemic and the emergence of new variants** and accelerate the modification of vaccines to enhance their efficacy for emerging high-risk variants if they are shown to significantly reduce vaccine protection. The US, European Union, and other high-income countries should invest in global surveillance, including with genome sequencing, to facilitate early detection of variants and track trends at the local level. Strategies of creating multivalent vaccines and adapting vaccines to new variants through boosters will need to be deployed rapidly to maintain overall vaccine efficacy. If variants continue to emerge, it is possible that annual vaccination will be needed, similar to that for seasonal influenza. However, Centers for Disease Control and Prevention data indicate that seasonal influenza vaccine uptake averaged 50% and estimated vaccine efficacy averaged 35% from 2014 to 2019.[9] For COVID-19, the identification of new variants and modification of vaccines to be efficacious for these variants would need to be more effective.

**3. Manage and finance winter hospital surges.** COVID-19 has burdened intensive care units (ICUs) in the US this winter. Social distancing measures have reduced COVID-19 transmission and substantially reduced influenza transmission. US hospitals have avoided the double pressure on bed availability from both influenza and COVID-19 infection. A shift to recurrent seasonal COVID-19 makes it unlikely governments would adopt social distancing mandates every winter, potentially leading to hospitalizations for influenza and COVID-19. ICU bed availability pressure could require halting elective procedures in peak months such as December and January. Hospitals may need to develop greater capacity to respond to surges with sufficient bed capacity and personnel, and anticipate associated financial implications. Financing mechanisms that address that currently hospital income is driven by elective procedures would need to be considered.

**4. Reduce transmission in peak months through employer and educational institution action.** Although it is unlikely that the federal government or state governments will use social distancing mandates every winter, employers and educational institutions could adopt certain measures. Actions could include establishing mandatory vaccination, requiring masks during peak transmission months, and avoiding superspreader events by moving meetings or classes with attendance above a certain number to digital platforms. Requiring vaccination where legally allowed could help increase vaccination rates. Requiring mask use in the winter months could contribute both to reduced transmission in those settings and cultural change toward accepting mask use as normal.

**5. Modify behavior of at-risk individuals.** Increased risk of death in a winter surge may be large enough to motivate at-risk individuals to change their behavior. Higher-risk individuals (eg, aged ≥65 years or with comorbidities) would need to consider winter behavioral

modification such as mask wearing and avoiding congregate settings such as bars, indoor dining, concerts, and sports events, and any setting in which transmission risk is high.
It is not clear whether COVID-19 will become a chronic seasonal disease. There is too much uncertainty about the probability and frequency of emergence of new variants, the reduction in vaccine efficacy for each variant, the critical question of cross-variant immunity, and the consistency of safe human behavior. However, the prospect of persistent and seasonal COVID-19 is real. If immunity from infection for the same SARS-CoV-2 variant or vaccine-derived immunity wanes, the prospect would increase further. There is much to learn in the coming months about variants, vaccines, and immunity. Recurrent seasonal COVID-19 could require both health system change and profound cultural adjustment for the life of high-risk individuals in the winter months. There is an urgent need to prepare for such a scenario by aligning surveillance, medical response, public health response, and socioeconomic programs.

**EDITOR'S COMMENT:** So, practically this article says that lockdowns were not necessary. Let us stop being self destructive, vaccinate, keep all the protective measures and try to heal our wounds.

## WHO Cancels Interim Report on China COVID Investigation

Source: http://www.homelandsecuritynewswire.com/dr20210305-who-cancels-interim-report-on-china-covid-investigation

Mar 05 – The World Health Organization (WHO) investigators who recently visited China to determine the origins of the emergence of the COVID-19 virus will not release a promised interim report of their findings. the WHO team decided not to release its interim account "amid mounting tensions between Beijing and Washington." Another international group of scientists has called for the WHO to conduct a new inquiry into COVID's origins.

**EDITOR'S COMMENT:** What a surprise! Either they find nothing to blame or they find somebody else to blame that is not Chinese.

## How DHS S&T's Past Bioagent Research Informs Current and Future Pandemic Response

Source: https://www.hstoday.us/subject-matter-areas/emergency-preparedness/how-dhs-sts-past-bioagent-research-informs-current-and-future-pandemic-response/

Mar 04 – Like many U.S. research and development agencies, the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) was forced to shift priorities almost overnight due to the COVID-19 pandemic. From the start, researchers at S&T's National Biodefense Analysis and Countermeasures Center (NBACC) have raced against the clock to learn as much as possible about the coronavirus so that our nation is better armed to fight, control and defeat the deadly COVID-19 disease.
We asked NBACC researchers: when faced with the challenge of a lifetime, where do you start? Here's what they told us.

**Go back to the basics, starting with anthrax**
NBACC, the first DHS national laboratory, was established in the wake of the 2001 anthrax attacks to conduct research specifically on bioterrorist threats that endanger our homeland security.
"We were starting from a place where there were a lot of gaps in our understanding about anthrax when those attacks happened," said Dr. Lloyd Hough, who leads S&T's Hazard Awareness and Characterization Technology Center (HAC-TC). The HAC-TC provides technical support and guidance for the S&T program Probabilistic Analysis for National Threats Hazards and Risks (PANTHR) and S&T's labs, including NBACC. "We learned quickly how to fill those gaps and how to prioritize the research. We needed to determine the infectious dose, how long the anthrax was stable as a powder in indoor environments. All those experiments and lessons taught us approaches we use when we evaluate emerging biological hazards today, like SARS-CoV-2."
The lab is what's known as 'hot', meaning it is equipped for the highest Biosafety Levels (BSL) for work with highly dangerous microscopic organisms. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the bacteria that caused the plague, and the West Nile virus are all studied in BSL-3 laboratories; the anthrax bacteria and the Ebola and Marburg hemorrhagic viruses are handled in BSL-4 laboratories.

"For known agents like the bacteria that cause anthrax or plague, we do studies from a biodefense perspective," said Dr. Victoria Wahl, Deputy Director of NBACC's National Biological Threat Characterization Center. "And for something brand new like SARS-CoV-2, we are studying the basics like how stable the virus is in the air, how it can be transmitted. The same unique capabilities NBACC has established for biodefense research can also be applied to a new agent like SARS-CoV-2 to help us understand it better."

**Lessons learned from Ebola and the flu help inform present-day crisis response**

Risk assessment helped S&T identify not only anthrax bacteria for in-depth study but also other disease-causing organisms like the Ebola virus.

"S&T's risk assessment activities, conducted through the PANTHR program, consider the risk posed by a variety of chemical, biological, radiological and nuclear agents that could potentially be used by terrorists to harm the U.S.," said Hough. "They also look at the factors that affect risk: how likely an adversary would be to try a certain type of attack, its impact, and the nation's ability to mitigate such an event with antibiotics and vaccines or other measures."

**EDITOR'S COMMENT:** This photo was accompanying this article. Both men are working in a – most probably – BSL Level 3 lab. I am not sure if this is the proper way to wear their PPE – especially the bearded man. It is difficult to maintain a valid face shield. Perhaps this is how lab people are infected with highly contagious pathogens. Once more: any deviation from SOPs ends up in disaster!

During the 2014-2015 Ebola outbreak in West Africa, S&T was flooded with safety-related questions from across DHS components and other federal agencies:

*Should a product from the outbreak area be allowed to be imported to the U.S.?*

*Can an airport fingerprint reader be potentially contaminated by an infected passenger?*

*How do we respond if somebody gets sick on an international flight?*

*How long does infectious Ebola virus survive when an infected person's bodily fluids (e.g., blood, vomit, saliva, feces) contaminate certain surfaces like stainless steel, polypropylene plastic, and airline carpeting?*

*What disinfectants are effective at killing the virus in those cases?*
In response, S&T first developed a Master Question List (MQL) that consisted of high-level research questions derived from open, reliable, vetted sources. From there, NBACC focused on answering only the questions for which it was best qualified.
"We didn't want to duplicate efforts," said Hough. "The MQL became the driver behind the highest-priority gaps in our understanding the disease or helping us plan to respond to it."
Initially, people assumed the Ebola virus was generally unstable in the humid and hot environments of West Africa. NBACC tested these assumptions to inform health response and decontamination efforts and to learn which virus-infested bodily fluids represent the greatest hazard, which ones are most stable, and how to clean up the most stable ones.
"We were surprised to find that the Ebola virus did just fine in dried blood samples in high heat and humidity for much longer periods than expected. In another study, we demonstrated more effective decontamination methods." said NBACC Director George Korch.
Additional recent environmental research had NBACC studying the effect of sunlight on the flu virus in aerosols. Despite many years of influenza research, there were still unknowns regarding how the flu virus survives in different environmental conditions. This research experience informed similar research on the coronavirus.
"Compared to Ebola, a known risk, SARS-CoV-2 is a novel agent and we did not know what to expect, and the pressure was incredible to get high-quality data quickly," said Wahl. "Much like the pandemic, this intensity didn't just go away. This has lasted for a whole year already. We thought this was going to be like a sprint, but it turned into a marathon."
The Ebola and flu studies helped inform the basis of NBACC's initial work on COVID-19 as early as January 2020, before the virus even arrived in the U.S. Because this was a new pathogen, NBACC first sought to answer two principal questions. First, what is already known? And second, what is different or unknown? NBACC then started working on a dedicated COVID-19 MQL that has since been updated weekly. This new MQL quickly summarizes what is known, what additional information is needed, and who may be working to address such fundamental questions as "What is the infectious dose?" and "How long does the virus persist in the environment?" and "Are there differences between geographic strains?"

**Looking at SARS-CoV-1 in order to ask the right questions about SARS-CoV-2**
Another early step NBACC took was to compare SARS-CoV-2 to SARS-CoV-1, which caused an outbreak in China in 2003.
"What's intriguing is that by naming this new strain after an earlier strain of virus, it likely created assumptions, by the medical community, of the characteristics of the new virus based on that earlier virus, which actually proved problematic in how we approached severity, transmission routes and other factors" said Korch.
Although these two coronaviruses are closely related genetically, they turned out to be quite different in how they present in patients. For example, SARS-CoV-2's incubation period is almost twice as long, the number of patients with mild illness is much higher than the SARS-CoV-1, and the number of patients needing hospitalization and intensive care vastly exceed patients with SARS-CoV-1.
"Also, SARS-CoV-1 had a much shorter duration of causing issues in only a limited number of countries, so there was not as much opportunity to observe the types of outcomes we see with SARS CoV-2," said Korch.
NBACC chose to answer questions from the MQL related to transmissions via aerosol and surfaces, environmental stability factors, decontaminant effectiveness, and infectious dose. Such questions were selected based upon the unique capabilities that S&T has built at NBACC.

**Focusing on future pandemic preparedness**
NBACC is using lessons learned from all these research experiences—from anthrax to COVID-19—to refine and streamline the lab's planning and workflows, so response to future outbreaks will be swifter from day one.
In recent months, several peer-reviewed NBACC COVID-19 studies were published, and many others are in the works. Currently, NBACC scientists are studying the minimum number of viral particles needed to cause an infection.
"This is a fundamental question that must be answered," said Korch. "A lot rides on this type of information. Improvements like higher ventilation rates, single-pass air or UV decontamination within air conditioning systems can help decrease or eliminate the virus indoors. All of those things decrease the number of viral particles little, by little, by little."
Also, the lab has obtained several new coronavirus isolates that are thought to spread more easily. NBACC scientists are replicating their earlier environmental tests to study the effects of humidity, sunlight, and temperature to evaluate potential differences with the variants.
NBACC is constantly following what is going on in the world, paying attention to reports of new outbreaks. While the COVID-19 pandemic rages on, Ebola cases continue to appear in West Africa. S&T's goal is to always try to anticipate the needs of the country.

"The response to this pandemic taught us how to quickly find data gaps and then fill them," said Korch. "Building on these capabilities will help us defeat whatever is coming our way. Many of the basic principles that inform how a novel virus or bacteria might spread in the community, how it behaves under different environmental conditions and how much or little of the pathogen it takes to cause disease will be the same questions we will be tackling for threats of the future. Having great systems, personnel and capabilities at the ready put us in much better shape to tackle those future threats as well."

## COVID-19 Oxygen Emergency Impacting More Than Half a Million People a Day

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/covid-19-oxygen-emergency-impacting-more-than-half-a-million-people-a-day/

Mar 04 – Since the start of the pandemic, affordable and sustainable access to oxygen has been a growing challenge in low- and middle-income countries.
COVID-19 has put huge pressure on health systems, with hospitals in many LMICs running out of oxygen, resulting in preventable deaths and families of hospitalised patients paying a premium for scarce oxygen supplies.
Oxygen is an essential medicine, and despite being vital for the effective treatment of hospitalised COVID-19 patients, access in LMICs is limited due to cost, infrastructure and logistical barriers. Health facilities often cannot access the oxygen they require, resulting in the unnecessary loss of lives.


Recognising the central importance of sustainable oxygen supply – alongside therapeutic products such as dexamethasone – for the treatment of COVID-19, the Access to COVID Tools Accelerator Therapeutics pillar (co-led by Unitaid and Wellcome), is taking a new role to coordinate and advocate for increased supply of oxygen, and, in partnership with a WHO-led consortium[1], is today announcing the launch of a **COVID-19 Oxygen Emergency Taskforce.**
It is estimated that more than half a million people in LMICs currently need 1.1 million cylinders of oxygen per day[2], with 25 countries currently reporting surges in demand, the majority in Africa. This supply was constrained prior to COVID-19 and has been exacerbated by the pandemic.
Dr Philippe Duneton, Executive Director of Unitaid, said: "This is a global emergency that needs a truly global response, both from international organisations and donors. Many of the countries seeing this demand struggled before the pandemic to meet their daily oxygen

needs. Now it's more vital than ever that we come together to build on the work that has already been done, with a firm commitment to helping the worst-affected countries as quickly as possible."
The taskforce has determined an immediate funding need of US$90 million to address key challenges in oxygen access and delivery in up to 20 countries, including Malawi, Nigeria and Afghanistan. This first set of countries has been identified based on assessments coordinated by WHO's Health Emergencies Programme, in order to match in-country need with potential financing, such as through the World Bank[3] and the Global Fund. Unitaid and Wellcome will make an immediate contribution of up to US$20 million in total for the emergency response. The urgent, short-term requirements of additional countries will be measured and costed in the coming weeks, with the overall funding need over the next 12 months estimated by ACT-A to be US$1.6 billion – a figure that will be regularly reviewed by the taskforce.
Dr Mike Ryan, Executive Director of the WHO Health Emergencies Programme, said: "Oxygen is life-saving and it is imperative to move faster to scale-up holistically with patient-centred, end-to-end solutions that improve clinical outcomes. WHO has been working through the Biomedical Consortium to bring the technical, clinical and procurement partners together with about US$80 million of biomedical equipment procured for low and middle-income countries. The Oxygen Taskforce will help drive oxygen scale-up through further innovation, financing and capacitation."
Paul Schreier, Chief Operating Officer at Wellcome, said: "We have made critical advances in providing lifesaving clinical care and treatments to COVID-19 patients over the last year. The impact of the combination of oxygen and dexamethasone to treat severely ill patients has, in particular, been incredible. But global access to advances remains unequal. We need to urgently increase access to medical oxygen to ensure patients are benefiting regardless of where they live and ability to pay. International solidarity is the quickest – and only – way out of this pandemic. It is a public health, scientific, economic and moral imperative that all tools are made available globally."
The taskforce brings together key organisations[4] that have been working to improve access to oxygen since the start of the pandemic including Unitaid, Wellcome, WHO, Unicef, the Global Fund, World Bank, the Clinton Health Access Initiative (CHAI), PATH, the Every Breath Counts coalition and Save the Children. Building on these efforts, partners will focus on four key objectives as a part of an emergency response plan: measuring acute and longer-term oxygen needs in LMICs; connecting countries to financing partners for their assessed oxygen requirements; and supporting the procurement and supply of oxygen, along with related products and services. Other areas in the scope of the taskforce include addressing the need for innovative market-shaping interventions, as well as reinforcing advocacy efforts to highlight the importance of oxygen access in the COVID-19 response.
Henrietta Fore, Executive Director of UNICEF, said: "Oxygen is a simple medical intervention that remains in short supply for far too many around the world. The COVID-19 pandemic has taken this acute shortage and made it a full-blown emergency. But addressing the oxygen gap will not only help with COVID-19 treatment in countries that are losing far too many saveable lives. It will also help to improve health systems and health outcomes beyond COVID-19 in the long term, including for the many newborns and children who require oxygen to survive."

## Why a Public Health Officer Should Be on Every Executive Team

**By Richard Serino and Michelle Pratt**
Source: https://www.hstoday.us/subject-matter-areas/emergency-preparedness/perspective-why-a-public-health-officer-should-be-on-every-executive-team/

Mar 04 – Caught off-guard by the coronavirus pandemic, many companies found themselves in a period of great uncertainty in mid-March. Unsure of their safest options and without medical experts on staff, many companies chose to close (Aaron in Fry, 2020), leading to devastating economic impacts. How can we prevent this from happening again? The addition of a "public health officer" to an executive team can present several benefits even beyond ensuring companies face the future prepared for the unexpected.
The role of a public health officer goes beyond occupational health and safety. A recommendation for future staffing involves including a public health preparedness medical expert on staff to advise on and assess threats. These experts should sit at an executive level, to avoid falling into silos and losing their company-wide impact. Some may question the validity or need for this role given the recent vaccine developments for COVID-19, but despite the roll-out of a vaccine not all will receive one in a timely manner, if at all. COVID-19 may be here to stay, and populations will experience periodic outbreaks (Dr. David Murdock in Litke, 2020). Not only that, but COVID-19 will not be the last pandemic: there have been several close calls already where wildlife diseases have had a potential to jump to human populations (Gill, 2020).

So what will a public health officer do? Internally this person will serve a symbolic and practical role. They show the workforce that the company is willing to prioritize staff health and safety, and that they are a caring employer. This person has the ability to provide expert advice, develop vaccination plans, and identify and assess health risks in the workplace. They can answer the question "is it safe?" by examining health hazards. This function may have previously been included in an occupational health and safety role, which tends to analyze slips, trips, falls, and visible features of a workplace; generally, this position may not have as in-depth medical knowledge as an expert with a public health background. When a person with this expertise is brought on staff, confidence may be increased – many people are influenced by expert endorsements, as evidenced in a consumer study by Nielsen (Henshaw, 2019).
This staff member will also play a role publicly. They will improve a company's reputation through the aforementioned prioritization of staff health. This person can ensure public health remains a topic of discussion within the company, thus improving the company's overall contribution to public health. If adopting a public health officer becomes a common practice, it is likely that public health can be improved nationwide.
It can be argued that many businesses are struggling already without the added burden of finding resources to hire new staff. In these instances, it is still recommended that organizations seek public health guidance that can be tailored to the individual company. Regardless of the method of integration, public health expertise must be included in all future business planning, instilling a preparedness mindset for any future crises.
The COVID-19 pandemic has forced everyone to learn many tough lessons about resiliency, adaptability and how we can improve moving forward. Key among these lessons is the essential nature of healthcare providers and experts. These individuals can be assets in not only the healthcare setting, but also in any public or corporate enterprise.

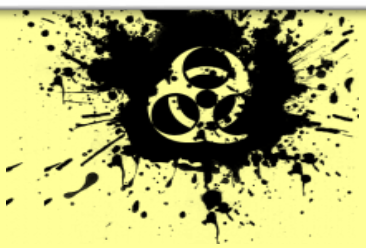
*The **Honorable Richard Serino** is currently a "Distinguished Visiting Fellow" at Harvard University, National Preparedness Leadership Initiative. Mr. Serino was appointed by President Obama and confirmed by the Senate as the Federal Emergency Management Agency's 8th Deputy Administrator in October 2009 and served until 2014. Prior to his appointment as Deputy Administrator, he served as Chief of Boston EMS and Assistant Director of the Boston Public Health Commission. As Chief of Boston EMS, Mr. Serino served as Incident Commander for over 35 mass casualty incidents and for all of Boston's major planned events. During his time at FEMA, he oversaw 60 disasters from flooding in the Midwest, tornado devastation in Missouri, tsunami destruction, and numerous hurricanes. Mr. Serino was on scene at the Boston Marathon bombings in 2013 as the highest-ranking official of DHS. Under Mr. Serino's leadership, FEMA has started the following initiatives such as FEMA Corps, FEMA Stat, the FEMA Think Tank, a detailed budgetary process, and a Disaster Workforce and Workplace Transformation.*
***Michelle Pratt** is a professional Human Ecologist and current intern to Rich Serino, Distinguished Senior Fellow Distinguished Visiting Fellow at Harvard School of Public Health, National Preparedness Leadership Initiative. She is currently a student of the Northern Alberta Institute of Technology for Disaster and Emergency Management, and works for the provincial health provider in her home province. Besides being a student, she is also a community volunteer for education projects related to sexual consent and personal safety.*

# A Neanderthal OAS1 isoform protects individuals of European ancestry against COVID-19 susceptibility and severity

**By Sirui Zhou, Guillaume Butler-Laporte, et al.**
*Nature Medicine* (2021)
Source: https://www.nature.com/articles/s41591-021-01281-1

## Abstract

To identify circulating proteins influencing Coronavirus Disease 2019 (COVID-19) susceptibility and severity, we undertook a two-sample Mendelian randomization (MR) study, rapidly scanning hundreds of circulating proteins while reducing bias due to reverse causation and confounding. In up to 14,134 cases and 1.2 million controls, we found that an s.d. increase in OAS1 levels was associated with reduced COVID-19 death or ventilation (odds ratio (OR) = 0.54, $P = 7 \times 10^{-8}$), hospitalization (OR = 0.61, $P = 8 \times 10^{-8}$) and susceptibility (OR = 0.78, $P = 8 \times 10^{-6}$). Measuring OAS1 levels in 504 individuals, we found that higher plasma OAS1 levels in a non-infectious state were associated with reduced COVID-19 susceptibility and severity. Further analyses suggested that a Neanderthal isoform of OAS1 in individuals of European ancestry affords this protection. Thus, evidence from MR and a case–



control study supports a protective role for OAS1 in COVID-19 adverse outcomes. Available pharmacological agents that increase OAS1 levels could be prioritized for drug development.

## What the Coronavirus Variants Mean for the End of the Pandemic

**By Dhruv Khullar**

Source: https://www.newyorker.com/science/medical-dispatch/what-the-coronavirus-variants-mean-for-the-end-of-the-pandemic

Mar 07 – Last March, during the first wave of the pandemic, Adriana Heguy set out to sequence coronavirus genomes. At the time, New York City's hospitals were filling up, and American testing capacity was abysmal; the focus was on increasing testing, to figure out who had the virus and who didn't. But Heguy, the director of the Genome Technology Center at N.Y.U. Langone Health, recognized that diagnostic tests weren't enough. Tracking mutations in the virus's genetic code would be crucial for understanding it. "No one was paying attention to the need for sequencing," Heguy told me recently. "I thought, I can't just sit here and not do anything." Within weeks, her team had sequenced hundreds of samples of the virus collected in New York City and published a paper with three key findings: the virus had been circulating in the city for weeks before the lockdown; most cases had come from Europe, not China; and the variant infecting New Yorkers carried a mutation, D614G, that scientists soon confirmed made it far more contagious than the original virus isolated in Wuhan.

Heguy's efforts were prescient. The world is now confronting a growing number of coronavirus variants that threaten to slow or undo our vaccine progress. In recent months, it's become clear that the virus is mutating in ways that make it more transmissible and resistant to vaccines, and possibly more deadly. It's also clear that, at least in the United States, there is no organized system for tracking the spread or emergence of variants. As Heguy sees it, the U.S. has more than enough genome-sequencing expertise and capacity; the problem is focus. "Efforts in the U.S. have been totally scattered," she said. "There's no mandate to do it in a timely fashion. The government is kind of like, Let us know if you find something." Funding has also been a major constraint. "It boils down to money," Heguy said. "With money, I could hire a technician, another scientist, get the reagents and supplies I need." Because of their better-organized efforts, other countries have been more successful in identifying new versions of the virus: "The reason the U.K. variant was identified in the U.K. is that the U.K. has a good system for identifying variants." The U.K. has, for months, sequenced at least ten per cent of its positive tests. "If you're doing ten per cent, you're not going to miss things that matter," Heguy said. "If a variant becomes prevalent, you'll catch it."

Heguy's lab sequences ninety-six samples a week—as many as will fit onto a single sample plate, which has eight rows and twelve columns. The process—receiving, preparing, sequencing, and analyzing samples, then reporting the results—takes time and resources, and diverts attention from other research. "Mostly we do this out of a sense of moral obligation," Heguy told me. "This feeling that the country shouldn't be left in the dark." As we enter what seems to be the endgame of the pandemic, tracking and analyzing variants—which could fill hospitals and reduce the effectiveness of therapies and vaccines—is more important than ever.

To understand coronavirus variants, you need to understand a little about viral biology and, more specifically, about how the fragments of RNA and protein from which viruses are made go about replicating. *SARS*-CoV-2, the coronavirus that causes *COVID*-19, has about thirty thousand letters of RNA in its genome. These letters, or "bases," are like the architectural plans for the virus's twenty-nine proteins, including the "spike" protein that it uses to enter cells. Once inside a cell, the virus hijacks the cellular machinery, using it to make copies of itself. Because the machinery is good but not perfect, there are occasional errors. *SARS*-CoV-2 has a mechanism that checks the new code against the old code; still, it's possible for the substitution, deletion, or addition of an amino acid to evade this proofreading. If the errors don't arrest the replication process completely, they sneak into the next generation. Most mutations don't meaningfully change a protein's structure or function. Sometimes, however, one of these accidental experiments "works." A variant has been created—a virus with a slightly different design.

In the time that *SARS*-CoV-2 has troubled humans, it's accumulated innumerable mutations. Those that matter have one of two key features: they either help the virus latch onto and enter cells more easily, or they allow it to better evade tagging and destruction by the immune system. Today, scientists are following three variants of particular concern: B.1.1.7, originally detected in the U.K.; B.1.351, from South Africa; and P.1, from Brazil. Predictably, variants seem to have emerged more quickly in countries with rampant viral spread—places where the virus has had more chances to replicate, mutate, and hit upon changes that confer an evolutionary advantage. The U.K.'s B.1.1.7 variant has spread to more than eighty countries and has been doubling every ten days in the U.S., where it is expected to soon become the dominant variant. Its key mutation is called N501Y: the name describes the fact that the amino acid asparagine ("N") is replaced with tyrosine ("Y") at the five-hundred-and-first position of the spike protein. The mutation affects a part of the spike that allows the virus to bind to cells, making the

variant some fifty per cent more transmissible than the original; new evidence also suggests that people infected with it have higher viral loads and remain infectious longer, which could have implications for quarantine guidelines.

Both the B.1.351 and P.1 variants carry the N501Y mutation. They also have another, more dangerous mutation, known as E484K: a substitution of glutamate ("E") for lysine ("K") at the spike protein's four-hundred-and-eighty-fourth position. This mutation diminishes the ability of antibodies—both naturally acquired and vaccine-generated—to bind to and neutralize the virus. Last month, South Africa halted use of the vaccine produced by AstraZeneca, citing evidence that it offers minimal protection against the B.1.351 variant that is now dominant in that country; a monoclonal antibody drug from Eli Lilly is also inactive against it. In the U.S., a number of homegrown variants are beginning to circulate, including some with the antibody-evading E484K mutation; in the U.K., B.1.1.7 has, in some cases, also acquired the mutation, becoming more like the South African and Brazilian variants.

There's growing concern that B.1.351 and P.1 can infect people who've already had *COVID*-19. The city of Manaus, in Brazil, has faced a viral surge this winter, even though some three-quarters of its population is thought to have been infected by the original virus in the fall—a level at which herd immunity is believed to settle in. This suggests that the antibodies produced by the original virus have struggled to neutralize its successor. Lab tests examining blood from immunized people have shown that the Pfizer-BioNTech and Moderna vaccines—which are effective against the U.K. variant—tend to produce fewer antibodies that fight the South African and Brazilian variants. It's not yet clear how this will affect real-world protection: the vaccines still elicit huge numbers of antibodies—probably more than enough to neutralize the virus—and they stimulate other parts of the immune system, such as T cells, that weren't assessed in the blood tests. At least for now, a degree of uncertainty is inevitable.

How worried should we be about the variants? They pose a challenge, but, compared to the original vaccine-development effort, it's small. Pfizer-BioNTech and Moderna have said that they can develop booster shots within six weeks that work against these variants; Moderna has already started working on one that targets the South African version. From a scientific perspective, developing variant-specific vaccines is a straightforward proposition—one simply swaps the new genomic material for the old. Testing, manufacturing, and distribution could still take months. But the F.D.A. has released guidance designed to streamline the approval process for coronavirus boosters, indicating that it will review them using roughly the same approach it employs for annual flu shots. This means that the new vaccines will likely be tested in small trials of several hundred people, as opposed to the larger randomized trials that were needed for initial approval of the vaccines. Instead of following trial subjects for months to see if they develop *COVID*-19, researchers will be able to use a blood test to determine if they are mounting an adequate immune response to the variant. The U.S. regulatory apparatus is evolving with the virus.

On January 6, 2020, Jason McLellan, a structural biologist at the University of Texas at Austin, was in Park City, Utah, waiting in a ski shop for his new boots to be heat-molded. His phone rang; it was Barney Graham, the deputy director of the Vaccine Research Center at the National Institute of Allergy and Infectious Diseases. McLellan had previously collaborated with Graham on projects to study the molecular structure of viruses such as RSV and *MERS-CoV*. After the conversation, McLellan sent his team a text: "Barney is going to try and get the coronavirus sequence out of Wuhan, China. He wants to rush a structure and vaccine. You game?"

In the coming weeks, McLellan and his team determined the structures of key proteins in the new coronavirus. They learned that *SARS*-CoV-2 had an "unstable" spike protein, capable of changing shape when it attaches to cells, and sometimes before. The immune system makes more effective antibodies against the initial, "prefusion" version of the protein. The trick, therefore, was to lock the protein in that state. Drawing on their work with *MERS-CoV*, McLellan and Graham introduced two mutations to stabilize the spike protein. Every successful *COVID*-19 vaccine developed in the United States works by presenting the immune system with the "locked" proteins that McLellan and Graham devised; the paper describing their work, published online last February in the journal *Science*, has been cited nearly four thousand times.

McLellan has been tracking coronavirus mutations and how they change the structure of the spike protein. For much of 2020, he told me, the protein seemed to accumulate a few mutations a month. Then, in December, variants began to emerge with as many as twelve mutations simultaneously. "We were like, Wow, how did this one variant get so many mutations all of a sudden?" he said. McLellan hypothesizes that, in addition to the usual factors—the passage of time, uncontrolled viral spread—certain individuals vastly accelerate the rate of mutation. "Some people aren't able to eliminate the virus for a long time—sixty days, a hundred days," McLellan said. "They mount enough of an immune response to not die, but not enough to get rid of the virus. That creates selective pressure. There's an evolutionary experiment going on inside these people. The virus emerges with a bunch of changes, some of which improve its fitness." Such individuals become not superspreaders but supermutators.

A growing body of evidence suggests that persistent infection within a person can greatly accelerate the speed with which the virus mutates. Last year, in Boston, a forty-five-year-old man with an autoimmune condition contracted the coronavirus. The man suffered labored breathing, fatigue, abdominal pain, a fungal infection, and extensive bleeding throughout both lungs and was admitted to the hospital six times; he was given the usual *COVID*-19

therapies—remdesivir, monoclonal antibodies, steroids—as well as other powerful immunosuppressants to treat complications of his autoimmune condition. All the while, his compromised immune system struggled to clear the infection. In total, he experienced a five-month illness. He died a hundred and fifty-four days after he was diagnosed, with the virus still circulating in his body.

Genetic analyses conducted at different points during the man's illness revealed that the virus in his system had accrued a startling number of mutations. Dozens of genomic letters had changed or been deleted. The genes encoding the spike protein account for thirteen per cent of the virus's genome, but had accumulated nearly sixty per cent of the observed changes, with most of these occurring in a region that allows the protein to bind to its receptor. Many scientists now suspect that the B.1.1.7 variant, which surfaced with nearly two dozen concurrent mutations in the U.K., emerged from immunosuppressed *COVID*-19 patients who were treated with therapies that exerted further selective pressure on the virus. (The South African variant, by contrast, appears to have evolved more gradually, suggesting that population spread was its dominant mutational force.)

Like all viruses, *SARS*-CoV-2 will continue to evolve. But McLellan believes that it has a limited number of moves available. "There's just not a lot of space for the spike to continue to change in ways that allow it to evade antibodies but still bind to its receptor," he said. "Substitutions that allow the virus to resist antibodies will probably also decrease its affinity for *ACE*-2"—the receptor that the virus uses to enter cells. Recently, researchers have mapped the universe of useful mutations available to the spike's receptor-binding area. They've found that most of the changes that would weaken the binding ability of our antibodies occur at just a few sites; the E484K substitution seems to be the most important. "The fact that different variants have independently hit on the same mutations suggests we're already seeing the limits of where the virus can go," McLellan told me. "It has a finite number of options."

Over time, *SARS*-CoV-2 is likely to become less lethal, not more. When people are exposed to a virus, they often develop "cross-reactive" immunity that protects them against future infection, not just for that virus, but also for related strains; with time, the virus also exhausts the mutational possibilities that might allow it to infect cells while eluding the immune system's memory. "This is what we think happened to viruses that cause the common cold," McLellan said. "It probably caused a major illness in the past. Then it evolved to a place where it's less deadly. But, of course, it's still with us." It's possible that a coronavirus that now causes the common cold, OC43, was responsible for the "Russian flu" of 1889, which killed a million people. But OC43, like other coronaviruses, became less dangerous with time. Today, most of us are exposed to OC43 and other endemic coronaviruses as children, and we experience only mild symptoms. For *SARS*-CoV-2, such a future could be years or decades away.

For now, tracking and analyzing variants remains vital. In July, a report on the state of genomic sequencing in the U.S., published by the National Academies of Sciences, Engineering, and Medicine, concluded that "genome sequence data are patchy, typically passive, and reactive in the United States." Last year, the federal government organized two efforts to increase genetic surveillance; neither was particularly effective, and, in January, the U.S. sequenced less than one per cent of all positive coronavirus tests—placing it thirty-eighth in the world, behind Gambia, Vietnam, and Thailand, by proportion of tests analyzed. President Joe Biden has announced a two-hundred-million-dollar investment to bolster the country's sequencing infrastructure; the C.D.C. has indicated that it hopes to sequence twenty-five thousand samples a week in the near future; and Biden's *COVID*-19 relief plan, which passed the Senate on Saturday and will likely be signed into law later this coming week, will provide nearly two billion dollars to strengthen the country's genomic-sequencing efforts.

Still, these improvements are yet to come. In January, New York City, where I practice, sequenced, on average, just fifty-five samples a day. In hopes of expanding its capacity, the city has convened a consortium of research institutions and is seeking to identify more partners. Much of the resulting effort will likely run through the N.Y.C. Pandemic Response Lab, created by Opentrons, a Brooklyn-based robotics company, whose technology is used to automate research functions and efficiently process samples in labs around the world. Since September, PRL has focussed on diagnostic testing; now it is turning its attention to sequencing, as well. In recent weeks, it has tracked the spread of the U.K. variant and identified New York's first case of the South African variant. The lab has more than doubled its sequencing capacity every week for the past month and plans to expand its testing and sequencing efforts to cities around the country.

Effective vaccines, emerging variants, expanding testing—what does it all add up to? In September, I wrote about two models of infectious-disease control that can help us think about the fight against *COVID*-19. On the one hand, there's the silver-bullet model, typified by the eradication of polio: vaccines for that disease were so effective that, within a few years, we had extinguished it entirely in the U.S. On the other hand, there's the incremental, multipronged approach, which was used to tamp down tuberculosis. There is no silver-bullet vaccine for TB; instead, the disease has been beaten back slowly, over a long period, using a series of interventions, including better sanitation, contact tracing, masking, and therapies. In the days after we learned of the spectacular efficacy of the *COVID*-19 vaccines from Pfizer-BioNTech and Moderna, the polio model felt within reach. To an extent, it still is: universal vaccination would drastically reduce the damage of *COVID*-19, even if it doesn't stamp out the coronavirus completely. But, given how easily *SARS*-CoV-2 spreads, how entrenched the virus has

become, and how many people are skeptical of vaccines, the TB model remains relevant. We live in a liminal state, requiring progress on both fronts. Now, variants have further complicated the story.

Confronting the variants, we should be cautious but hopeful. They are a worrying development but not a devastating blow. Every coronavirus vaccine available in the U.S. appears likely to prevent the more concerning consequences of infection—severe illness, hospitalization, death—even for the new variants. (In South Africa, where B.1.351 dominates, Johnson & Johnson's vaccine prevented a hundred per cent of *COVID*-19 deaths a month after inoculation.) Vaccinated people, therefore, should feel confident in the protection they've gained, and in the knowledge that booster shots, should they become necessary, can quickly be developed and approved. Even for those who have been inoculated, the risk of illness has not been, and may never be, eliminated—but it remains vastly lower than it was before vaccination, despite the new variants in our midst.

For millions of unvaccinated Americans, however, the variants pose a heightened danger. More transmissible variants mean that activities such as travel, shopping, socializing, and dining carry a higher risk of infection; if individuals infected by variants do become ill, they may be less likely to benefit from existing therapies. This spring, people who haven't been vaccinated—the vast majority of Americans—have reason to be concerned. The variants may well provoke another viral surge, especially as governors rush to reopen states and discontinue mask mandates. With the addition of a third coronavirus vaccine, the U.S. should have enough supply to immunize every American adult by the end of May. The emergence of variants is a reason to strengthen, not weaken, public-health measures—surveillance, masks, distance, isolation—until widespread vaccination has been achieved.

In a way, the beginning of the pandemic was simple: the virus was spreading, and we had to stop it. Its ending will be more complicated. While the arrival of the virus changed life swiftly and decisively, our return to normalcy won't mirror our departure from it. There probably won't be a day, week, or month when the U.S. rises out of the pandemic, with a "Mission Accomplished" banner unfurled overhead. Instead, as more of the population gains immunity, either through infection or inoculation, daily life will become less risky. We'll feel more comfortable running errands and seeing friends. More of us will trek to the office, board planes, eat in restaurants. With time, concerts, weddings, and spin classes will return, too. The variants may postpone or complicate this reality, but they won't foreclose it. A likely future is one in which most Americans are protected by the end of the summer. From there, we will line up for coronavirus booster shots the way we do for flu vaccines. The virus will linger and it will evolve. New variants, constrained by the virus's molecular limitations, will arise, in a game of evolutionary cat and mouse. But, step by step, our old rhythms will return. We'll end up finding a new equilibrium, one more favorable to humanity than to the virus—a slight variation on the way we used to live.

***Dhruv Khullar*** *is a contributing writer at* The New Yorker*, where he writes primarily about medicine, health care, and politics. He is also a practicing physician and an assistant professor at Weill Cornell Medical College. His research focusses on value-based care, health disparities, and medical innovation, and has been published in* JAMA *and* The New England Journal of Medicine*. He serves as the director of policy dissemination at the Physicians Foundation Center for the Study of Physician Practice and Leadership, and was recently a senior research fellow at NYC Health + Hospitals. His writing has previously appeared in the New York* Times*, the Washington* Post*,* The Atlantic*, and other publications. Khullar earned his medical degree from the Yale School of Medicine and completed his medical training at the Massachusetts General Hospital. He also received a master's degree in public policy from the Harvard Kennedy School, where he was a fellow at the Center for Public Leadership.*

## Japan's Terumo makes syringe to draw 7 doses from Pfizer vaccine vials

Source: https://www.straitstimes.com/asia/east-asia/japans-terumo-says-makes-syringe-to-draw-7-doses-from-pfizer-vaccine-vials

Mar 09 – Japan's Terumo Corp said on Tuesday (March 9) it has developed a new syringe that can get seven doses out of each vial of Covid-19 vaccine made by Pfizer Inc , at least one more than accessible with existing syringes.

The health ministry approved the design on Friday, and Terumo will begin production at the end of March, a Terumo spokesman told Reuters.

The Kyodo News agency, which first reported the development, said Terumo is aiming to make 20 million units this year.

The vaccine made by Pfizer and its German partner BioNTech, is shipped in vials initially indicated to hold five doses. Six doses can be drawn with special syringes, call low dead space, which minimise the amount of vaccine left in the syringe after use.

Japan began its Covid-19 inoculation campaign last month, using Pfizer's vaccine. Mr Taro Kono, the minister in charge of the effort, said on Friday that some shots may go to waste amid a shortage of the specialty syringes.

## Excess Mortality across Countries in 2020

**By Ufuk Parildar, Rafael Perara, Jason Oke**
Source: https://www.cebm.net/covid-19/excess-mortality-across-countries-in-2020/

Mar 03 – The Coronavirus (SARS-nCOV2) has caused a marked increase in deaths across the world but with significant variation between countries. Some of this variation can be accounted for by differences in the way countries attribute the cause of death. This bias can be overcome by comparing excess all-cause deaths, which is a more objective measure. In addition, estimates of excess deaths can help us understand not only deaths that are directly attributed to COVID-19 but also those that result indirectly (collateral loss).
The total amount of excess mortality will also depend on the age structure of a population. Countries with age structures weighted towards an older population will experience higher mortality than a country with an age structure weighted towards a younger population. By standardising age structures, we can make more appropriate comparisons.
Many early reports comparing excess deaths resulting from the COVID-19 pandemic did not take account of population size, age distribution and focussed mainly on the first phase of the pandemic. Here, we provide updated estimates of excess mortality rates overall of 2020, standardised to a reference population

**Methods**
Weekly mortality data from 37 countries were acquired from the Short-Term Mortality Mortality Fluctuations (STMF) data series in the Human Mortality Database (HMD). We calculated the expected mortality for each country by taking the average of the past 5 years (2015-2019). We calculated sex-specific age-adjusted excess mortality rates by standardising to the European Standard Population (2013) using age-groups of (0-14, 15-64, 65-74,75-84,85+). Data are presented as age-standardised total mortality per 100,000, age-standardised total excess mortality per 100,000 and percentage increase in mortality per age-adjusted 100,000. Relative increases are useful when comparing countries with marked differences in annual mortality rates.
We built a web-based application that allows the user to graph and tabulates excess mortality statistics for each country using an average of the previous 5-year data. In the table, below we summarise the data for age-standardised mortality for 2020 calculating expected age-standardised mortality using an average of the previous 5-year's data where possible and the average of 4 years where that data were not available (Chile, Germany, and Greece), using an alternative web-based application that we've built.
Access the Weekly Excess Mortality in 2020 app

| Country | Expected Age-standardised Mortality 2020 (per 100,000) | Age-standardised total excess mortality per 100,000 | Excess age-standardised mortality per 100,000 | Percentage increase in Mortality per Age-Adjusted 100,000 |
|---|---|---|---|---|
| Austria | 938 | 1009 | 71 | 7.6% |
| Belgium | 956 | 1072 | 116 | 12.2% |
| Bulgaria | 1597 | 1788 | 191 | 12.0% |
| Canada | 709 | 751 | 42 | 6.0% |
| Chile* | 1041 | 1184 | 143 | 13.8% |
| Czechia | 1147 | 1258 | 111 | 9.7% |
| Denmark | 1016 | 972 | -44 | -4.3% |

| | | | | |
|---|---|---|---|---|
| England & Wales | 960 | 1060 | 100 | 10.5% |
| Estonia | 1178 | 1178 | 0 | 0% |
| Finland | 948 | 919 | -29 | -3.1% |
| France | 839 | 895 | 56 | 6.7% |
| Germany* | 1016 | 1049 | 33 | 3.3% |
| Greece* | 912 | 957 | 45 | 4.9% |
| Hungary | 1420 | 1473 | 53 | 3.7% |
| Iceland | 755 | 724 | -31 | -4.1% |
| Israel | 864 | 920 | 56 | 6.5% |
| Italy | 728 | 792 | 63 | 8.7 |
| Latvia | 1446 | 1414 | -32 | -2.2% |
| Lithuania | 1393 | 1468 | 75 | 5.4% |
| Luxembourg | 842 | 852 | 9.5 | 1.1% |
| Netherlands | 971 | 1040 | 70 | 7.2% |
| Norway | 893 | 861 | -32 | -3.6% |
| Poland | 1216 | 1391 | 175 | 14.4% |
| Portugal | 977 | 1043 | 66 | 6.8% |
| Scotland | 1134 | 1219 | 85 | 7.5% |
| Slovakia | 1219 | 1236 | 17 | 1.4% |
| Slovenia | 996 | 1116 | 120 | 12.0% |
| South Korea | 779 | 757 | -22 | -2.9% |
| Spain | 838 | 946 | 108 | 12.9% |
| Sweden | 883 | 896 | 13 | 1.5% |
| Switzerland | 783 | 817 | 34 | 4.3% |
| USA | 1020 | 1152 | 132 | 12.9% |

**Canada only has data up to week 42, and Iceland and Italy up to week 44. Slovakia only has data up to week 48, and Greece & South Korea up to week 49. Switzerland & Czechia are based on data up to week 50, and Hungary, Slovenia, and the USA based on data up to week 51.*

**Observations**

Relative excess mortality in the countries we have examined ranges from -4.3% to 14.4% and is strongly positively correlated with the recorded number of COVID-19 deaths (r = 0.8). Denmark, Finland, Iceland, Latvia and Norway experienced fewer deaths in 2020 according to our analysis. As we would expect these countries have recorded a lower number of COVID-19 deaths than other countries. For example, Iceland, Norway and Finland have all recorded fewer than 12 per 100k COVID-19 deaths. Denmark and Latvia are perhaps exceptions to this having recorded 32 COVID-19 deaths per 100k and Latvia 54 per 100k.

A number of eastern European countries saw little or no excess deaths in the first half of the year but have experienced significant excess mortality in the second half of 2020. Bulgaria, Czechia, Croatia, Hungary, Lithuania, Luxembourg, Poland, Slovakia, and Slovenia with Poland and Bulgaria exhibiting levels of excess mortality of the same order of magnitude as the countries in the centre of the first wave (e.g. Spain, France, England and Wales, Italy).

The USA which has often been cited as the worse affected country (often using the total number of COVID-19 deaths) has relative excess of 12.9% which although one of the highest, is below some with even higher relative excess mortality such as Poland and Chile. Relative standardised excess mortality is one method of measuring the impact of the SARS-nCOV2 pandemic. It is superior to comparing the total numbers of COVID-19 deaths and

arguably more useful than comparing the COVID-19 death rate per 100k as it overcomes the recording bias and measures both direct and indirect consequences of the pandemic. But it has limitations. We have noted that defining the expected number of deaths and thus the excess can vary according to whether a four- or five-year average is used. In addition, using simple averages of historical mortality data could underestimate if there is a significant downward trend in mortality or overestimated if there are upward trends.

***Ufuk Parildar*** *is a third-year medical student in the Final Honours School of the University of Oxford.*
***Rafael Perera*** *is Professor of Medical Statistics and Director of Medical Statistics at the Nuffield Department of Primary Care Health Sciences*
***Jason Oke*** *is a Senior Statistician at the Nuffield Department of Primary Care Health Sciences and Module Coordinator for Statistical Computing with R and Stata (EBHC Med Stats), and Introduction to Statistics for Health Care Research (EBHC), as part of the Evidence-Based Health Care Programme.*

## Swiss company to produce Russian Sputnik coronavirus vaccine in Italy

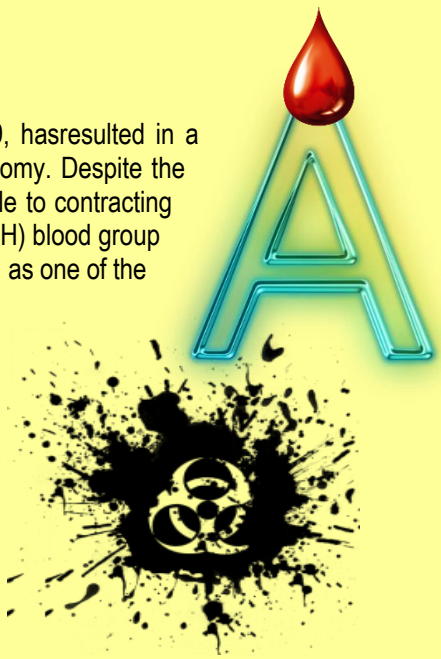
Source: https://www.business-standard.com/article/current-affairs/swiss-company-to-produce-russian-sputnik-coronavirus-vaccine-in-italy-121030900163_1.html


Mar 09 – The Russian Direct Investment Fund (RDIF) is set to cooperate with Swiss-based Adienne Pharma & Biotech for Sputnik V coronavirus vaccine production in Italy, chief executive of RDIF Kirill Dmitriev said.
"We are holding talks with the government of Italy. There are many regions enthusiastic in respect of the Sputnik V, which want to produce it domestically. We for the first time cooperate now with the Swiss company Adienne Pharma & Biotech in Sputnik V production in Italy," Dmitriev said in an interview with the Italian TV Channel Rai 3, as reported by Tass.
The manufacturing mechanism will help to create new jobs and provide Italy with the opportunity to control the product.
Tass reported that the production of the Sputnik V in Italy may start as early as in June. RDIF will announce 20 cooperation projects in ten countries, including Italy, by the end of this march, the chief executive said.
In particular, the Fund is discussing cooperation with Germany and France now.
According to The Hill, Sputnik V, which has a reported efficacy rate of 92 percent for preventing COVID-19 infections, is a two-dose vaccine with lower cold storage requirements than those produced by Pfizer and Moderna.
**It has been authorized for emergency use in at least 20 countries.**

**EDITOR'S COMMENT:** The agreement was sealed the moment that EMA is trying to slow the process of giving the green light for Sputnik V for EU member states (with the boring excuse that company's file is not the proper one).

## The SARS-CoV-2 receptor-binding domain preferentially recognizes bloodgroup A

**By Shang-Chuen Wu, Connie M. Arthur, Jianmei Wang, et al.**
*Blood Advances | 9 MARCH 2021; VOLUME 5, NUMBER 5*
Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7929867/




Severe acute respiratory syndrome-coronavirus 2 (SARS-CoV-2), the cause of COVID-19, hasresulted in a global pandemic, overwhelming modern health care systems and reshaping the worldeconomy. Despite the devastating consequences of SARS-CoV-2, not all individuals seem to beequally susceptible to contracting the virus. Recent genome-wide association studies identi-fied the locus responsible for ABO(H) blood group expression, the first polymorphism describedin the human population well over a century ago, as one of the most significant geneticpredictors of SARS-CoV-2 infection risk.1Although previous and subsequent studies corroboratethese results,2-6additional data have failed to observe a similar association between ABO(H)blood group status and SARS-CoV-2 infection.7Although differences in study populationnumbers and other variables may

influence these outcomes, these collective studies in generalwarrant a direct examination of a possible association between ABO(H) blood group antigens andSARS-CoV-2.
ABO(H) blood groups are not only the first polymorphisms described in the human population; they are also the most well-recognized. Naturally occurring antibodies against the blood groupABO(H) antigens in individuals who do not express these same polymorphic structures can causepotentially fatal hemolytic transfusion reactions after transfusion and severe acute graft rejectionafter transplantation.8It is possible that anti–blood group antibodies may also influence SARS-CoV-2 infection through engagement of putative ABO(H) blood group antigens on the surface ofthe virus.9However, these antibodies can be found in individuals of multiple blood types(eg, anti–blood group B antibodies are present in both blood group A and blood group Oindividuals) and thus may not fully account for the propensity of blood group A individuals, inparticular, to exhibit an increased risk for SARS-CoV-2 infection. Furthermore, although ABO(H)antigens may influence disease progression,10early studies suggested that increased risk wasprimarily associated with the likelihood of initial infection.2-5,11In this regard, the mechanism bywhich ABO(H) antigens, and particularly those of blood group A, influence the likelihood ofinfection is still unknown.

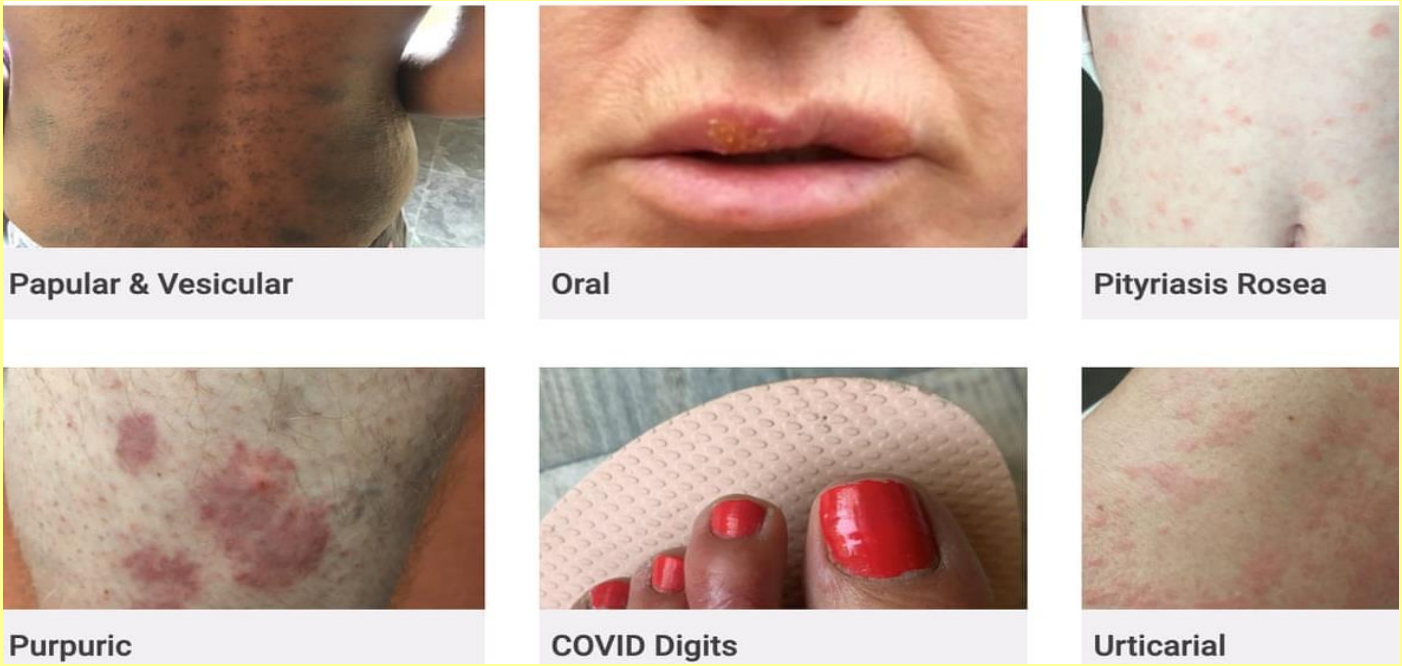
# In Surprise Twist, COVID-19 Can Cause Weird Skin Rashes. Here's What to Look Out For

**By Vassilios Vassiliou and Subothini Sara Selvendran**
Source: https://www.sciencealert.com/in-surprise-twist-covid-19-can-cause-weird-skin-rashes-here-s-what-we-know

Mar 08 – The most common symptoms of COVID-19 are fever, a dry cough, and losing your sense of taste and smell. Other signs that are frequently seen include headaches, muscle and joint pain, nasal congestion, and fatigue.
A less common symptom are rashes of various forms. These have been slower to be reported, partly due to the wide variety that have appeared in COVID-19 patients, making it more challenging to establish a consistent correlation.
Nevertheless, knowing how COVID-19 affects the skin is important. A recent study found that for 17 percent of COVID-19 patients with multiple symptoms, skin rashes were the first symptom to appear, while for 21 percent of patients rashes were their only symptom.
Being able to identify the effects of COVID-19 on the skin may allow cases to be spotted earlier – or even picked up altogether in people who are otherwise asymptomatic. This could help limit transmission.
With that in mind, here are the four main types of skin changes to look out for, and the possible reasons why they occur.

**Chilblain-like lesions**
These are red, swollen or blistering skin lesions that affect mainly the toes and soles of the feet, colloquially known as "COVID toes". Over the course of one to two weeks, the lesions will become even more discoloured and will flatten, and after this they will spontaneously resolve without treatment.
A substantial number of these lesions have been seen, primarily in adolescents and young adults with no or only mild symptoms of COVID-19. They make up the majority of skin issues associated with the virus. In two international reports on different types of suspected COVID-related skin conditions, around 60 percent of patients with skin complaints reported these lesions.
However, given these lesions correlate with mild disease, many of the patients with them in these studies didn't qualify for a COVID-19 test at the time, and 55 percent were otherwise asymptomatic.
So while the swift rise of these lesions during the pandemic suggests they're associated with COVID-19, direct confirmation of this hasn't been established. It's possible they're caused by some other related factor.
Exactly when they appear is also somewhat unclear. In a study analysing 26 patients with suspected COVID-related skin changes, 73 percent presented with chilblain-like lesions. None of the patients had respiratory symptoms and they were all COVID-negative at the onset of their lesions. An explanation is that these lesions appear only after a long delay – up to 30 days after infection.
The cause of these lesions has been debated. A possible culprit could be type 1 interferons, proteins that regulate the antiviral properties of the immune system.
The theory is that high production of these interferons might result in patients rapidly clearing the coronavirus, but also cause injury to blood vessels and increased inflammation. This would explain the coincidence of mild or nonexistent disease, negative tests and skin damage.
Another theory concerns ACE2, the molecule that the coronavirus uses to get inside cells. It is present on many types of cell, including those in the sweat glands, which are common on

the palms of the hand and soles of the feet. This could make these areas particularly vulnerable to damage from the virus.
Or, it could be that damage to blood vessels, caused either by the immune response or the virus, leads to cell death and multiple mini blood clots in the toes.




**Maculopapular rash**
This term describes both flat and raised areas of discoloured skin. A study of 375 patients in Spain found that 47 percent of patients with COVID-related skin changes had this kind of rash.
These were associated with more severe COVID-19 symptoms, and were mainly found on the trunk in middle-aged to elderly patients. They tended to last 7-18 days, appearing 20-36 days after infection.
A suggested cause is the body's immune system going into overdrive. In some patients, a hyperinflammatory phase occurs 7-10 days after infection, which leads to tissue damage and, potentially, more severe disease and death.

**Hives**
Also known as urticaria, these are raised areas of itchy skin. In a study involving four hospitals in China and Italy, 26 percent of COVID-19 patients that complained of skin changes presented with hives.
Hives typically precede or present at the same time as other symptoms, making them useful for diagnosis. They are more common among middle-aged patients and are associated with more severe disease. Viral infections are a known trigger of hives, as they cause the breakdown of cells and the release of histamine through a cascade of reactions in the immune system.
However, it's important to remember that hives are also a noted side-effect of many drugs that have been used to treat COVID-19, such as corticosteroids and remdesevir.

**Vesicular lesions**
These are clear fluid-filled sacs under the skin, similar to those seen in chicken pox. They are less common compared to the skin conditions above: in the previously mentioned Spanish study of skin changes associated with COVID-19, only 9 percent of patients had these vesicles.
However, they are thought to be a more specific indication of someone having COVID-19 than those already listed, and so are more useful for diagnosis. They appear to present in patients with mild disease around 14 days after infection.
It's thought that they're caused by prolonged inflammation, with antibodies attacking the skin and damaging its layers, resulting in fluid-filled sacs.

***Vassilios Vassiliou*** *is Senior Clinical Lecturer in Cardiovascular Medicine @ University of East Anglia.* ***Subothini Sara Selvendran*** *is Visiting Researcher in Medicine @ University of East Anglia.*

## SARS-CoV-2 Variants B.1.351 and B.1.1.7 Show Resistance to Neutralizing Antibodies

A new study of the SARS-CoV-2 variants B.1.351 and B.1.1.7 (first detected in South Africa and the U.K., respectively), shows that they have increased resistance to antibody neutralization. The findings suggest that current antibody therapies and vaccines may be less effective against some variants. The authors noted that if the rampant spread of the virus continues, and more critical mutations accumulate, continuous revising of therapeutics may be needed. + MORE

## L.G.B.T.Q. People Face Increased Risks from Covid, but Many Don't Want the Vaccine

Source: https://news.yahoo.com/l-g-b-t-q-194514745.html

Mar 08 – At her last doctor's appointment, Erica Tyler, who lives in Brooklyn, N.Y., joked that she didn't want to get vaccinated for Covid-19 "because another foot might grow out of my forehead. And I'm not ready for that."

Ms. Tyler, 68, a cancer survivor who has diabetes and high blood pressure, lost her wife to a heart attack nearly a year ago and has been staying home throughout the pandemic to avoid becoming infected with the coronavirus. But when the vaccine became available, she did not rejoice.

"I was resistant," Ms. Tyler said. She described feeling unsettled by the push to vaccinate minorities, especially given how Black people have been underserved or mistreated by the medical establishment in the past.

"I felt that they were trying to storm people who they wanted to eliminate out of society," she said, namely "the elderly and the Black people."

Research has shown that sexual and gender minorities, and especially people of color, are more vulnerable to becoming infected with the coronavirus and also more likely to have underlying conditions that could make them severely ill if they were to contract Covid-19. But many of the very people who are most at risk within these communities are also hesitant to take the vaccine, according to a recent study and interviews with health care workers as well as people of color who identify as lesbian, gay, bisexual, transgender or queer.

"There's an overarching mistrust around vaccination," said Anthony Fortenberry, the chief nursing officer of the Callen-Lorde Community Health Center, which provides medical care to L.G.B.T.Q. people in New York City. "They're not sure if they want to get it."

Each of the three Covid vaccines currently available in the United States has been shown to be remarkably good at preventing serious illness and death. At Callen-Lorde, Mr. Fortenberry said he has counseled patients about the efficacy of the vaccine, eventually easing their fears.

"They are not quick conversations," he said. "They are addressing someone's personal experiences and their history of discrimination."

But not everyone has a health care provider with whom they feel comfortable sharing their concerns.

"I worry that without those conversations happening, people will continue to not get vaccinated," he said.

So far about 54 million people in the United States have received at least one dose of a Covid-19 vaccine, and of those nearly 28 million have been fully vaccinated. At Callen-Lorde and other medical centers that treat many L.G.B.T.Q. patients, health care workers say they have seen a higher demand for the vaccine among white patients compared to patients of color.

L.G.B.T. people of color were twice as likely as white non-L.G.B.T. people to test positive for Covid-19, according to a Williams Institute study published in February. Even though Black people are more at risk for contracting the disease, concerns about the vaccine are especially prevalent among this population, experts say. In a study published this month in the journal Vaccines, 1,350 men and transgender women who predominantly identified as gay or bisexual reported how likely they would be to get a Covid-19 vaccine. The Black participants expressed significantly more vaccine hesitancy than their white peers, the study found.

Health care workers are encountering the same resistance in their patients. "Some people just literally said, 'Well, no — Trump was involved in getting this vaccine going so I'm not going to get the vaccine,'" said Jill Crank, a nurse practitioner at Johns Hopkins Community Physicians in Baltimore.

Studies show that hesitancy about the Covid vaccine occurs across all demographic groups, including those in the medical profession. About three in 10 health care workers are hesitant about getting the vaccine, according to a survey published in December by K.F.F. (previously the Kaiser Family Foundation) compared to about a quarter of the general population.

Dezjorn Gauthier, 29, a Black transgender man who lives about 20 minutes from Milwaukee, said that although he is currently eligible to get the vaccine, he doesn't want it.

"Right now, it's a no-go," said Mr. Gauthier, a model and business owner who has Covid-19 antibodies because he contracted the coronavirus last year. The vaccine's development moved "so rapidly and so quickly, it just has me a little bit hesitant," he said, adding that he's also unsure about the vaccine's ingredients. "There's a fear in the community."

For members of the L.G.B.T.Q. community, and especially people of color, the hesitancy stems, in part, from pre-existing mistrust in the medical establishment, the experts said.

The infamous Tuskegee study, which took place from 1932 to 1972, is one of the most egregious examples of racial discrimination in health care. The researchers recruited African-American men, some of whom were infected with syphilis, to observe the course of the disease. But the researchers did not disclose what they were studying or give the participants proper treatment, even as the men suffered and experienced severe health problems.

The racial bias still found in medical care as well as the modern-day discrimination faced by sexual and gender minorities adds an additional burden.

"The fear of being rejected is already there," Ms. Crank said. "They may have already been rejected by their families, friends, co-workers — so it can cause a deep depression and lack of trust in anyone, including health care workers."

There are additional, different concerns about the vaccine among transgender people, advocates say, especially those who have received silicone injections or hormone replacement therapy.

"How does that affect somebody who has been on estrogen for the last 20 years?" asked Maria Roman-Taylorson, a transgender person and the vice president and chief operations officer of the TransLatin@ Coalition, a nonprofit agency that provides social services to transgender, gender nonconforming and intersex people in Los Angeles. "There's no data at all."

Dr. Kenneth Mayer, the medical research director at Fenway Health, a community health center in Boston where half of the patients identify as L.G.B.T.Q., said there's no reason to believe that hormones or silicone would interact with the vaccine.

"There's not something intrinsic about being transgender that would make somebody more likely to respond poorly to the vaccine or have more side effects," said Dr. Mayer, whose institution has enrolled over 200 participants in the largest, most recent AstraZeneca Covid-19 vaccine trial.

Ms. Roman-Taylorson said she was initially hesitant to get vaccinated, but eventually decided to do it because she knew she needed to stay healthy to lead her agency.

"I felt the benefit outweighed the risk," she said. But, she added, "there's some folks even within our organization who are not willing to take it because they don't trust the process. They don't trust how it's been developed."

Although the vaccine was developed and manufactured quickly, "the safety steps were definitely not cut," Dr. Mayer said, citing the independent data safety monitoring board that examines the data and the Food and Drug Administration's stringent vetting process. "I really think this is an example of science going right," he added.

However, Dr. Mayer and others say there is a dearth of data about the L.G.B.T.Q. population. Representatives from both Pfizer and AstraZeneca said that they have not asked vaccine study participants to report their sexual orientation or gender identity. (Johnson & Johnson and Moderna did not immediately respond to emails asking about the demographic information they collect.) In addition, these categories are not included on the C.D.C.'s Covid-19 case report form, and only a handful of states and the District of Columbia have been working to collect such data when testing for Covid-19.

Public health experts say vaccination is safe and that there are a number of reasons to believe that if sexual and gender minorities don't get vaccinated, they are more at risk of contracting Covid and becoming severely ill than the general population.

Last month the Centers for Disease Control and Prevention released a report concluding that gay, lesbian and bisexual people in the United States had higher rates of self-reported underlying conditions like cancer, heart disease and obesity than heterosexual people and are also more likely to be smokers. These conditions put adults at increased risk for severe illness from Covid-19, the report said. The C.D.C. says that people with these types of conditions should receive the vaccine earlier than the general population.

In addition, a recent study from New York State found that Covid patients with H.I.V. had higher rates of severe disease requiring hospitalization than those without an H.I.V. diagnosis. Men who have sex with men have the most new H.I.V. diagnoses in the United States, federal data shows.

Socioeconomic status and geographic location can create additional health vulnerabilities, said Sean Cahill, director of health policy research at the Fenway Institute, a branch of Fenway Health that does policy analysis, conducts research and offers educational training around the world.

According to a Human Rights Campaign Foundation analysis, L.G.B.T.Q. people are twice as likely to work in frontline professions like food service and retail as non-L.G.B.T.Q. people,

which can raise the risk of exposure to the coronavirus. Many sexual and gender minorities live in urban areas, where physical distancing measures are harder to maintain, Dr. Cahill said.
Even those who can socially distance harbor skepticism about the need to vaccinate.
"My girlfriend and I live a very secluded life but wear masks and protection everywhere we go," said Rayshawn Stallings, 30, a transgender Black man who lives in Pensacola, Fla. "No one enters our home and we have no contact with anyone other than each other. So why would we need to get the vaccine?"
As for Ms. Tyler, in Brooklyn, after speaking with seven of her friends who had taken the vaccine, none of whom had troubling side effects, she changed her mind and decided to get vaccinated. She received her first dose in February and is scheduled to get the second in mid-March.
"I did not want to cut short my living by having to hide in my house," she said. "So I took a leap of faith."

## Priapism in COVID-19: A thromboembolic complication

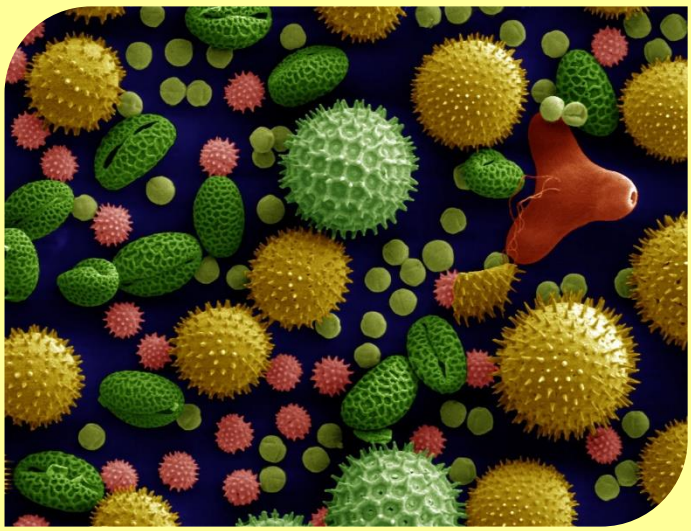
**By Matthew L. Silverman, MD, Seth J. VanDerVeer, DO, and Thomas J. Donnelly, MD**
*Am J Emerg Med | December 31, 2020*
Source: https://www.ajemjournal.com/article/S0735-6757(20)31191-8/fulltext

SARS-CoV-2 (COVID-19) infection is frequently associated with thromboembolic complications. In this case report, we describe the diagnosis and management of priapism as a thromboembolic complication of severe COVID-19.

## Covid-19 risk increases with airborne pollen

Source: https://www.tum.de/en/about-tum/news/covid-19/short/article/36479/

Mar 08 – When airborne pollen levels are higher, increased SARS-CoV-2 infection rates can be observed. These results were determined by a large-scale study conducted by an international team headed by researchers at the Technical University of Munich (TUM) and the Helmholtz Zentrum München. Members of high-risk groups could protect themselves by watching pollen forecasts and wearing dust filter masks.



In the spring of 2020, the outbreak of the coronavirus pandemic appeared to coincide with the tree pollen season in the northern hemisphere. These observations prompted an international team of researchers to conduct an extensive investigation: The scientists wanted to know whether there is a demonstrable link between airborne pollen concentrations and SARS-CoV-2 infection rates.

**Pollen is a significant environmental factor influencing infection rates**

Under the leadership of first author **Athanasios Damialis**, the team at the Chair of Environmental Medicine at TUM collected data on airborne pollen concentrations, weather conditions and SARS-CoV-2 infections – taking into consideration the variation of infection rates from one day to another and the total number of positive tests. In their calculations, the team also included data on population density and the effects of lockdown measures. The 154 researchers analyzed pollen data from 130 stations in 31 countries on five continents.
The team showed that airborne pollen can account for, on average, 44 percent of the variation in infection rates, with humidity and air temperature also playing a role in some cases. During intervals without lockdown regulations, infection rates were on average 4 percent higher with every increase of 100 grains of airborne pollen per cubic meter. In some German cities, concentrations of up to 500 pollen grains per cubic meter per day were recorded during the study – which led to an overall increase in infection rates of more than 20 percent. In regions where lockdown rules were in effect, however, the infection numbers were on average only half as high at comparable pollen concentrations.

**Airborne pollen weakens immune response**

**High pollen concentrations lead to a weaker immune response in airways to viruses that can cause coughs and colds. When a virus enters the body, infected cells usually send out messenger proteins. This is also the case with SARS-CoV-2. These proteins, known as antiviral interferons, signal nearby cells to escalate their antiviral defenses to keep the invaders at bay. Additionally, an appropriate inflammation response is activated to fight the viruses.**

But if airborne pollen concentrations are high, and pollen grains are inhaled with the virus particles, fewer antiviral interferons are generated. The beneficial inflammatory response itself is also affected. Therefore, on days with a high concentration of pollen, it can lead to an increase in the number of respiratory illnesses. This also holds true for Covid-19. Whether individuals are allergic to the different pollen types is irrelevant.

"You cannot avoid exposure to airborne pollen," says Stefanie Gilles who is also first author of the study. "People in high-risk groups should, therefore, be informed that high levels of airborne pollen concentrations lead to an increased susceptibility to viral respiratory tract infections." Athanasios Damialis emphasizes: "When studying the spread of SARS-CoV-2, environmental factors such as pollen must be taken into account. Increased awareness of these effects are an important step in preventing and mitigating the impact of Covid-19."

**Particle filtering masks provide protection**

What can vulnerable people do to protect themselves? Claudia Traidl-Hoffmann, last author and a professor of environmental medicine, advises people at high-risk to monitor pollen forecasts over the coming months. Claudia Traidl-Hoffmann states: "Wearing a particle filtering mask when pollen concentrations are high can keep both the virus and pollen out of the airways."

## We Just Found the Secret Weapon That Makes Cotton the Best for Reusable Face Masks

Source: https://www.sciencealert.com/under-real-world-conditions-cotton-masks-still-reign-supreme-for-effective-protection-against-covid-19

Mar 10 – While some still quibble over wearing masks a year into the pandemic, scientists have gotten on with working out exactly what strategy is best - and cotton face masks just received another tick of approval.

Various studies have tested different material combinations and health authorities such as the World Health Organization and the CDC recommend cloth masks for the general public, based on their conclusions. But some of these studies overlooked an important real-world factor - these face covering fabrics end up damp from our breath.

Now, a team of researchers has tested mask materials under high humidity conditions that mimic the air expelled from our mouths.

"This new study shows that cotton fabrics actually perform better in masks than we thought," said material scientist Christopher Zangmeister from the US National Institute of Standards and Technology (NIST).

Zangmeister and colleagues tested nine different types of cotton and six types of synthetic fibers including polyester and rayon in 99 percent humidity (about how humid our breath is) and 55 percent humidity.

This resulted in a remarkably visible difference in the performance of cotton.

While synthetic fabrics, which also performed poorly compared to dry cotton, did not change performance under humid conditions, cotton fabrics *increased* their ability to capture particles by 33 percent.

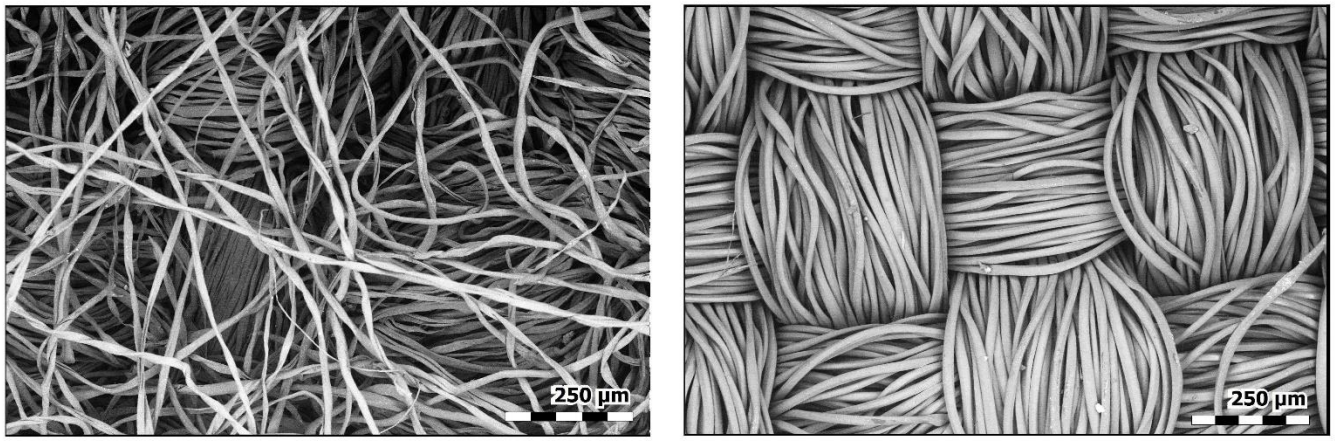
The researchers used variously sized particles of salt as a test substitute for virus-transporting droplet and aerosol particles,and these appeared to absorb some of the moisture trapped by the water-attracting cotton fibers. The particles swell in volume, which makes it harder for them to pass through the fabric uninhibited.

Synthetic fibers, however, repel water, thus not creating the humid environment within the mask itself for this inhibition to happen. There was also no change in medical masks - but they are designed to work at high levels in all conditions (equivalent levels to cotton).

The best-performing type of cotton was cotton flannel, according to the results.

Microscopic images of the materials reveal a stark difference in structure - an orderly weave pattern in synthetic polyester compared to the chaotic network of crisscrossing fibers that give flannel its soft-to-touch feel.

NIST researchers believe this mess of fibers is what increases the chance airborne particles passing through the mask will collide and stick to the fabric.




Cotton flannel (left), polyester (right). (E.P. Vicenzi/Smithsonian Museum/NIST)

However, all this doesn't mean wet masks are better: If your mask gets wet, it should be replaced. The amount of liquid present in the masks in these humid conditions amounts only to a few drops, which doesn't alter the material's breathability - the team found air pressure on both sides of the fabric remained relatively similar.
This is great news from an environmental perspective too. With mounting waste from disposable surgical masks that shed microplastics, it's comforting to know there's a safe, reusable option.
Research suggests owning a bunch of reusable masks that can be machine-washed together is the most eco-friendly option to keep you and your loved ones safe.
While the team says more research is required to fully appreciate the interactions between masks, humidity, and aerosol particle transmission, their study has contributed to the first international standards for fabric masks meant to slow the spread of COVID-19, recently released by the standards-developing organization ASTM International.
"To understand how these materials perform in the real world we need to study them under realistic conditions," Zangmeister concluded.

▶▶ **This research was published in** *ACS Applied Nano Materials*.

## Six promising Covid-19 vaccines set to join the immunisation race

Source: https://www.thenationalnews.com/uae/health/six-promising-covid-19-vaccines-set-to-join-the-immunisation-race-1.1179680

Mar 08 – Covid-19 vaccines have become household names after being heralded as the most viable long-term solution to an outbreak which has raged for more than a year.
From Sinopharm and Pfizer-BionTech, to Moderna and Oxford-AstraZeneca, all have seeped into the collective consciousness of a world eager for a way back to normality.
No fewer than 74 Covid-19 vaccines - including those already released - have reached clinical trials and a further 182 are in preclinical studies.
According to Prof Polly Roy, professor of virology at the London School of Hygiene and Tropical Medicine, experience with vaccines so far during the pandemic is proving useful to researchers looking to improve jabs.
“I think it is teaching us many different things that help to make better quality vaccines,” she said.
“Vaccines all the time are going to improve – they will be better and better quality.”
For example, messenger RNA (mRNA) vaccines will be modified so that they are easier to preserve – the Pfizer-BioNTech jab must be stored at at least -70 °C – while “multi-variant vaccines” better able to cope with mutations in the coronavirus will also be released, Prof Roy indicated. Pfizer and BioNTech are seeking approval to be allowed to store the vaccine at higher temperatures.
With efficacy rates in some cases above 90 per cent, existing vaccines have set a high bar for subsequent shots and weeded out some below-par shots.

**Here, we look at some of the key vaccines set to make a mark. Six promising Covid vaccines awaiting approvals:**

- **Janssen/Johnson and Johnson**, single dose
- **Bharat Biotech (Covaxin),** two doses
- **EpiVacCorona,** two doses
- **Valneva,** two doses
- **Novavax,** two doses
- **SpyBiotech**

## The Janssen /Johnson and Johnson vaccine

Developed by Janssen, a Belgian subsidiary of US-headquartered Johnson and Johnson, this vaccine stands out for being administered as a single dose. It was recently approved for US distribution by the FDA.
Crucially for global distribution, it is low cost and can be stored in refrigerators.
"It looks very good. It will be useful in poorer-world situations," said Prof David Taylor, professor emeritus of pharmaceutical and public health policy at University College London.
It is based on an adenovirus that normally infects people but has been modified to prevent it from replicating and causing disease.
Genetic material has been added so the adenovirus causes human cells to produce harmless coronavirus spike proteins, the immune response to which protects against the coronavirus.
The Oxford-AstraZeneca vaccine and Russia's Sputnik V are also based on adenoviruses.
Clinical trials found the vaccine did not produce major side effects and was 66 per cent effective at preventing moderate to severe illness four weeks after a single dose, and 85 per cent effective at averting severe illness.
The vaccine also reduces transmission, although it is less effective against the South African and Brazilian variants. One billion doses could be produced this year.

## The Bharat Biotech (Covaxin) vaccine

India's Covid-19 vaccine, developed by Bharat Biotech, has been pre-approved by the country's authorities.
It was found to be 81 per cent effective against the virus in phase three trials.
Covaxin is based on an inactivated version of the coronavirus that cannot replicate or cause illness, yet prompts a protective immune response, like the Sinopharm and Sinovac vaccines.
The inactivated virus is given alongside an immune potentiator or adjuvant, a substance that strengthens the immune response.
This two-dose vaccine entered late-stage clinical trials in India – where it is being manufactured – in mid-November, and there are trials in Bangladesh too.
Because the vaccine is made up of inactivated whole virus particles – not just the spike protein – the immune response may be more protective against emerging variants, which tend to have key changes in the spike protein.
Stored in refrigerators, the vaccine is likely to be administered in numerous Asian countries, including the Philippines, Sri Lanka and Myanmar, as well as Bahrain and Oman. Bharat Biotech's investments in factories mean monthly production could reach 40 million doses.

## The EpiVacCorona vaccine

Following Russia's Sputnik V comes another vaccine from the country, EpiVacCorona, from the Vector State Research Centre of Virology and Biotechnology. Regulators in Russia have already approved the vaccine.
While many Covid-19 vaccines involve injecting into people genetic material that codes for the production of coronavirus proteins, EpiVacCorona consists of synthetic versions of coronavirus proteins themselves.
These are in the form of short fragments or peptides linked to a carrier protein, and are supplied with an adjuvant to strengthen the immune response.
Officials have claimed that results from early trials are impressive. All under-60s developed antibodies against the coronavirus, while 94 per cent of over-60s produced an immune response.
They have also said the vaccine has been shown to be effective against the UK coronavirus variant and have predicted that it would work against the South African and Brazilian variants too.
Administered as two doses, the vaccine is said to have sparked interest from 45 countries, with Russia's neighbour Belarus among the nations likely to receive supplies.

## The Valneva vaccine

Like the Sinopharm and Sinovac vaccines and others likely to be used soon, the Valneva offering is based on an inactivated version of the coronavirus.

Valneva, which is headquartered in France and has manufacturing plants in Austria, Scotland and Sweden, announced in late January that it had started producing doses so that there would be stockpiles once approval was granted.

The UK has already ordered 100 million doses of the vaccine and these supplies should be available from the end of 2021 or early next year, should the vaccine be approved.

Showing how far ahead governments are looking, and indicating that Covid-19 vaccination is going to be an ongoing part of life, the British government has an option for a further 90m doses to be delivered between 2023 and 2025. Up to 60m doses may be ordered by the European Union.

The company has said results from the first clinical trials of the vaccine – the only one based on an inactivated virus under development in Europe – should be available in April.

## The Novavax vaccine

This vaccine consists of purified coronavirus spike protein, produced in insect cells, along with Novavax's proprietary adjuvant to strengthen the immune response.

Novavax, a US biotechnology company founded in 1987, said the vaccine cannot replicate in human cells nor can it cause Covid-19, and is stable in refrigerators.

Clinical trials in the UK found the vaccine to be 89.3 per cent effective overall at preventing Covid-19, although it was marginally less effective at stopping people from falling ill to the more transmissible UK variant.

During clinical trials in South Africa, where another more transmissible variant is prevalent, efficacy was significantly lower, at only 60 per cent.

In the second quarter of this year, the company plans to begin testing a reworked vaccine better able to cope with new variants. This could be given as a booster shot or as part of a joint vaccine with the original version, what the company calls a combination bivalent vaccine.

Should the vaccine get the regulatory green light, Novavax is due to deliver 60m doses to the British government in the second half of this year, manufactured in England.

UAE residents of all ages are eligible for the Sinopharm shot, which is available across the seven emirates. All photos by Victor Besa / The National

## The Sanofi / GlaxoSmithKline vaccine

Disappointing clinical results for this vaccine were announced last year, with the immune response in older people poorer than had been hoped. Reports have indicated that people in clinical trials were given a lower dose than they should have been.

New trials are being carried out with a different dosing regime with the aim of seeing the vaccine released at the end of 2021. The companies are also developing an updated version aimed to protect against the South African and other variants.

Adopting a similar approach to EpiVacCorona, this vaccine consists of Sars-CoV-2 proteins produced by genetically engineered organisms (contributed by Sanofi), plus an adjuvant (supplied by GSK). Protein vaccines of this kind produced through genetic engineering are well established.

## The SpyBiotech vaccine

Developed with the Serum Institute of India, this vaccine uses SpyBiotech's own "superglue" technology to display the coronavirus spike protein on virus-like particles (VLPs), which are similar to viruses but are unable to cause infection. The VLPs, based on hepatitis B, are a well-established vaccine platform.

**Coronavirus outbreak**

The superglue technology, called SpyCatcher/SpyTag, is licensed from the University of Oxford, from which SpyBiotech was "spun out" as a company, and produces what is described as a "stable" bond. It can be used to produce vaccines against a wide variety of pathogens. "The vaccine I'm most interested in is the one being produced by SpyBiotech," said Sir John Bell, regius professor of medicine at the university, adding that in tests it produced one of the highest levels of neutralising antibodies – which destroy the virus – in the blood. "It's very, very cheap and easy to make. It looks like a great vaccine."

Clinical trials began in September last year.

# Ready or Not 2021: Protecting the Public's Health Against Diseases, Disasters, and Bioterrorism

Source: https://www.tfah.org/wp-content/uploads/2021/03/TFAH_ReadyOrNot2021_Fnl.pdf

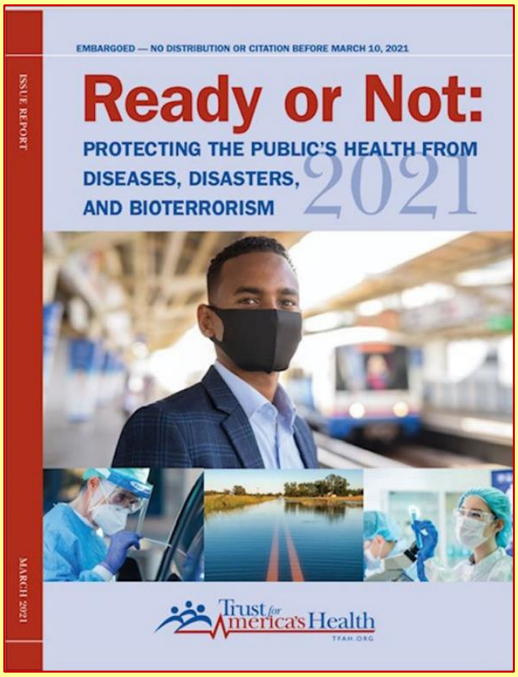
Mar 10 – The COVID-19 pandemic has starkly demonstrated that underinvestment in public health emergency preparedness can cost hundreds of thousands of lives and wreak havoc on the economy. This report, *Ready or Not 2021: Protecting the Public's Health Against Diseases, Disasters and Bioterrorism* measured states' performance on 10 key emergency preparedness indicators placing 20 states and the District of Columbia in a high level of preparedness tier, 15 states in a middle preparation tier and 15 states in a low degree of preparation tier. The report analysis found room for improvement in every jurisdiction.

**State performance, by scoring tier, 2020**

| Performance Tier | States | Number of States |
|---|---|---|
| High Tier | CO, CT, DC, DE, GA, ID, KS, MA, MD, ME, MS, NC, NE, NM, OK, RI, UT, VA, VT, WA, WI | 20 states and DC |
| Middle Tier | AL, CA, FL, IA, IL, KY, LA, MI, MN, MT, ND, NJ, OR, TN, TX | 15 states |
| Low Tier | AK, AR, AZ, HI, IN, MO, NH, NV, NY, OH, PA, SC, SD, WV, WY | 15 states |

*"The importance of this report is that it gives states actionable data to adopt policies that save lives. The COVID-19 crisis shows that we have much more work to do to protect Americans from health threats, particularly in the ways in which structural racism create and exacerbate health risks within communities of color. States need to take aggressive steps to shore up their preparedness for all types of public health emergencies."*

*John Auerbach, President and CEO of Trust for America's Health*




While the report's findings are not a measure of any state's COVID-19 response, they demonstrate that while states' readiness is important, national health emergencies on the scale of a pandemic require strong federal leadership and coordination, and long-term investment in public health infrastructure and workforce. States alone, even those that rank high in this report, are not sufficiently equipped to respond to a pandemic without federal help.

*The report found:*

**A majority of states have made preparations to expand healthcare and public health capabilities in an emergency, often through collaboration.** Thirty-four states participated in the Nurse Licensure Compact, up from 26 in 2017. The compact allows registered nurses and licensed practical or vocational nurses to practice in multiple jurisdictions with a single license. In an emergency, this enables health officials to quickly increase their staffing levels.

**Hospitals in most states have a high degree of participation in healthcare coalitions**. On average, 89 percent of hospitals were in a coalition and 17 states and the District of Columbia had universal participation, meaning every hospital in the jurisdiction was part of a coalition. Such coalitions bring hospitals and other healthcare facilities together with emergency management and public health officials to plan for and respond to incidents.

**Every state and the District of Columbia had public health laboratories that had plans for a large influx of testing needs.** This ability to surge laboratory testing capacity during the COVID-19 crisis was extremely critical.

**Most states are accredited in the areas of public health, emergency management, or both.** As of December 2020, the Public Health Accreditation Board (PHAB) or the Emergency Management Accreditation Program (EMAP) accredited 42 states and the District of Columbia; 29 states and the District of Columbia were accredited by both groups, a net increase of one since November 2019. Both programs help ensure that necessary emergency preparation and response systems are in place and staffed by qualified personnel.

**Seasonal flu vaccination rates, while still too low, have risen significantly.** The seasonal flu vaccination rate among Americans ages 6 months or older rose from 42 percent during the 2017–2018 season to 52 percent during the 2019–2020 season but is still below the 70 percent target vaccination rate set by *Healthy People 2030.*

**In 2019, only 55 percent of employed state residents, on average, used paid time off, the same percentage as in 2018.** Those without paid leave are more likely to work when they are sick and risk spreading infection. This became particularly relevant during the COVID-19 pandemic, as isolation and quarantine are important tools for controlling the outbreak.

**Most residents who got their household water through a community water system had access to safe water.** On average, just 5 percent of state residents used a community water system in 2019 that did not meet all applicable health-based standards.

The report includes recommendations for actions by federal and state policymakers to improve the nation's public health emergency preparedness in seven priority areas:

- Provide stable, sufficient funding for domestic and global public health security.
- Strengthen policies and systems to prevent and respond to outbreaks and pandemics.
- Build resilient communities and promote health equity generally and in preparedness.
- Ensure effective public health leadership, coordination, and workforce.
- Accelerate development and distribution, including last mile distribution, of medical countermeasures.
- Strengthen the healthcare system's ability to respond and recover during and from health emergencies.
- Prepare for environmental threats and extreme weather.

The *Ready or Not* report series is funded by the Robert Wood Johnson Foundation with additional support from The California Endowment, W.K. Kellogg Foundation and The Kresge Foundation.

## The Collapse of Trust in Public Health

**By Jeffrey A. Tucker**

Source: https://www.globalresearch.ca/collapse-trust-public-health/5739425

Mar 10 – Maybe you have noticed the rise in public incredulity toward the coronavirus narrative that you hear all day from the mainstream media. More doubts. More opposition. More protests. And far less trust. You are hardly alone. What began as a spark in the Spring of 2020 is now a raging fire. Try as they might to put it out, it is burning hotter and higher than ever before.

The data are already in and the lockdown elites are getting worried. Rightly so.

The great epidemiologist Donald Henderson in 2006 made two firm predictions of the consequences of lockdowns. First, he said, doing so would have no benefit in terms of disease mitigation. Indeed, lockdowns did not work.

Second, he said that doing so would result in discrediting public health and cause a "loss of public trust in government." The loss in public trust – not just officials but also in media – is palpably obvious.

Turn your attention to a new round-up of surveys published in the *New England Journal of Medicine*. It specifically relates to vaccines but the results reflect a much broader loss of trust in general. Indeed, the surprising lack of public enthusiasm for the vaccines is but a symptom of a much larger problem.

However, despite scholarship emphasizing the role of trust in institutions to provide relevant information, polls suggest that sources of technical information about safety are not greatly trusted. Specifically, there is limited trust in the media or pharmaceutical companies to provide Covid-19 vaccine information: **as few as 16% and 20% of respondents, respectively, say they have "a great deal/quite a bit" of trust in these organizations to provide such information.** The public also has only moderate trust in information provided by the Food and Drug Administration.

The loss of trust was triggered by using an egregious and destruction means – lockdowns – in order somehow to achieve the unachievable; that is, the control of a widespread respiratory virus with severe outcomes for the elderly and sick but which is mostly mild for everyone else. It so happened that SARS-CoV-2 was not the universally deadly plague it was presumed to be one year ago, so these measures were wildly disproportionate.

Even if the pandemic had been as grim as the models predicted, there is no evidence in the historical record of lockdowns doing anything about a virus except to disrupt and destroy social and market functioning in a way that makes dealing with severe health outcomes even more difficult.

Consider one huge and unprecedented mitigation measure deployed last year: the stay-at-home order. Most states imposed them and enforced them with police power. It was not that different from near-universal house arrest – right here in the United States.

The claim was that this would slow or stop the spread or somehow cause the virus to be controlled, resulting in fewer severe disease outcomes. The propaganda became outrageous at points, with signs everywhere ordering people to "stay home and save lives," as if leaving your house would result in lives lost.

Again, What Were the Benefits of Locking Down?

People undertook enormous personal sacrifices to comply, at great personal expense. The economic costs were huge but so were the psychological and social costs. The result was an epidemic in loneliness and a rise in deaths of despair.

**How did it work? A new study in *Nature* by four epidemiologists looked at the experience of 87 countries with a variety of policies, some loose and some extreme in strigency. They sought to correlate state-at-home orders with virus control. The results: they were unable to do so. The relationship does not exist, which is to say that it is consistent with randomness. The policy was worse than useless.**

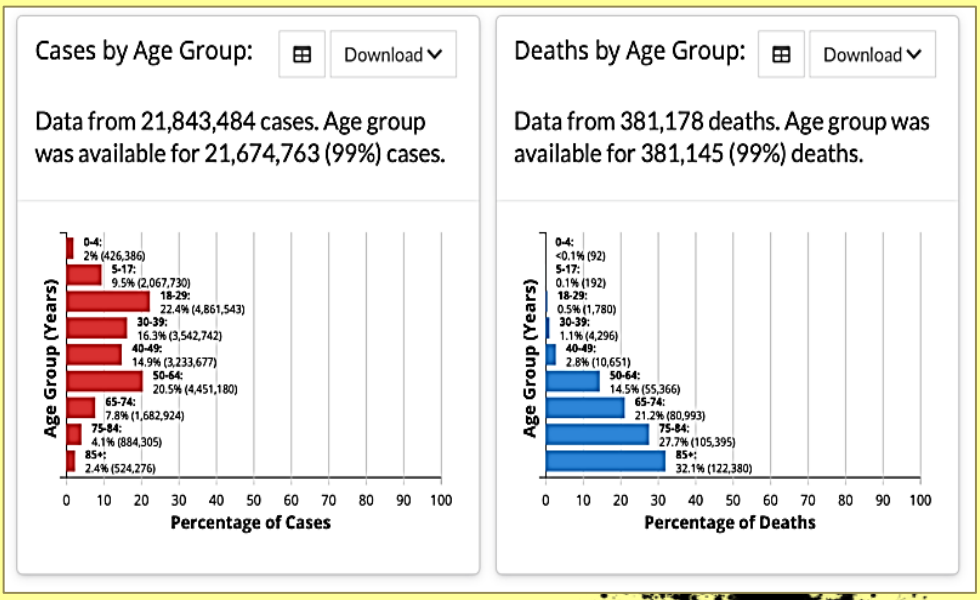
This study is the 31st that AIER has assembled using data nationally and internationally showing that lockdowns achieved nothing and cost everything. You are welcome to peruse the list and share it with your friends, who will be astonished (or maybe not) to discover that the public health edicts were unscientific and pointlessly brutal. All that sacrifice for nothing.

How many other things did public health authority get wrong? Thanks to a large email dump, from an account used by Anthony Fauci, we know that he was warned in early March 2020 that PCR testing was giving inaccurate results. As a result, almost all the data we thought we had now lives under a cloud. If testing is wrong, so too could be death data and so on. It's a mess of confusion. The same email dump revealed that a US delegation went to China in mid-February to learn from the best in the politics and arts of locking down a society.

Incredibly, these policies were implemented at a time when American trust in government is at the lowest point it has been since 1972. Only 8% are willing to say that they trust government in domestic affairs a "great deal" whereas 20% say they trust government "not at all." It will be fascinating to watch these polls move during this year, as more and more information comes out about what our governing elites did to the economy and our lives during the pandemic. It could be generations before trust returns to what it was before.

The last poll taken specifically about public health officials dates to September 2020, and it documented that trust in the CDC and Dr. Fauci were already evaporating. How does that compare with today? And what becomes of that trust over the next six months as more people discover just how terrible and thoroughly unscientific the policies were?

This collapsing trust is hitting about the time that the CDC has finally begun to put on its website some clarifying data. These charts for example make it clear that another public health measure from last year was wildly wrong: that getting the virus was very nearly a death sentence. We are at least getting some accurate data on the demographics of severe outcomes.




In truth, this was known since late March 2020. We reported on it on April 5. Even earlier, from March 8, we reported accurately on the nature of this virus, and fully expected that once the information was revealed, public fear would decline and the world would reopen. Instead, a combination of media and government messaging stoked that fear and fed more and longer lockdowns, disastrous policies that governors are racing to repeal even as the federal government warns against it.

The longer lockdown policies last – in practice especially but also when defended by public health authorities – the more that elites in government and media risk a devastating loss of credibility. The rebuilding of reputation might prove impossible for at least a generation or two.

There is a potential social cost to this loss in trust. Public health in the last century largely did good for humanity, with its emphasis on holistic perspectives on human well-being, the distribution of therapeutics and vaccines, the education on clean water and wise disease mitigation, its focus on rational science and calm over disease panic, and so much more. With lockdowns, and the tremendous public confusion sown by so many, this entire well-deserved reputation for science in the public interest is in tatters.

***Jeffrey A. Tucker*** *is Editorial Director for the American Institute for Economic Research. He is the author of many thousands of articles in the scholarly and popular press and nine books in 5 languages, most recently Liberty or Lockdown. He is also the editor of The Best of Mises. He speaks widely on topics of economics, technology, social philosophy, and culture.*

## The Verdict Is In: You Only Need One Vaccine Dose if You've Already Had COVID-19

Source: https://www.sciencealert.com/more-research-emerges-suggesting-one-shot-strategy-for-people-who-ve-had-covid

Mar 11 – In the race to get coronavirus vaccines into arms as quickly as possible, scientists think they've found a way to accelerate the process: Give the people who've already had COVID-19 just one dose.

Most vaccine-eligible Americans are getting either Pfizer or Moderna's vaccine, both of which require two doses administered several weeks apart. But a growing chorus of researchers now agrees that a single dose of either vaccine will generate a sufficient immune response among people who've already had the coronavirus.

Giving them the second dose, research suggests, is essentially a waste of a good shot.

"For those who've been infected and recovered, which is tens of millions of people, they'll only need one shot, which will make the vaccine go even further," Dr. James Hildreth, president of Meharry Medical College, told Insider.

Hildreth served on the Food and Drug Administration advisory committee that recommended all three authorized coronavirus vaccines in the US. The third, from Johnson & Johnson, is a one-shot vaccine, so people who've had COVID-19 would get a single dose of that no matter what.

Given that more than 29 million Americans have had COVID-19, that could be up to 15 million Pfizer or Moderna shots that could go to other people.

**New research backs up the one-shot strategy**

Once a person has had COVID-19, their immune system should recognize the virus if it invades again. So, when a vaccine spurs the body to start producing antibodies again, it's logical that the immune system would mount a stronger and quicker defense.

In a letter in the *New England Journal of Medicine* on Wednesday, 32 researchers from the Icahn School of Medicine at Mount Sinai wrote that a single-dose strategy for people who've already had the virus "requires investigation."

The team found in a small study that people who'd previously had COVID-19 developed 10 to 45 times as many antibodies after their first dose of Pfizer or Moderna's vaccine as the average uninfected person did. The research is still awaiting peer review.

"The first dose ends up serving as the booster," Dr. Jeremy Faust, an emergency medicine physician at Brigham and Women's hospital, told Insider. "If you've been infected, it's very likely that one dose would be pretty damn good for quite a while."

**There are a few caveats, though: People may need to confirm that they still have antibodies if they were sick a while ago, since antibody levels wane over time. An antibody test would also be required for those who suspect they had COVID-19 but never tested positive. If that antibody test comes back positive, the second shot is likely redundant.**

"What is the point?" Akiko Iwasaki, an immunobiologist at Yale University, told Insider. "It's kind of a wasted shot."

**'This is where the policy lags science'**

France began recommending a single vaccine dose for people who've had COVID-19 in February.

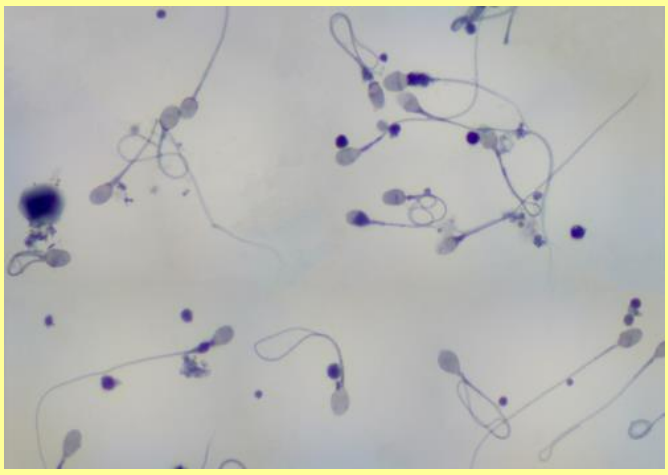
By then, the Mount Sinai research was out, and another preliminary study had also discovered high antibody levels among healthcare workers who'd had COVID-19 before receiving their first shot.

Dr. Mohammad Sajadi, a co-author of that study, told Insider that COVID-19 patients typically develop antibodies about two to three weeks after their initial infection. But the healthcare workers showed high antibody levels a week after their first shot.
"What that shows you is that individuals who had a prior COVID infection have what we call a recall response or a memory response," Sajadi said.
"For most infections, the second time you see that microorganism, you should get a faster response."
Then in late February, a UK study found roughly equal antibody levels among people who'd received the first dose of Pfizer's vaccine and had never gotten COVID-19 and those who'd had COVID-19 but weren't vaccinated yet.
After the people who'd had COVID-19 got their first shot, their antibody levels were 140-fold higher than their peak levels before the vaccine.
Yet most countries, including the US, don't yet recommend a single-dose regimen for people who've had COVID-19.
"This is where the policy lags science," Iwasaki said.
Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, told NBC News in February that the idea is worth considering.
"The data looked really quite impressive – that if you've been infected and then you get a single dose, the boost that you get with that single dose is really enormous," Fauci said.
"That is one thing that you might want to consider, but we really want to look carefully at the data first."

**Concerns about long-term immunity**
Since scientists haven't had much time to follow up with vaccine recipients, there's no consensus yet about how long vaccine-induced immunity lasts. This uncertainty is one reason experts are hesitant to advocate for anything other than the standard two-dose regimens of the Pfizer and Moderna vaccines.
Delaying or skipping the second dose places a lot of pressure on the first dose to provide solid, long-term immune protection, Princeton University researchers wrote on Tuesday.
They expressed concern that switching up the dosing regimen could lead to a "broad range" of outcomes among vaccinated people.
But Iwasaki said people who've had COVID-19 could probably wait months before getting their second shot – if they need one at all.
"There just isn't any need to do it so early," she said.
Scientists are also optimistic that even though antibody levels are known to wane over time, T cells will confer long-term protection for those who've had COVID-19. Like antibodies, T cells have impressive powers of recollection that can help the immune system recognize and re-attack the coronavirus.
A recent study found that people who previously had COVID-19 mounted a stronger T-cell response to one shot of Pfizer's vaccine than people who'd never gotten infected did.

## Markers of sperm quality found adversely affected by COVID-19

Source: https://www.focusonreproduction.eu/article/News-in-Reproduction-COVID-19-Sperm-Quality



Feb 19 – An experimental study which measured markers of inflammation and oxidative stress in the sperm cells of men infected with COVID-19 found significantly higher levels than in healthy controls. Experts urge caution in interpreting results.
A manuscript accepted for publication in the journal Reproduction at the close of January has already caused quite a stir by claiming 'the first direct experimental evidence that the male reproductive system could be targeted and damaged by the COVID-19 infection'. The study, reportedly in 84 men hospitalised in Tehran with confirmed COVID-19 and 105 age-matched healthy controls, was based on semen analysis performed at ten-day intervals over 60 days and found that in the infected men inflammation and oxidative stress markers in sperm cells were significantly increased by more than 100% when compared to the controls.

Of interest in the study was the angiotensin-converting enzyme 2 (ACE2) receptor, which is used by the SARS CoV-2 virus to enter cells and, say the authors, is abundant in the testes and other male reproductive organs. The study results indeed showed that ACE2 activity was significantly higher in men in the COVID-19 group than in controls (P <0.05) but tended to decrease over time. By comparison, there were no significant changes in ACE2 activity in the control group. However, in the COVID-19 subjects these and other markers of inflammation and oxidative stress were correlated with significant impairments in semen volume, sperm morphology and sperm concentration.
The authors say that these findings 'go beyond our current understanding of the disease, suggesting that the reproductive function of the patients recovering from the disease should be precisely followed and evaluated', and provide evidence that 'the male reproductive system is a potential target and vulnerable to COVID-19 infection'. A press release issued by the journal publisher proposed that 'men recovering from COVID-19 may find it harder to conceive, due to abnormally low sperm quality'.
The study results, if confirmed, may put a question mark over some recent reassuring conclusions on COVID-19 and male fertility. For example, in an online meeting staged by the Progress Educational Trust (publishers of BioNews) at which ESHRE hosted a session on risk reduction in fertility clinics, UK andrologist Allan Pacey after reviewing 14 studies concluded that 'any measurable effect of coronavirus on male fertility is probably only slight and temporary'. (2) Pacey himself, in press comments on this study, said its findings were 'surprising' and went on to raise 'a strong note of caution' about them. Among his concerns – raised also by other commentators – was the effects of the disease itself and the medications taken to treat it (including corticosteroids and antivirals) on sperm parameters. This too was raised by the authors themselves, who described it as 'unclear whether these findings are attributed to the male reproductive tract-specific infection or merely the result of a general response to virus infection'. Meanwhile, a recent review of COVID-19 on male reproduction has confirmed that, while 'current evidence does not support sexual transmission of the SARS-CoV-2 virus', the virus can harm the male reproductive system 'in large part by inflammatory damage'. (3) Despite such evidence – and as Pacey noted from his review of earlier studies – 'a substantial decrease in male reproductive capacity awaits clinical evidence'. Pacey himself added that this latest paper and the publisher's press release 'seriously over claim the value of the findings and I need to raise a strong note of caution in their interpretation of these data'.

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## Aspirin use for cardiovascular disease may reduce likelihood of COVID-19 infection

*Bar-Ilan University*
Source: https://www.eurekalert.org/pub_releases/2021-03/bu-auf031021.php

Mar 10 – Aspirin is an established, safe, and low-cost medication in long-standing common use in prevention and treatment of cardiovascular diseases, and in the past a pain relief and fever reducing medication. The use of aspirin was very popular during the 1918 Spanish Influenza pandemic, several decades before in-vitro confirmation of its activity against RNA viruses. Studies showed that aspirin, in addition to its well-known anti-inflammatory effects, could modulate the innate and adaptive immune responses helping the human immune system battle some viral infections.
With this information in mind Israeli researchers hypothesized that pre-infection treatment with low-dose aspirin (75mg) use might have a potential beneficial effect on COVID-19 susceptibility and disease duration. A joint team from Leumit Health Services, Bar-Ilan University, and Barzilai Medical Center conducted an observational epidemiological study, utilizing data from Leumit Health Services, a national health maintenance organization in Israel. Their findings were recently published in *The FEBS Journal*.


The researchers analyzed data of 10,477 persons who had been tested for COVID-19 during the first COVID-19 wave in Israel from February 1, 2020 to June 30, 2020. Aspirin use to avoid the development of cardiovascular diseases in healthy individuals was associated with a 29% lower likelihood of COVID-19 infection, as compared to aspirin

non-users. The proportion of patients treated with aspirin was significantly lower among the COVID-19-positive individuals, as compared to the COVID-19-negative ones. And those subjects who had been treated with aspirin were less associated with the likelihood of COVID-19 infection than those who were not. Moreover, the group observed that the conversion time of SARS-CoV-2 PCR test results from positive to negative among aspirin-using COVID-positive patients was significantly shorter, and the disease duration was two-three days shorter, depending upon the patients' pre-existing conditions.
"This observation of the possible beneficial effect of low doses of aspirin on COVID-19 infection is preliminary but seems very promising," says Prof. Eli Magen from the Barzilai Medical Center, who led the study.
Study principal investigator Dr. Eugene Merzon, from Leumit Health Services, emphasizes the importance of repeating the study results using larger samples, and including patients from other hospitals and countries, to verify the results.
Dr. Milana Frenkel-Morgenstern, of the Azrieli Faculty of Medicine of Bar-Ilan University: "The present study sought to better understand the potential favorable effects of aspirin in aiding the human immune system battle COVID-19. We intend to investigate a larger cohort of patients and in randomized clinical trials."

## Eli Lilly's combo therapy for COVID-19 cuts serious illness and death in large study

Source: https://www.reuters.com/article/us-health-coronavirus-lilly-idUSKBN2B21C0

Mar 10 – Eli Lilly and Co said on Wednesday that its combination antibody therapy to fight COVID-19 reduced the risk of hospitalization and death by 87% in a study of more than 750 high-risk COVID-19 patients.

**It is the second large, late-stage study to show that combination therapy of two antibodies, bamlanivimab and etesevimab, is effective at treating mild to moderate cases of COVID-19.**

The previous study, which published data in January, used a higher dose of the drugs and reduced risk of hospitalization by 70%.
“I expect this data to continue to drive more utilization” of the antibodies,” said Daniel Skovronsky, chief scientific officer at Eli Lilly.
“We have few other diseases where we have drugs that can offer this magnitude of benefit.”

**U.S. regulators authorized the combination therapy in February for use in COVID-19 patients 12 and over with a high risk of developing serious complications. European regulators greenlighted its use in March.**

The United States agreed in February to purchase a minimum of 100,000 doses of the combination treatment.
Regulators authorized bamlanivimab alone for use against COVID-19 last year and the U.S. government agreed to purchase nearly 1.5 million doses.
Skovronsky said the combination therapy has the benefit of offering greater protection against new strains of COVID-19.
A variant of COVID-19 originally discovered in Britain has infected patients in most U.S. states and is expected to become the country's dominant strain. (Graphic: tmsnrt.rs/34pvUyi)
“We are quite confident this combo covers all of the variants in the U.S.,” Skovronsky said, adding Lilly is studying an additional treatment for new COVID strains first identified in South Africa and Brazil, which have not become widespread in the United States.
Skovronsky said that Lilly is prepared to manufacture 1 million doses of the combination therapy in the coming months and is in active talks to supply governments around the world with the treatment.

## Covid reinfection: Doctors report rise in patients testing positive nearly a year after initial infection

Source: https://www.thenationalnews.com/uae/health/covid-reinfection-doctors-report-rise-in-patients-testing-positive-nearly-a-year-after-initial-infection-1.1182256

Mar 11 – Twelve months after the World Health Organisation declared a global pandemic over the spread of Covid-19, a Sharjah resident reveals the physical and mental toll of twice testing positive for Covid-19 in the space of nine months.
Thanseem Parambil, 28, was admitted to Medcare Hospital in Sharjah on February 24 this year, two days after testing positive for Covid-19.
He initially managed the fever at home, in an apartment he shares with friends.
But his temperature started to rise and, reeling with acute body pain, he returned to the hospital’s emergency department, where he nearly collapsed and required an intravenous drip.

It came as a shock to Mr Parambil, who previously tested positive for the coronavirus in May last year. He is, however, one of an increasing number of patients in the UAE who are catching Covid-19 for a second time, almost a year after they first caught the virus.
The men are upset because they are under the impression they had lifetime immunity
Dr Sanjay Paithankar, Right Health group
Cases of reinfection are infrequent, doctors say. The symptoms vary from mild to moderate, and are usually handled with isolation and antibiotics, but some patients require hospital treatment.
Dr Sanjay Paithankar, head of the Right Health group, which has 58 clinics in the UAE, said they treat "fewer than 100 patients a week" who have been reinfected with the coronavirus.
They counsel troubled patients and talk to company representatives, who are baffled when told their workers need to be kept in isolation again, having already once recovered from the virus.
Medics are spreading the message that catching Covid-19 does not created a lifetime of immunity and that everyone should continue to take safety precautions.
The World Health Organisation said that although it is rare, research shows that people who were once infected with coronavirus could be infected again when their antibody response wanes.
The US Centre for Disease Control and Prevention said based on its experience with other viruses, Covid-19 reinfections were expected.

**'I could not stand, could not walk'**

Mr Parambil said the effect was very different the second time around. He experienced mild body aches and recovered from the disease last year after spending a week in quarantine in a hotel.
The Sharjah resident said he feels drained and weakened by the illness this time.
Doctors found bronchial pneumonia patches on his lungs, and administered steroids, anti-inflammation drugs and a blood thinner to control the infection.
"I could not stand, could not walk. I felt dizzy when I stood up. It was horrible because for three days I could not sleep [because of] heavy body pain," said Mr Parambil, who works as a cashier in the same hospital.
"I'm better now but I still feel tired. I was really very upset to get Covid again; this time it was very hard."
He has a persistent cough that doctors said will ease over time.
He was discharged after a week in hospital and resumed work on Monday after two negative tests.
People must take this seriously because the second wave is very strong and people need to be more careful now
Thanseem Parambil
Mr Parambil was scheduled to take his second dose of the Sinopharm vaccine on the day he was admitted to hospital and will reschedule the dose when he recovers.
He has a safety message that he repeats to anyone he meets.
"People must take this seriously because the second wave is very strong and people need to be more careful now," he said.
"Some people are still not taking care. I never thought this disease could happen to me twice."
Dr Rehab Ahmed, a specialist in internal medicine at Medcare Hospital in Sharjah, said this was the first case of reinfection she had treated.
She urged patients not to ignore symptoms.
"Viral infections, especially in Covid, cause inflammation. We start antivirals to stop a cytokine storm. In moderate to severe cases, we give corticosteroids and an anti-coagulant to prevent any deterioration further," she said
"But bronchial pneumonia requires time to fade out, although the infection is treated, bronchial spasms and the residual cough will take some time."

**No lifetime immunity to Covid-19**

Dr Sanjay Paithankar, who runs 58 low-cost medical facilities across the country, said his doctors are seeing fewer than 100 mild to moderate cases of reinfection a week.
"The symptoms are of longer duration. Last year, we had a lot of people with throat pain, cough, cold and fever who would be OK in three or four days with basic medicines," said Dr Paithankar, head of the Right Health group.
"Now patients are reporting to the clinics with a history of more than two weeks of cough, cold and mild fever. Severe tiredness is an added, new thing, [with] severe muscle, joint pain of a longer duration.
"But the number of reinfections is small; it is fewer than 100 a week across all clinics."

The men test positive about nine months to a year after they first contracted the virus.
The clinics are within walking distance of labour accommodation and treat 2,500 workers daily.
"The men are upset because they are under the impression, they had lifetime immunity," Dr Paithankar said.
"We have to tell them that a one-time Covid infection does not guarantee you will not be Covid positive the second time."
In most cases, people were reinfected after the first dose of Sinopharm.
There were fewer cases of reinfection and much milder symptoms after the second vaccination dose, Dr Paithankar said.
The men are administered antibiotics and paracetamol and told to stay in rooms specially designated for quarantine in the labour accommodation buildings.
Dr Paithankar said the workers, who are largely healthy, are recovering quickly.
"The previous exposure to Covid helps your body's defence mechanism understand there is infection, and it develops antibodies, or soldiers, to protect them," he said. "The soldiers are ready this time because the enemy is known."
Medical experts advise everyone to continue to avoid crowded places, socially distance and wear masks.

**"All people – those who had Covid, those who took the vaccines and those who have not had Covid – everyone should know that Covid is a part and parcel of your lifestyle," Dr Paithankar said.**

## Versatile and multivalent nanobodies efficiently neutralize SARS-CoV-2

**By Yufei Xiang, Sham Nambulli, Zhengyun Xiao, et al.**
*Science 18* Dec 2020: Vol. 370, Issue 6523, pp. 1479-1484
Source: https://science.sciencemag.org/content/370/6523/1479

**Nanobodies that neutralize**
Monoclonal antibodies that bind to the spike protein of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) show therapeutic promise but must be produced in mammalian cells and need to be delivered intravenously. By contrast, single-domain antibodies called nanobodies can be produced in bacteria or yeast, and their stability may enable aerosol delivery. Two papers now report nanobodies that bind tightly to spike and efficiently neutralize SARS-CoV-2 in cells. Schoof *et al.* screened a yeast surface display of synthetic nanobodies and Xiang *et al.* screened anti-spike nanobodies produced by a llama. Both groups identified highly potent nanobodies that lock the spike protein in an inactive conformation. Multivalent constructs of selected nanobodies achieved even more potent neutralization.

➲ *Science*, this issue p. 1473, p. 1479

### Abstract

Cost-effective, efficacious therapeutics are urgently needed to combat the COVID-19 pandemic. In this study, we used camelid immunization and proteomics to identify a large repertoire of highly potent neutralizing nanobodies (Nbs) to the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spike protein receptor binding domain (RBD). We discovered Nbs with picomolar to femtomolar affinities that inhibit viral infection at concentrations below the nanograms-per-milliliter level, and we determined a structure of one of the most potent Nbs in complex with the RBD. Structural proteomics and integrative modeling revealed multiple distinct and nonoverlapping epitopes and indicated an array of potential neutralization mechanisms. We bioengineered multivalent Nb constructs that achieved ultrahigh neutralization potency (half-maximal inhibitory concentration as low as 0.058 ng/ml) and may prevent mutational escape. These thermostable Nbs can be rapidly produced in bulk from microbes and resist lyophilization and aerosolization.

## Russian Sputnik V vaccine trials in UAE conclude

Source: https://www.thenationalnews.com/uae/health/covid-19-russian-sputnik-v-vaccine-trials-in-uae-conclude-1.1182337

Mar 11 – UAE clinical trials of the Russian Sputnik V vaccine have moved into the final monitoring phase, now that all **1,000 volunteers received their second dose. The next step involves monitoring the immune response of the test patients over 180 days.**

The vaccine is being trialled on healthy adults from several nationalities in the UAE, aged 18 years and above, with no history of Covid-19 vaccinations or infection, and who have not suffered any communicable or severe respiratory diseases.
Moving onto this next monitoring phase should be celebrated as an achievement for the UAE's medical community
Results from the UAE study will be released by April 2021 and amalgamated with the research findings from other global trials.
Recent interim statistics from Phase 3 of the clinical trials into the Sputnik V show a high efficacy of 91.6 per cent.
The data also showed the vaccine is safe, and offers complete protection against hospital admission and death, as reported in *The Lancet* medical journal. It also works well for the elderly.
The Russian human adenovirus-based vaccine is being trialled in the UAE under the supervision of the Ministry of Health and Prevention, Abu Dhabi Health Services Company and Department of Health Abu Dhabi.
Dr Ahmed Al Hammadi, a consultant physician in infectious diseases and the trial's principal investigator in the UAE, said the progress of the Sputnik V trail should be celebrated as an achievement for the UAE's medical community.
"It's an important precursor to studying the immune response in a diverse range of volunteers – paving the way for further securing the safety of our citizens and residents against Covid-19."
Kirill Dmitriev, chief executive of the Russian Direct Investment Fund, praised the progress of the trial in the UAE.
"This next stage will add important data, further demonstrating the high efficacy of the vaccine and strengthening the UAE's global efforts in pioneering scientific discovery," he said.

**How does Sputnik V work?**
The vaccine was initially registered for use in Russia in August 2020, making it the first registered Covid-19 vaccine from the 165 being developed across the world.
The UAE authorised its emergency use in January, on the basis of the results of the Russian Phase 3 clinical trial, which included more than 33,000 volunteers.
Sputnik V harnesses similar technology to the AstraZeneca/Oxford University vaccine, in that it uses a cold-type virus, re-engineered to be harmless, to deliver a small fragment of the coronavirus to the body.
This encourages an immune response, and those antibodies can fight off a real Covid-19 infection, meaning someone who has received the vaccine does not get ill.
The drug needs to be stored at minus 2.8°C, making it easier to distribute than those requiring ultra-cold storage, and the doses are given 21 days apart.
So far 16 countries have approved its use.
Ian Jones, professor of virology at the University of Reading, told *The National* that he would take the vaccine based on the data published in *The Lancet*.
"I don't see any reason not to," he said. "[Russia] deserves credit where credit is due."

## New Online Tool Calculates COVID-19 Progression Risk

Source: https://www.medscape.com/viewarticle/947140

Mar 10 – Researchers have developed an online tool to help clinicians predict which COVID-19 patients admitted to the hospital are likely to progress to severe disease.
The tool, **Severe COVID-19 Adaptive Risk Predictor (SCARP),** is available at https://rsconnect.biostat.jhsph.edu/covid_trajectory/.
"Clinicians need to have measurements of vital signs and a few basic labs to maximize use of the tool," Dr. Matthew Robinson of Johns Hopkins University School of Medicine in Baltimore told Reuters Health by email. "It is designed to begin giving predictions with input of only two variables - pulse oximetry and amount of supplemental oxygen being used - but then delivers increasingly accurate predictions as more variables are entered."
"We included 'Adaptive' in the name," he explained, "because the tool sequentially asks clinicians for the next most important variable needed to improve the accuracy of the prediction, which is tailored to the information already inputted."
Recent studies have found that traditional risk scoring tools may be unreliable in COVID-19 patients. Last month, for example, a separate research team reported in JAMA that for determining the need for mechanical ventilation in patients with COVID-19 pneumonia, the accuracy of the Sequential Organ Failure Assessment (SOFA) score "was poor and significantly inferior to simply using age." (http://bit.ly/3aJQMnb)

As reported in Annals of Internal Medicine, the SCARP tool was developed based on COVID-19 registry data collected between March 5 and December 4, 2020, including demographic characteristics, hospital admission source, comorbid conditions, time-varying vital signs, laboratory measurements, and clinical severity. Healthcare workers recording the data were blinded to subsequent patient outcomes.
The primary outcome was progression to severe illness or death, according to the WHO COVID-19 score of 6 or greater, including patients who died or received respiratory support.
Data from 3,163 patients hospitalized with moderate COVID-19 were included in the analysis. The median age was 61; 51% were men; 31%, non-Hispanic White; 36%, Black; 23%, Hispanic; 5% Asian and 5% unknown.
Of these, 228 (7%) became severely ill or died in the next four hours; an additional 355 (11%) became severely ill or died in the next week.
The area under the curve for one-day predictions to severe illness or death was 0.89 during the first or second week of hospitalization.
The AUC for one-week predictions was 0.83 during the first week and 0.87 during the second week.
Model calibration, assessed by risk decile, showed that the one-day and one-week risk predictions were well calibrated.
One limitation is that the tool is based on data from a single healthcare system. "We will be evaluating and refining our tool using larger national databases," Dr. Robinson said. "We intend to expand our focus to predict who is well enough to be safely discharged home and who is at highest risk of death among patients who are already severely ill. We also hope to apply these methods to predict the outcomes of other infectious diseases."
Dr. Jess Mandel, Chief, Division of Pulmonary, Critical Care, and Sleep Medicine and Vice-Chair for Education, Department of Internal Medicine at UC San Diego School of Medicine in La Jolla, commented by email to Reuters Health, "It is an interesting first step, but is not ready for implementation. It will need to be validated in patient cohorts separate from the ones from which it was derived and in multiple diverse settings before its use could be recommended."
"A lot of the most powerful predictive components are already pretty apparent to people who take care of a lot of COVID-19 patients," he noted, "so the incremental benefit to experienced clinicians remains to be seen."
"Defining better clinical prediction rules could be helpful in terms of allocating healthcare resources and in reassuring patients who are low risk," he added. "However, it is a challenge in a new disease like COVID-19, where it is a bit of a moving target. As more patients become vaccinated, their clinical course, if infected, will be very different from the patients from which the risk predictor was derived and it likely won't be valid. Likewise, as additional treatments become available, it becomes less relevant."

## Inhaled COVID Meds and 'Simple, Self-Administered' Care

Source: https://www.medscape.com/viewarticle/947206

Mar 10 – Aashish Manglik, MD, PhD, envisions a future in which inhaled medications provide a barrier to protect the nose and throat from invading pathogens, including SARS-CoV-2, the virus that causes COVID-19. People heading into situations where there could be crowds — and therefore germs in the air — could use an inhaled targeted therapy to prevent illness, a nanobody facemask of sorts.

Manglik, a physician by training, leads a lab at the University of California, San Francisco, and has spent the past few years building a massive library of nanobodies that can be used investigate their use. The rising star in his field made *Scientific American*'s 30 under 30 list in 2013.
When the pandemic hit, Manglik's work, like that of so many others around the world, changed. He wanted to help find something "simple and self-administered" that could shield people from harm.
The SARS-CoV-2 virus takes hold in a person's body when the spike protein comes into contact with an angiotensin-converting enzyme 2 (ACE2) cell receptor. Once the virus has infected the cell, it takes over and begins to make copies of itself.
But what if, investigators wonder, they could block the invader by giving the spike something else to attach to?
The COVID messenger RNA vaccines — like the Pfizer and Moderna ones authorized in the United States — are designed to teach the body how to protect against future infection. The vaccines give instructions to cells to make a piece

of the spike protein found on the surface of the virus that causes COVID-19. This triggers an immune response, which produces antibodies that protect against infection should the actual virus enter the body.
But for people who test positive for COVID-19 before the vaccine has a chance to provide protection, treatment options are needed in addition to the monoclonal antibody drugs approved for emergency use by the US Food and Drug Administration.
The majority of the monoclonal antibodies under development for SARS-CoV-2 target the spike protein, as the vaccines do. Although they are showing therapeutic promise, there are drawbacks, Manglik says. Monoclonal antibodies are difficult to make, are expensive, and are administered intravenously, usually at high doses.
This is where nanobodies come in, he explains. Because of their small size, these single-domain antibodies, or antibody fragments, are promising building blocks for the next-generation of biologic drugs: needle-free treatments that can be converted into a fine mist. And single-domain antibodies can be produced in bacteria or yeast and are durable, so they don't have to be kept at exact temperatures and can withstand aerosol delivery.
It is not hard to imagine a world in which people who test positive for COVID-19 take inhaled medications before symptoms ever worsen, says Manglik.
So when the opportunity arose for his lab to join forces with the Walter lab — helmed by Peter Walter, PhD, also at the University of California, San Francisco — it made sense. Walter's many honors include a prestigious Lasker Award, often seen as a precursor to a Nobel Prize.
Walter understood that the capacity of SARS-CoV-2 to bind with ACE2 proteins could theoretically be over-ridden by a precisely shaped nanobody. The team began screening the 2 billion nanobodies amassed in Manglik's library. Together, they developed synthetic nanobodies that bind tightly to the spike and efficiently neutralize SARS-CoV-2 in cells. The discovery, published in *Science*, demonstrates a potential mechanism to disrupt the function of the spike protein.

**Nanobodies Energizing Efforts**

More work, published in the same issue of *Science*, shows nanobodies produced by a llama binding tightly enough to the spike to inactivate it.
For their research, the team turned to a black llama named Wally, who resembled the black Labrador Retriever owned by senior investigator Yi Shi, PhD, from the University of Pittsburgh, and shares the dog's name. They immunized Wally with the SARS-CoV-2 spike protein and, after about 2 months, the llama's immune system produced mature nanobodies to help fight off infection from the virus.
Using a mass-spectrometry-based technique that Shi has been fine tuning for the past 3 years, his colleague Yufei Xiang, PhD, identified the nanobodies in Wally's blood that would create the strongest bond with the spike.
When the scientists exposed those nanobodies to live virus, they found that a very small amount — just a fraction of a nanogram — could neutralize enough virus to protect a million human cells.
"It's impressive work," says Manglik. "The mass-spectrometry-based technique is really innovative."
Manglik's own work bypasses the need for a llama. As a graduate student, his lab spent thousands of dollars and had to wait months to receive harvested nanobodies. To democratize access for researchers everywhere, Manglik began to assemble one of the world's largest nanobody libraries. To date, his lab has shared nanobodies housed in yeast cells with hundreds of labs around the world.
But with the pharmaceutical industry consumed with vaccine development and efforts to make conventional antibodies, the path for nanobody commercialization has proven difficult.
It is a struggle shared by Yakun Wan, 6000 miles away in Shanghai, China. The founder of Novamab Biopharmaceuticals estimates that their durable nanobodies are less than a year away from clinical study, and the company is looking for international partners to help move into clinical trials.
Novamab was initially developing inhaled nanobodies to treat asthma, but changed course to focus on COVID-19.
The Novamab library contains nanobodies from four camels immunized with the SARS-CoV-2 spike receptor. Wan says that as a child growing up in Xinjiang, a province in the northwest of China that shares a border with Russia, he looked across the desert to watch thousands of wild camels roam free. That these long-legged mammals with broad cushioned feet would one day factor so prominently in his work defies imagination, but today Wan's farm houses about 100 camels. And his vision of patients with COVID-19 using an at-home nebulizer to inhale nanobodies is approaching realization.

**Fine Mist of Possibilities**

An estimated 117 million people around the world have been infected with COVID-19. There is a "pressing need" for medications that curb viral replication, says Xavier Saelens, PhD, from Ghent University in Belgium.

A positive COVID-19 test could soon be followed with an easily administered, inexpensive inhaled medication, he explains.
Global access to an affordable biologic for COVID-19 is essential, Saelens says, and could factor into future pandemic planning.
He wonders how things could have been different had more work been done after the first SARS outbreak, when scientists had the sequencing for SARS-CoV-1, and how many of the 2.6 million people who have died from COVID-19 might have been spared.
Saelens, whose lab focuses on influenza viruses, says it is very likely the next pandemic will be another respiratory virus. "The building blocks to prepare are already in hand, and now is the time to lay the regulatory groundwork that will be needed to fast-track future medications."
Manglik's work, which already changed in the pandemic, will move forward too. "In the next pandemic, once we have the sequence for a new pathogen, we could have a molecule in a matter of weeks," he says.
The unique structure of the tiny nanobodies that have become such an enormous part of this small scientific community will help shape the next generation of biologic drugs. For some, it could one day be a breath of fine mist.

## Delay Surgery by 7 Weeks After COVID Diagnosis, Study Shows

**By Damian McNamara**
Source: https://www.medscape.com/viewarticle/947228

Mar 10 – **Seven weeks appears to be the ideal amount of time to delay surgery, when possible, after someone tests positive for COVID-19, researchers in the United Kingdom report.**
Risk for death was about 3.5 to 4 times higher in the first 6 weeks after surgery among more than 3000 people with a preoperative COVID-19 diagnosis compared with patients without COVID-19. After 7 weeks, the 30-day mortality rate dropped to a baseline level.
Surgery should be further delayed for people who remain symptomatic at 7 weeks postdiagnosis, lead author Dmitri Nepogodiev, MBChB, told *Medscape Medical News*.
"In this group we recommend waiting until COVID-19 symptoms resolve, if possible. However, our study did not capture specific data on long COVID…so we are unable to make specific recommendations for this group," said Nepogodiev, research fellow at the NIHR Global Health Research Unit on Global Surgery at the University of Birmingham in the United Kingdom.
"This should be an area for future research," he added.
The international, multicenter, prospective cohort study is notable for its sheer size — more than 15,000 investigators reported outcomes for 140,231 surgical patients from 1674 hospitals across 116 countries. In total, 2.2% of these patients tested positive for SARS-CoV-2 prior to surgery.
Surgery of any type performed in October 2020 was assessed. A greater proportion of patients with a preoperative COVID-19 diagnosis had emergency surgery, 44%, compared with 30% of people who never had a COVID-19 diagnosis.
Most patients were asymptomatic at the time of surgery, either because they never experienced COVID-19 symptoms or their symptoms resolved. The 30-day mortality rate was the primary outcome.

**Death Rates Among Surgical Patients with Preoperative COVID-19 Diagnosis**

| Time of Surgery Since COVID-19 Diagnosis | 30-Day Mortality Rate |
|---|---|
| 0 to 2 weeks | **9.1%** |
| 3 to 4 weeks | **6.9%** |
| 5 to 6 weeks | **5.5%** |
| 7 weeks or longer | **2.0%** |

For comparison, the 30-day mortality rate for surgical patients without a preoperative COVID-19 diagnosis was 1.4%. A COVID-19 diagnosis more than 7 weeks before surgery did not make a significant difference on outcomes.

**The "Why" Remains Unknown**
The reasons for the association between a COVID-19 diagnosis and higher postoperative death rates remain unknown. However, Nepogodiev speculated that it could be related to "some degree of lung injury, even if patients are initially asymptomatic."
Intubation and mechanical ventilation during surgery could exacerbate the existing lung injury, he said, thereby leading to more severe COVID-19.

In fact, Nepogodiev and colleagues found that postoperative pulmonary complications followed a pattern similar to the findings on death. They reported higher rates of pneumonia, acute respiratory distress syndrome, and unexpected reventilation in the first 6 weeks following a COVID-19 diagnosis. Again, at 7 weeks and beyond, the rates returned to be relatively the same as those for people who never had COVID-19.
"Waiting for 7 or more weeks may allow time for the initial COVID-19 injury to resolve," Nepogodiev said.

**"An Important Study"**
"This is an important study of postoperative mortality among patients recovered from COVID-19," Adrian Diaz, MD, MPH, told *Medscape Medical News* when asked to comment.
The large cohort and numerous practice settings are among the strengths of the research, said Diaz, from the University of Michigan Institute for Healthcare Policy and Innovation in Ann Arbor. He was lead author of a June 2020 review article on elective surgery in the time of COVID-19, published in *The American Journal of Surgery*.
"As with nearly all studies of this nature, results must be interpreted on a case-by-case basis for individual patients. However, this study does add important information for patients and providers in helping them have an informed discussion on the timing of surgery," said Diaz, who is also a fellow in the Center for Healthcare Outcomes and Policy and a resident in general surgery at Ohio State University.
Nepogodiev and colleagues included both urgent and elective surgeries in the study. Diaz said this was a potential limitation because emergency operations "should never be delayed, by definition." In addition, lack of indications for the surgeries and information on cause of death were additional limitations.
Future research should evaluate any benefit in delaying surgery longer than 7 or more weeks, Diaz added, perhaps looking specifically at 10, 12, or 14 weeks, or considering outcomes as a continuous variable. This would help healthcare providers "garner more insight into risk and benefits of delaying surgery beyond 7 weeks."

▶▶ **The study was published online March 9, 2021, in *Anaesthesia*.**

***Damian McNamara** is a staff journalist based in Miami. He covers a wide range of medical specialties, including infectious diseases, gastroenterology, and critical care.*

## Clinician engineers — the time is now

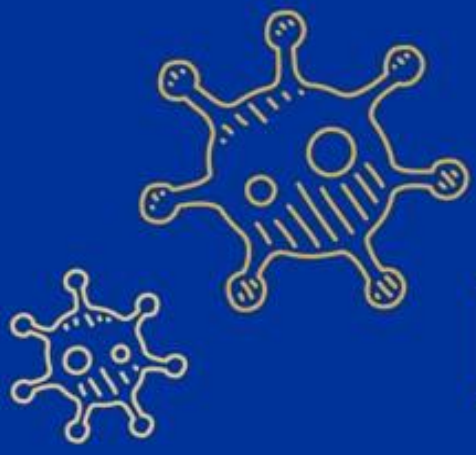
**By Neel Sharma**
*Correspondence | Volume 397, ISSUE 10278, P967, March 13, 2021*
Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00444-X/fulltext

Mar 13 – I read with great interest the Perspective by Roger Kneebone and Claudia Schlegel,[1] and I agree about the pigeon-holed approach to medical education.[1] COVID-19 has shown clinicians and engineers working side by side to ensure health-care worker safety via personal protective equipment and the management of patients through ventilators.
Engineering platforms are used to diagnose and treat patients. Clinicians use the endoscope, the CT scan, dialysis machines, cardiac stents, etc, yet have little understanding about how these devices are made or work.
The Clinician Engineer Hub is a global network aimed at bridging the gap between medicine and engineering. The hub offers workshops, research opportunities, and industry-based opportunities for medical students, and early career doctors to ensure they are given the chance to gain knowledge and skills in engineering. Students within the network are empowered to serve as leaders. To date, we have held summer and winter schools, multiple webinars, a 3-day conference, and offered collaborations with researchers in laboratories or through industry internships. Webinars have included topics such as biomechanics, optics, coding, and aerospace engineering. Our conference featuring academic experts globally and industry members—from Google Health, Microsoft, and Amazon Web Services as well as WHO—gained considerable interest (20 million impressions via Twitter).
Later this year, we will be holding a virtual hackathon—ClinHacks—aimed at innovative engineering solutions to health care.
As Kneebone and Schlegel highlight, medical education is typically funnel based and I fully endorse the need for "funnel perforation".[1]

**Reference**
[1]Kneebone R, Schlegel C. Thinking across disciplinary boundaries in a time of crisis. *Lancet.* 2021; 397: 89-90.

# EU:
# FREE
# VACCINES

# Public Health is more important than politics and profits!



# The changing face of medical professionalism and the impact of COVID-19

**By Andrew F Goddard and Mumtaz Patel**

Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00436-0/fulltext

Feb 23 – Medical professionalism is changing with the increasing gap between what doctors have traditionally been trained to do and the realities of modern clinical practice.[1]

In high-income countries, the changing demographics of patients with an ageing population, the large proportion of patients with long-term conditions and multiple comorbidities, and rising health-care costs have placed huge pressures on health systems globally.[2]

Advances in technology and science have changed the way health professionals interact with patients, and democratisation of knowledge and increased accountability that come with changing patient and societal expectations have added to the demands placed on physicians.[3]

In many countries, inadequate staffing levels aggravate this situation.[4]

Morale among doctors is generally declining—eg, a survey in the UK showed 54% of physicians reported morale as low or very low[4]—and burnout is rising (prevalence about 66–80%).[5, 6]

There is a crisis in staff retention in some countries with up to 48% doctors considering leaving the profession.[7]

COVID-19 has exacerbated these tensions between medical professionalism and physician wellbeing. The pandemic has placed substantial demands on already overstretched, understaffed, and under-resourced health systems. COVID-19 has tested doctors and health-care workers to the limits of their professional competence and taken a considerable toll on their health and wellbeing.[8]

Core principles of medical professionalism—ie, primacy of patient welfare, patient autonomy, and social justice—have been challenged during the pandemic.[9]

Many doctors worldwide have had to change the way they work, having to prioritise patient care and make difficult decisions based on insufficient resources, including withholding and withdrawing potentially life-saving treatments.[10, 11]

Doctors have had to balance their personal risk with their duty to care for patients as well as balance professional versus caring responsibilities for household members in high-risk groups.[12]

The need to self-isolate if they or their family members have symptoms of COVID-19 take them away from front-line responsibilities. All these factors have caused a sense of guilt, tension, and moral injury.[13]

Moral injury in this context occurs when doctors are forced to make decisions that contradict their professional and moral commitments—the challenge of knowing what care patients need but being unable to provide it due to constraints beyond their control. The moral injury concept helps reframe such challenges from a focus on the individual to a system-wide perspective.[14]

The COVID-19 pandemic has changed how health professionals work, how we behave and interact within our teams and organisations, our understandings of personal health and risk, inequalities between doctors with different risk factors, and wellbeing and mental health.[8]

Globally more than 300 000 health-care workers have been infected with COVID-19 in 79 countries, over 7000 have died, and many more have suffered as a result of stress, burnout, and moral injury.[13, 15]

There is an urgent need for a system-level approach to address the issues that COVID-19 has created to better protect and safeguard our medical workforce for the future. Such approaches need to focus on organisational culture and staff wellbeing as integral to professionalism and central to patient care.[16]

Physicians' wellbeing must be recognised as a care quality indicator for all health systems.[17]

Improving the working lives of clinicians can optimise the performance of health systems, improve patient experience, drive population health, and reduce costs.[16, 18]

Targeted interventions are likely to be less effective if only aimed at the individual.[17]

During COVID-19, there have been many wellbeing initiatives for clinicians that have been well received.[19]

However, they need to be combined with organisational interventions including flexible working arrangements, enhanced teamwork, reductions in administrative burdens, and optimal use of technology.[20]

Health professionals need to be well supported throughout the COVID-19 pandemic. The medical profession, health systems, and society all have a part to play in ensuring this support is provided. Individual doctors need to be empowered to recognise their own limitations as well as their wellbeing and support needs.

The professions must adapt to the changing needs of modern clinical practice and shape how we balance the many competing demands on us. Health professionals must build on the changes that are good for patient care and resist those that are not. COVID-19 has shown that we must move away from a model of medical professionalism that can lead to

moral injury and towards one that provides proactive support for professionals in a systematic way and is focused on supporting moral repair.[21]
With the second and subsequent waves of COVID-19 now well established in many countries, we need to ensure that we as a profession support our doctors and promote ways of working that incorporate the doctor, the patient, teams, health-care organisations, workplace environment, and health systems.[1]
Over time, this wider system approach will lead to greater cohesiveness within health care and support individual professionals in a safer, more sustainable way.

*AFG is the President and MP the Global Vice President of the Royal College of Physicians, UK. We declare no other competing interests.*

## Countries split from EU on COVID-19 vaccines

Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00620-6/fulltext

Mar 13 – Czech Republic and Slovakia have turned to the Sputnik V vaccine, despite it not being approved by the European Medicines Agency. Ed Holt reports.
Leaders in the Czech Republic and Slovakia are pushing for the use of Russia's Sputnik V vaccine, despite it not being approved by the European Medicines Agency (EMA). Both states have struggled to contain SARS-CoV-2 infections in recent months and, as of March 4, 2021, had some of the highest rates of COVID-19 mortality and SARS-CoV-2 infection rates in the world.
Ministers and health-care professionals have been keen to roll out vaccinations as quickly as possible to ease pressure on hospitals and staff, who say the health-care system is close to collapse. However, although vaccination campaigns in both countries began at the end of December, only 4·3% of the Czech population and 5·8% in Slovakia had been vaccinated as of March 1.
These low numbers have been attributed, in large part, to problems across the EU with supplies of the three vaccines—Pfizer/BioNTech, AstraZeneca, and Moderna—that have so far been approved by the EMA. These delays have led to independent calls from Czech Prime Minister Andrej Babis, and his Slovak counterpart Igor Matovic, to source vaccines elsewhere. Both have advocated the use of Sputnik V.
Sputnik V was approved in Russia in August, 2020, before the full results of phase 3 trials had been assessed, and, despite a study published in *The Lancet* earlier in 2021 showing high efficacy, it has not been approved by the EMA, prompting concerns among Czech and Slovak doctors about its use. Libor Grubhoffer, a virologist at the Czech Academy of Sciences, told *The Lancet*: "It should not be used until a proper approval procedure has taken place, for example by the EMA."
On March 1, Slovakia received 200 000 doses of the Sputnik V vaccine as part of an order of 2 million doses. Matovic announced that these doses could be used as part of the country's vaccination programme within weeks and the health ministry issued a special dispensation for its use. Under EMA rules, national regulatory bodies can grant vaccine licences for emergency use. But on March 8, Christa Wirthumer-Hoche, chair of the EMA Management Board, urged EU members to refrain from granting national approvals for Sputnik V while the agency examines its safety and effectiveness. Hungary, another EU state, has already begun using the Sputnik V and Chinese Sinopharm vaccines.
Although groups such as the Slovak Medical Chamber said they welcomed the availability of another vaccine, even if unregistered, others were unhappy. Peter Visolajsky, chairman of the Doctors Trade Union Association in Slovakia, told *The Lancet*: "A vaccine should only be given to patients who have been fully informed about it. But how can they be fully informed if even we doctors do not have all the relevant information?
"If a patient came to me and asked about the Sputnik vaccine, I would say that I could not recommend it because it hasn't been through an approval process. It may be a good and effective vaccine, but it's not registered, so we don't have data [from a full regulatory body review on all aspects of its production as well as safety and efficacy] for it." Matovic has dismissed criticism of the Sputnik V deal as political point scoring and said that people will be able to choose between the Russian vaccine or an alternative.
Matovic is confident that many people will agree to vaccination with Sputnik V, but locals who spoke to *The Lancet* said they would not. One, Zuzana Thullnerova, a 45-year-old who works in the capital, Bratislava, told *The Lancet*: "Other vaccines have gone through a process of approval with the EMA, but Sputnik V has not. I don't trust the quality of the vaccine itself, nor the conditions under which the doses might be produced, stored, or transported."
In both countries, mistrust among parts of the population of the quality of any Russian products, medical or otherwise, dates back to the Soviet era. Others—including Slovak

Foreign Minister Ivan Korcok, who described Sputnik V as a "tool of hybrid war"—are wary of geopolitical aims behind Sputnik V's distribution.
Like Matovic, Babis has emphasised that procurement of Sputnik V has nothing to do with political ideology. However, it is unclear whether he would be able, unlike his Slovak counterpart, to push through use of the vaccine in Czech Republic without EMA approval. Babis has said that approval by the Czech regulator, the State Institute for Drug Control (SUKL), would be sufficient.
However, SUKL officials have said without EMA approval it could only be used under special dispensation from the health ministry, and Health Minister Jan Blatny has said he will not authorise the use of a vaccine unless it has EMA approval.
On March 4, the EMA announced it had started a rolling review of data from trials of Sputnik V in the first step in its approval process.
Rastislav Madar, an epidemiologist at the University of Ostrava, told *The Lancet* that EMA approval would remove many of the concerns in the Czech Republic. "If Sputnik V obtains EMA approval, where the vaccine comes from would not be so important [to people]. It could definitely work as a protective tool."

**EDITOR'S COMMENT:** EMA's games against bad non-Western vaccines. And the people? Should they be the first priority of the regulatory authority? And if the file submitted is not complete, EMA people should have taken the next flight and travel to Moscow and meet the manufacturers in order to ask for what is missing. Time is life!

## One Year into the Pandemic, More Than 3000 Healthcare Workers Have Died of COVID-19

**By Ellie Kincaid**
Source: https://www.medscape.com/viewarticle/947304

Mar 11 – Healthcare workers have been on the front lines of the global effort to care for patients with COVID-19 for 1 long year, while putting themselves at risk for infection. Since April 2020, when Medscape began commemorating healthcare workers from around the world who have died of COVID-19, we have added more than 3000 names to our page dedicated to their memory.


We started this effort to recognize and remember all people involved in caring for patients who have died of COVID-19 — physicians, nurses, assistants, technicians, orderlies, administrators, volunteers, drivers, porters, EMTs, firefighters, and more, fresh on the job or retired. We have also included names of people who did not die from COVID-19, but whose deaths were clearly related to the stress and demands of the pandemic.
We continue to update the list with submissions received through this form, when we can verify the information about the person and their death related to COVID-19. To all who have

submitted the names of colleagues, friends, and family members, we thank you for helping us remember them, and we mourn your loss.

**As of March 11, the anniversary of the day the World Health Organization declared the spread of COVID-19 a "pandemic," the memorial list includes more than 3030 names of people from 90 countries. The youngest is 20, the oldest 99.**

**They will not be forgotten.**

***Ellie Kincaid*** *is Medscape's associate managing editor. She has previously written about healthcare for Forbes, the Wall Street Journal, and Nature Medicine.*

## Anti-SARS-CoV-2 antibodies in the CSF, blood-brain barrier dysfunction, and neurological outcome

**By Alexopoulos, H.; Magira, E.; Bitzogli, K.; Kafasi, N.; Vlachoyiannopoulos, P.; Tzioufas, A.; Kotanidou, A.; Dalakas, M. C.**
*Neurology-Neuroimmunology & Neuroinflammation November 2020; 7 (6)*
Source: https://nn.neurology.org/content/7/6/e893

### Abstract

**Objective:** To investigate the pathophysiologic mechanism of encephalopathy and prolonged comatose or stuporous state in severally ill patients with coronavirus disease 2019 (COVID-19)

**Methods:** Eight COVID-19 patients with signs of encephalopathy were tested for antibodies to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in the serum and CSF using a Food and Drug Administration-approved and independently validated ELISA Blood-brain barrier (BBB) integrity and immunoglobulin G (IgG) intrathecal synthesis were further tested using albumin and IgG indices The CSF was also tested for autoimmune encephalitis antibodies and 14-3-3, a marker of ongoing neurodegeneration

**Results:** All patients had anti-SARS-CoV-2 antibodies in their CSF, and 4 of 8 patients had high titers, comparable to high serum values One patient had anti-SARS-CoV-2 IgG intrathecal synthesis, and 3 others had disruption of the blood-brain barrier The CSF in 4 patients was positive for 14-3-3-protein suggesting ongoing neurodegeneration In all patients, the CSF was negative for autoimmune encephalitis antibodies and SARS-CoV-2 by PCR None of the patients, apart from persistent encephalopathic signs, had any focal neurologic signs or history or specific neurologic disease

**Conclusions:** High-titer anti-SARS-CoV-2 antibodies were detected in the CSF of comatose or encephalopathic patients demonstrating intrathecal IgG synthesis or BBB disruption A disrupted BBB may facilitate the entry of cytokines and inflammatory mediators into the CNS enhancing neuroinflammation and neurodegeneration. The observations highlight the need for prospective CSF studies to determine the pathogenic role of anti-SARS-CoV-2 antibodies and identify early therapeutic

## Dubai trials breath test to detect Covid-19

Source: https://www.thenationalnews.com/uae/health/coronavirus-dubai-trials-breath-test-to-detect-covid-19-1.1183236

Mar 12 – A test that can detect if an individual has Covid-19 using a breath sample is being trialled in Dubai as a potential, faster alternative to the more uncomfortable nasal swab PCR.

The rapid test will be trialled on 2,500 patients at Nadd Al Hamar primary health care centre with the aim of assessing the its accuracy.

The device works by having a patient exhale into a disposable one-way valve mouthpiece. It then measures and analyses volatile organic compounds (VOCs) biomarkers - indications if the immune system is fighting a specific disease - in the sample and gives results within one minute.

The joint clinical trial is being carried out by Mohammed Bin Rashid University of Medicine

and Health Sciences, Dubai Health Authority and Breathonix, the company that developed the test.

The Breathonix test, currently being trialled in Dubai, analyses a patient's breath for traces of Covid-19 biomarkers. The results take less than a minute to produce. Courtesy: Dubai Health Authority

Breathonix, a spin-off company from the National University of Singapore, previously conducted a pilot study involving 180 patients in Singapore and found the test had a sensitivity of 93 per cent and specificity of 95 per cent.
Dr Hussain Al Samt, director of Pathology and Genetics at DHA, said that, if found to be accurate enough, the test could "drastically improve diagnostics and care for Covid-19 patients".
Describing the technology as "very promising", he said the rapid diagnosis could be a "game-changer in the global fight against the virus".
The test is significantly faster that the current available methods, such as the PCR, which can take up to 48 hours to process in local labs. If approved, the breath test would bring increased efficiency to mass screening in highly-populated areas. A faster result will help authorities quickly isolate positive cases before the virus can spread to others.
Du Fang, co-founder and chief operating officer of Breathonix, said the breath test was more convenient than other types.
“The breath test is non-invasive and is unlikely to cause any discomfort, as the person is only required to breathe out normally into the device. It is also quick and easy to train people on how to carry out the test, so it can be easily rolled out to testing sites,” said Mr Du. The tests were imported to Dubai onboard Emirates’ cargo flights.

## First Pill for COVID-19 Could Be Ready by Year's End

**By Marcia Frellick**
Source: https://www.medscape.com/viewarticle/947376

Mar 12 – New pills to treat patients with COVID-19 are currently in midstage clinical trials and, if successful, could be ready by the end of the year.
Only one treatment — remdesivir (Veklury) — has been fully approved by the US Food and Drug Administration (FDA) for patients in the hospital and it must be administered intravenously.

Hopes for a day when patients with COVID-19 can take a pill to rid their bodies of the virus got a boost over the weekend when early trial results were presented at a medical conference.

Interim phase 2 results for the oral experimental COVID-19 drug **molnupiravir**, designed to do for patients with COVID-19 what oseltamivir (Tamiflu) can do for patients with the flu, were presented at the Conference on Retroviruses and Opportunistic Infections (CROI) 2021 Annual Meeting, as reported by *Medscape Medical News*.

In the small study, the pill significantly reduced infectious virus in patients who were symptomatic and had tested positive for COVID-19 during the previous 4 days but were not hospitalized.

After 5 days of treatment, no participants who received molnupiravir had detectable virus, whereas 24% who received placebo did.


Two other oral agents are being developed by RedHill Biopharma: one for severe COVID-19 infection for hospitalized patients, and one for patients at home with mild infection.

The first, **opaganib** (Yeliva), proceeded to a phase 2/3 global trial for hospitalized patients after the company announced topline safety and efficacy data in December. In phase 2, the drug was shown to be safe in patients requiring oxygen and effectively reduced the need for oxygen by the end of the treatment period.

A key feature is that it is both an antiviral and an anti-inflammatory, Gilead Raday, RedHill's chief operating officer, told *Medscape Medical News*. Data are expected midyear on its performance in 464 patients. The drug is being tested on top of remdesivir or in addition to dexamethasone.

The second, **upamostat** (RHB-107), is currently undergoing a phase 2/3 trial in the United States and is being investigated for use in nonhospitalized COVID-19 patients.

"I would expect data to be available in the second half of this year," Raday said.

Upamostat is a novel serine protease inhibitor expected to be effective against emerging variants because it targets human cell factors involved in viral entry, according to the company.

Other drugs are being investigated in trials that are in earlier stages.

Infectious disease specialists are watching the move toward a COVID-19 pill enthusiastically.

"We badly need an oral treatment option for COVID," said Sarah Doernberg, MD, an infectious disease specialist from the University of California, San Francisco.

"It's a real gap in our armamentarium for COVID in outpatient treatment, which is where most who contract COVID-19 will seek care," she told *Medscape Medical News*.

Although some studies have shown the benefit of monoclonal antibodies for prevention and early treatment, there are major logistical issues because all the current options require IV administration, she explained.

"If we had a pill to treat early COVID, especially in high-risk patients, it would fill a gap," she said, noting that a pill could help people get better faster and prevent hospital stays.

**Studies of molnupiravir suggest that it decreases viral shedding in the first few days after COVID infection**, Doernberg reported.

There is excitement around the drug, but it will be important to see whether the results translate into fewer people requiring hospital admission and whether people feel better faster.

"I want to see the clinical data," Doernberg said.

She will also be watching for the upamostat and opaganib results in the coming weeks.

"If these drugs are successful, I think it's possible we could use them — maybe under an emergency use authorization — this year," she said.

Once an antiviral pill is a viable option for COVID-19 treatment, questions will arise about their use, she said.

One question is whether patients who are getting remdesivir in the hospital and are ready to leave after 5 days should continue treatment with antiviral pills at home.

Another is whether the pills — if they are shown to be effective — will be helpful for COVID postexposure. That use would be important for people who do not have COVID-19 but who are in close contact with someone who does, such as a member of their household.

"We have that model," Doernberg said. "We know that oseltamivir can be used for postexposure prophylaxis and can help to prevent development of clinical disease."

But she cautioned that a challenge with COVID is that people are contagious very early. A pill would need to come with the ability to test for COVID-19 early and get patients linked to care immediately.

"Those are not small challenges," she said.

**Vaccines Alone Won't End the COVID Threat**

Treatments are part of the "belt-and-suspenders" approach, along with vaccines to combat COVID-19, Doernberg said.

"We're not going to eradicate COVID," she said. "We're still going to need treatments for people who either don't respond to the vaccine or haven't gotten the vaccine or developed disease despite the vaccine."

Oral formulations are desperately needed, agreed Kenneth Johnson, PhD, professor of molecular biosciences at the University of Texas at Austin.

Right now, remdesivir treatments involve patients being hooked up to an IV for 30 to 120 minutes each day for 5 days. And the cost of a 5-day course of remdesivir ranges from $2340 to $3120 in the United States.

"We're hoping we can come up with something that is a little bit easier to administer, and without as many concerns for toxic side effects," he said.

Johnson's team at UT-Austin recently made a key discovery about the way remdesivir stops the replication of viral RNA.

The understanding of where the virus starts to replicate in the infection chain of events and how and where it reacts with remdesivir might lead to the development of better, more concentrated pill forms of antivirals in the future, with fewer toxicities, he said.

The team used a lab dish to recreate the step-by-step process that occurs when a patient who is infected with SARS-CoV-2 receives remdesivir.

The discovery was published online in *Molecular Cell* in January, and will be printed in the April issue of the journal.

The discovery won't lead to an effective COVID-19 pill for our current crisis, but will be important for the next generation of drugs needed to deal with future coronaviruses, Johnson explained.

And there will be other coronaviruses, he said, noting that this one is the third in 20 years to jump from animals to humans. "It's just a matter of time," he said.

***Marcia Frellick** is a freelance journalist based in Chicago. She has written for the Chicago Tribune, Science News and Nurse.com and was an editor at the Chicago Sun-Times, the Cincinnati Enquirer, and the St. Cloud (Minnesota) Times.*

## Fauci Worries About Possible Post-COVID 'Mental Health Pandemic'

Source: https://www.medscape.com/viewarticle/947387

Mar 12 – Anthony Fauci, MD, says he's concerned about how Americans will react once the coronavirus pandemic is brought under control, CBS News reports.

Noting that an American Psychological Association survey showed people reporting high stress levels because of the pandemic, CBS's Norah McDonald asked if Fauci was worried about a possible "mental health pandemic."

"Very much so," Fauci, director of the National Institute of Allergy and Infectious Diseases and a top White House coronavirus advisor, replied.

"That's the reason why I want to get the virological aspect of this pandemic behind us as quickly as we possibly can because the long-term ravages of this are so multifaceted," Fauci said.

Some of the problems could include prolonged physical symptoms and the economic effects of the pandemic, he said.

"And then the other things: Not only the mental health effects, but many people have put off routine types of medical examinations that they normally would have done," Fauci said.

"I hope we don't see an increase in some preventable situations that would not have happened if people had the normal access to medical care, which clearly was interrupted by the shutdown associated with COVID-19."

The American Psychological Association released the survey results Thursday in what many people consider the 1-year anniversary of the start of the coronavirus pandemic.

"The prolonged stress experienced by adults, especially the high levels of stress reported by Americans directly linked to the pandemic, is seriously affecting mental and physical health, including changes to weight, sleep and alcohol use," the APA said in a news release.

Some of the key findings of the survey include:

- 61% of respondents reported experiencing undesired weight changes since the start of the pandemic.
- 67% said their sleep habits changed, with 35% saying they slept more and 31% less.
- 23% reported drinking more alcohol to cope with stress.

- 47% said they delayed or canceled health care services because of the pandemic.
- 48% said their stress levels had increased.

## Study Indicates That Humidity in Breath Makes Cotton Masks More Effective at Slowing the Spread of COVID-19

Source: https://www.hstoday.us/subject-matter-areas/emergency-preparedness/study-indicates-that-humidity-in-breath-makes-cotton-masks-more-effective-at-slowing-the-spread-of-covid-19/

Mar 11 – Researchers have come up with a better way to test which fabrics work best for masks that are meant to slow the spread of COVID-19. By testing those fabrics under conditions that mimic the humidity of a person's breath, the researchers have obtained measurements that more accurately reflect how the fabrics perform when worn by a living, breathing person.

**The new measurements show that under humid conditions, the filtration efficiency — a measure of how well a material captures particles — increased by an average of 33% in cotton fabrics. Synthetic fabrics performed poorly relative to cotton, and their performance did not improve with humidity. The material from medical-procedure masks also did not improve with humidity, though it performed in roughly the same range as cottons.**

This study, conducted by scientists at the National Institute of Standards and Technology (NIST) and the Smithsonian's Museum Conservation Institute, was published in *ACS Applied Nano Materials*.

An earlier study by the same research team showed that dual-layer masks made of tightly woven cotton fabrics with a raised nap, such as flannels, are particularly effective at filtering breath. That study was conducted under relatively dry conditions in the lab, and its main finding still stands.

"Cotton fabrics are still a great choice," said NIST research scientist Christopher Zangmeister. "But this new study shows that cotton fabrics actually perform better in masks than we thought."

The researchers also tested whether humidity makes the fabrics harder to breathe through and found no change in breathability.

The Centers for Disease Control and Prevention (CDC) recommends that people wear masks to slow the spread of COVID-19. When worn correctly, those masks filter out some of the virus-filled droplets that an infected person exhales and also offer some protection to the wearer by filtering incoming air.

This study is one of several, conducted by NIST and other organizations, that contributed to the first standards for fabric masks meant to slow the spread of COVID-19. Those standards were recently released by the standards-developing organization ASTM International.
The filtration efficiency of cotton fabrics increases in humid conditions because cotton is hydrophilic, meaning it likes water. By absorbing small amounts of the water in a person's breath, cotton fibers create a moist environment inside the fabric. As microscopic particles pass through, they absorb some of this moisture and grow larger, which makes them more likely to get trapped.
Most synthetic fabrics, on the other hand, are hydrophobic, meaning they dislike water. These fabrics do not absorb moisture, and their filtration efficiency does not change in humid conditions.
For this study, the team tested fabric swatches, not actual masks. First, they prepared dual-layer fabric swatches by placing them inside a small box where the air was maintained at 99% humidity — roughly the same as a person's exhaled breath. For comparison, a second set of swatches were prepared at 55% humidity. After the fabrics reached an equilibrium with the humidified air, the researchers placed them in front of a pipe that emitted air at about the same velocity as exhaled breath. That air carried salt particles in a range of sizes typical of the droplets that a person exhales when breathing, speaking and coughing. This salt particle method is recommended by the CDC's National Institute for Occupational Safety and Health (NIOSH) for measuring the filtration performance of mask-making materials.
The researchers calculated filtration efficiency by measuring the number of particles in the air before and after it passed through the fabric. They measured breathability by measuring the air pressure on both sides of the fabric as the air passed through it.
The researchers tested nine different types of cotton flannel, which under humid conditions increased their filtration efficiencies from 12% to 45%, with an average increase of 33%. They tested six types of synthetic fabric, including nylon, polyester and rayon. All performed poorly in comparison to cotton flannel regardless of humidity. Medical-procedure masks and N95 respirator masks provided the same filtration efficiency under both high and low humidity conditions.
While the change in performance for cotton flannels is large, they don't actually absorb very much water. Under humid conditions, a two-layer cotton flannel mask absorbs about 150 milligrams of water from human breath, the equivalent of just one or two drops. If fabric masks actually get wet in other ways, they may become difficult to breathe through, and the CDC advises that people not wear them for activities such as swimming. If masks become wet due to weather, they should be changed.
While this research provides useful information for people who wear face masks, it also holds lessons for scientists who are working to improve masks and measure their performance.
"To understand how these materials perform in the real world," Zangmeister said, "we need to study them under realistic conditions."

## Guinea – New Ebola outbreak

Source: https://www.afro.who.int/news/new-ebola-outbreak-declared-guinea

Feb 12 – The World Health Organization reported that Guinea health officials declared an outbreak of Ebola after four Ebola cases were confirmed by the national laboratory in the rural community of Gouéké in N'Zerekore, marking the first time the disease has been reported in the country since an outbreak ended in 2016.

## Outbreak of Mysterious Paralyzing Condition Squashed by COVID–19 Pandemic

Source: https://www.sciencealert.com/outbreak-of-mysterious-paralyzing-condition-squashed-by-covid-19-pandemic

Mar 14 – The grim pall of the COVID-19 pandemic ensures that 2020 will go down as an infamous year in the history of human disease.
But this dark chapter held some surprises we can be thankful for, too. In a new study, researchers found that a predicted 2020 outbreak of a mysterious paralyzing illness failed to materialize on schedule – and in a weird way, we actually have the coronavirus to thank for it.
The condition in question is called **acute flaccid myelitis (AFM)**. This polio-like neurological disease mainly affects children, causing muscle weakness and, in some cases, permanent paralysis and even death.
For decades, cases of AFM were very rare, but in recent years, larger outbreaks across the US and elsewhere have occurred, seemingly reoccurring every two years.
A body of previous research has linked AFM to a rare virus called enterovirus D68 (EV-D68), and while it's not yet known how the virus manifests the symptoms of the AFM disease,

coinciding outbreaks of the pair have led researchers to think they are almost certainly related.
In the new research, a team led by first author and infectious disease modeler Sang Woo Park from Princeton University tracked patterns of cases of EV-D68 between 2014 and 2019, with the virus staging significant resurgences in even-numbered years – 2014, 2016, and 2018 – which are thought to be attributable to climate-based factors.
The data suggested 2020 was due for another hit.
"We predicted that a major EV-D68 outbreak, and hence an AFM outbreak, would have still been possible in 2020 under normal epidemiological conditions," the researchers explain in their study.
Of course, as the world was at pains to witness, the epidemiological conditions of 2020 were anything but ordinary, and the expected combo hit of EV-D68 and AFM never came.
In the US – a country with significantly more cases of COVID-19 than any other – the combined effects of physical distancing, quarantine and isolation policies, and economic and civic shutdowns all appeared to not just diminish the spread of SARS-CoV-2 but EV-D68 as well.
"Our preliminary analysis indicates that the COVID-19 pandemic response is likely to have affected the dynamics of a 2020 EV-D68 outbreak," the authors write.
According to the researchers, there were 153 cases of AFM in 2016 and 238 cases in 2018, but just 31 cases in 2020.
In light of everything the US has been through in recent times, these are some numbers to feel good about.
Still, there's no time for complacency – especially as EV-D68's unplanned gap year may have left a larger than usual void in viral immunity at the population level.
"On the basis of the low number of [predicted] EV-D68 cases in 2019, we would expect the number of susceptible individuals to have increased, enhancing the probability for a large outbreak to occur," the team says.
"If social distancing prevents the outbreak from occurring, then the susceptible pool may increase even further."

▶▶ **The findings are reported in** *Science Translational Medicine*.

## New data suggests mRNA COVID-19 vaccines prevent infection

Source: https://newatlas.com/health-wellbeing/mrna-coronavirus-vaccine-prevent-infection-transmission/

Mar 14 – In a stunning demonstration of human endeavor, less than one year after a new virus swept across the world triggering a pandemic, we developed several effective vaccines that protect those inoculated from hospitalization and death. However, one key question not answered by rigorous clinical trials last year was whether the vaccines prevent asymptomatic infection, and onward transmission.
While it was clear the vaccines could dramatically reduce rates of death from COVID-19, it was unclear whether they could prevent mild, or even asymptomatic infections. Now, as millions have been vaccinated around the world, researchers are getting some promising early indications that mRNA vaccines in particular may successfully prevent SARS-CoV-2 infection and subsequent transmission.
Over 100 million Americans have received at least one dose of a mRNA COVID-19 vaccine (either from Pfizer or Moderna). A new Mayo Clinic-led study, published in the journal *Clinical Infectious Diseases*, looked at retrospective data from nearly 40,000 subjects who took a routine pre-operative COVID-19 test over the past couple of months. About 3,000 of those subjects had received at least one dose of an mRNA vaccine more than 10 days before the COVID-19 test.
“Among individuals who had received a single dose of vaccine [more than] 10 days prior to their pre-procedure test, we observed a 72 percent reduction in the risk of a positive molecular screening test,” the researchers report in the study. “After adjustment for multiple potential confounding factors, we observed an 80-percent reduction in the risk of a positive molecular screening test among test performed in persons who had received two doses of vaccine, compared to those who were not vaccinated.”
These findings promisingly echo several other studies appearing on pre-print journal servers in recent weeks. A UK investigation tracking healthcare workers in the weeks following a single dose of the Pfizer mRNA vaccine found a 75-percent reduction in asymptomatic cases compared to a matched unvaccinated cohort.
Researchers have been closely studying case numbers in Israel, as that country is leading the world in mass vaccinations. **Early indications are again suggesting asymptomatic infections may drop by as much as 75 percent two weeks after one dose of the Pfizer vaccine.**

In mid-February Anthony Fauci noted during a White House COVID-19 briefing that preliminary data looking at the first wave of vaccinations is beginning to suggest mRNA vaccines don't just prevent severe disease, but also prevent infection.
"The looming question is, if the person who's been vaccinated gets infected, does that person have the capability to transmit it to another person," said Fauci. "Some studies are pointing in a very favorable direction."
Another major clue these early mRNA vaccines can prevent onward transmission of the virus are preliminary studies tracking reductions to overall viral loads in vaccinated subjects who do eventually become infected with SARS-CoV-2. One study, still in preprint and not yet peer-reviewed, found viral load to be "four-fold" lower in subjects infected 12 to 28 days after one dose of the Pfizer vaccine.
A Lancet study looking at transmission of the virus in Spain confidently noted a correlation between viral load and increased transmission. Fauci suggests this indicates a person is much less infectious when they present with a lower viral load.
"There's a direct correlation with viral load and transmission," Fauci said last month. "In other words, higher viral load, higher transmissibility; lower viral load, very low transmissibility."
All of these findings build a confident and promising picture of mRNA COVID-19 vaccines effectively reducing viral transmission. Of course, the picture won't become clearer until more people are vaccinated, and there are still unanswered questions over how effective these vaccines are against emerging SARS-CoV-2 variants. But overall, the real-world data from these first months of mRNA vaccinations are extremely promising and serve as a reminder for all to get vaccinated, regardless of personal risk, as soon as the opportunity arises.

▶▶ **The new study was published in the journal** *Clinical Infectious Diseases*.

# Could the bioweapons treaty be another tool for addressing pandemics?

**By Daniel Gerstein**
Source: https://thebulletin.org/2021/03/could-the-bioweapons-treaty-be-another-tool-for-addressing-pandemics/

Mar 12 – Since the beginning of the pandemic, the World Health Organization (WHO) has played a central role in updating the public, investigating the origin of the novel coronavirus, and encouraging public health measures around the globe. But the WHO has contended with critics on several fronts, including its initial handling of COVID-19 and the ongoing investigation into the virus's origins.
It's perhaps easy to forget that outside of the spotlight shining on the WHO, there is a separate international agreement that is similar in some ways to the regulations that guide the health body—a treaty that has the potential to play a critical role in preventing or addressing deliberate biological attacks—which themselves could spark a pandemic: the Biological Weapons Convention.
The bioweapons treaty has overlapping interests with the International Health Regulations that underpin the WHO. Those require all countries to have the ability to "detect, assess, report, and respond to public health events." The bioweapons treaty has the aim of excluding "completely the possibility of … biological agents and toxins being used as weapons." Both depend on governments having the ability to conduct disease surveillance, provide personal protective equipment and medical countermeasures, and ensure biosafety and biosecurity in labs. And these capabilities and resources are important for responding to or mitigating either a naturally occurring event or a deliberate attack. Yet during the pandemic, neither the public nor expert community has paid much attention to the role the bioweapons treaty could play.
However, in light of COVID-19, perhaps now is the right time to revisit the 46-year-old treaty and make it a better tool against future biological threats, including both deliberate biological attacks and pandemics. The members of the Biological Weapons Convention are set to meet this fall for an every-five-year review conference. This forum could provide an important opportunity to consider the implications of COVID-19 on the likelihood of, preparations for, and response to a deliberate biological attack.

**COVID-19, perceptions, and bioweapons**
Most if not all experts see no evidence that COVID-19 resulted from a deliberate act. And while some have called for greater scrutiny of the institutions that were conducting coronavirus research in Wuhan, China, where the pandemic began, there is no firm evidence that the virus escaped from a laboratory. Yet the bioweapons review conference discussions this fall could provide a forum to take stock of what governments have learned in responding to the pandemic and to redouble coordinated efforts to stop COVID-19 once and for all.
The pandemic suggests several related areas for bioweapons treaty members to consider and debate. For example, how has the threshold for a deliberate attack been affected by COVID-19?

Some countries have done phenomenally well in keeping the virus at bay within their borders, while others have seen devastating wave after wave of infections. The United States has logged more than 29 million cases of COVID-19. Much larger China meanwhile, where the pandemic began, has had just 100,000.
At the review conference, bioweapons treaty members should examine how the threat of biological weapons may have evolved as a result of these uneven responses to COVID-19. Have countries or perhaps terrorist organizations, seeing the death and disruption caused by COVID-19, come to view biological weapons as a more powerful way of achieve their goals? Or have they been dissuaded by the fact that diseases like COVID-19 seem difficult to target or control? What might governments do to reduce the risk of future large-scale biological attacks or naturally occurring pandemics?

**A revamped role for the bioweapons treaty?**

International collaboration between governments, industry, nonprofits, and academia has been critical to fighting the pandemic, a fact underscored by the rapid development of vaccines, many through public-private partnerships. But world governments haven't been able to properly fund the distribution of the inoculations to much of the globe. Indeed, some people in developing countries may be waiting until 2024 to get vaccinated. Unfortunately, the shortfalls in messaging, policy and guidance, and vaccine distribution led to additional spread of the virus, proliferation of inaccurate information, a global competition for access to personal protective equipment, and vaccine nationalism. The members of the bioweapons treaty could work to address these issues.
Some investments governments made in science and technology have paid off handsomely, particularly biomedical research, like those which allowed vaccine makers to so quickly produce effective inoculations. Projects like the Human Genome Project and the research behind messenger RNA were critical to scientists eventually being able to produce the first two vaccines that received emergency use authorization in the United States. Bioweapons treaty members should work to identify future areas for research and development that could be beneficial in preparing for possible future pandemics or biological attacks.
However, while investments paved the way for the success of the vaccines, in other areas, research and development shortfalls contributed to the lackluster government response to COVID-19 in the United States and elsewhere and would likely do so in the event of a deliberate biological attack, as well. Biosurveillance is clearly an area where government investment did not match what was needed. Biosurveillance includes a number of elements—environmental sampling (of air and within sewage systems, for example); point of care diagnostic tests that are accurate and rapid; the capacity to genetically sequence large numbers of samples quickly to accurately assess virus shift and drift; contact tracing capability; and well-staffed public health organizations able to assist with surveilling the environment and supporting decisionmakers. Identifying and redoubling efforts in underperforming areas such as biosurveillance would be beneficial.

**Time to address difficult issues?**

The Biological Weapons Convention lacks the personnel to be very useful in the event of a significant biological attack, a shortfall that should be addressed when the treaty's members meet this fall. The undersized implementation support unit for the treaty—composed of just three full-time staff—can do little more than coordinate regular meetings and conferences. The support staff would likely not play any role in response to a biological attack.
In contrast, the Chemical Weapons Convention has the Organization for the Prohibition of Chemical Weapons, which had the capability, for example, to monitor the elimination of declared chemical weapons in Syria. Such a mission would be impossible for the support unit behind the bioweapons treaty. Consider if governments thought COVID-19 had resulted from a deliberate attack and suspicious laboratories had been identified—wouldn't a similar body of professionals be useful to investigate the suspect facilities?
Since the earliest days of the Biological Weapons Convention, some have questioned whether it should be revised to address one of the biggest criticisms of the treaty, the lack of transparency and verification provisions. The arms control community has debated this point since the treaty came into force in 1975. Participants in the every-five-year review conference meetings frequently discuss the issue. It's a heated topic and it even caused the United States delegation to walk out of the 2001 meeting due to a draft verification protocol that it felt contained objectionable language. While many nations might still reject the verification protocol language, perhaps this age of COVID-19 is the right time to reconsider whether some limited mechanisms for increasing transparency might be warranted.
The COVID-19 pandemic has demonstrated that no country is safe until every country has adequate vaccinations and medical countermeasures. Until that occurs, the virus will continue to infect populations and mutate, remaining a global threat.
When US President Joe Biden offered that "things would be back to normal" by next holiday season, he was speaking for the United States. That will not be true around the globe. By sharing the vaccines with other nations, all countries benefit. If a biological attack sparked

an outbreak or pandemic, countries that are part of the Biological Weapons Convention would have to share resources, as one of the articles of the treaty requires member states "provide or support assistance" for any other country affected by a biological attack. By ensuring available mechanisms for doing so, governments could better respond to this pandemic as well as prepare for the future. Bioweapons treaty members should use this fall's review conference to finally begin to address the difficult issues regarding preparation for future biological attacks or pandemics. The COVID-19 crisis should be all the incentive necessary to have these serious discussions.

***Daniel M. Gerstein*** *works at the RAND Corporation. He formerly served as the undersecretary (acting) and deputy undersecretary in the Science and Technology Directorate of the Department of Homeland Security from 2011-2014.*

## Can vaccinated people transmit COVID-19? The answer will be key to ending the pandemic

**By Eileen Choffnes**

Source: https://thebulletin.org/2021/03/can-vaccinated-people-transmit-covid-19-the-answer-will-be-key-to-ending-the-pandemic/

Mar 09 – In the past year, the SARS-CoV-2 (COVID-19) virus has killed more people in the United States than the number of Americans who died in World War I, World War II, and the Vietnam War combined. And, while the number of cases and deaths appears to be declining, that trend could easily reverse. What is unquestionable is that many more people need to become immune to the virus in order to extinguish this pandemic through vaccine-induced herd immunity.

While still facing issues of efficiency and equitable distribution, the US vaccine rollout is finally getting shots into people's arms. According to the latest information from the Centers for Disease Control and Prevention, 9.4 percent of the US population has received two doses of either the Moderna or Pfizer/BioNTech mRNA vaccines. These vaccines, as well as one produced by Johnson & Johnson that was authorized for emergency use late last month, can prevent many cases of symptomatic COVID-19 infection, serious disease, hospitalizations, and death. The jury is still out, however, on another important question: How well do they do in preventing people from getting infected with COVID-19 or spreading the disease? Knowing the answer to this question is key to implementing polices to bring an end to the pandemic.

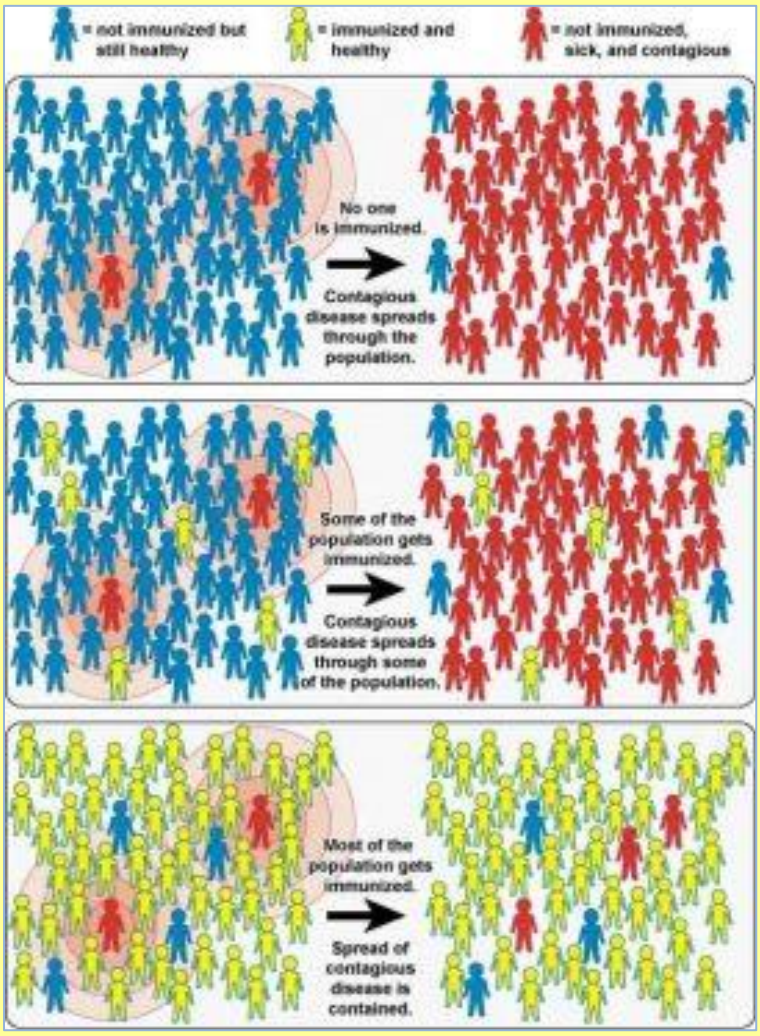
There's been positive news about how effective the vaccines might be in preventing transmission—but as several experts note, some studies that have been made public so far are inconclusive. Until we have a better answer on transmission, social distancing, hand hygiene, testing, and mask wearing will remain important in the fight to limit and eventually end the pandemic.

A recent, unpublished Israeli study showed a nearly 90 percent reduction in infections among the vaccinated population. *Wired* magazine writer Megan Molteni noted that the media framing of the study may have been overly optimistic. While the headlines about this unpublished study were wildly enthusiastic, the reality is more nuanced. "Israel finds BioNTech/Pfizer vaccine reduced virus transmission," read one headline. But Eric Topol, a professor of molecular medicine at Scripps Research, told *Wired* *he* was skeptical about drawing any conclusions about the extent to which the Pfizer vaccine cut transmission rates. He told the magazine that to accurately study asymptomatic transmission, both vaccinated and unvaccinated people should be regularly tested. "The testing rates were such a hodgepodge, I don't know you can make any conclusions about how much the vaccine cut transmission in Israel, let alone assigning a number as concrete as 89.4 percent," he told Molteni.

The way vaccines work is by tricking the body's immune system into believing it has been exposed to a "foreign" invader so that it initiates a series of responses, namely producing antibodies and memory cells, like it would against viruses or other pathogens. Should someone encounter the same disease in real life her immune system would be "primed" to neutralize or kill the foreign invader. This is what makes vaccines such powerful medical weapons against diseases. And, in an ideal world, this is the way a vaccine is supposed to work—to prevent infection by immunizing the entire at-risk population creating both individual and population herd immunity, the kind of wide-spread immunity that prevents a pathogen from infecting susceptible hosts.

In the 20th Century the goal of mass vaccination campaigns was to induce herd immunity and prevent or eliminate the sickness and death associated with an infectious pathogen. The scientist A.W. Hedrich described herd immunity almost a century ago in children naturally infected with measles. He noticed that measles outbreaks in Baltimore occurred when most children hadn't previously had the disease. Epidemics ended when the percentage of susceptible children in the population fell low enough. More surprising was that this immunity protection extended to children who had not been exposed to the viral disease—the conclusion being that immune individuals were unlikely to contribute to disease transmission.

According to the Centers for Disease Control and Prevention, herd or community immunity occurs when a high enough percentage of the population is immune to an infectious disease either through vaccination or previous illness that the disease is unlikely to spread person-to-person. Even people who haven't been vaccinated like newborns are also protected in this scenario. The herd immunity threshold is not set in stone, however. David Morens, a senior advisor to National Institute of Allergy and Infectious Diseases director Anthony Fauci, told *The New York Times* that the studies that accurately measured herd immunity were observations of how fast a contagious disease spread among penned animals. Studying how a disease spreads among people is difficult, because people move around locally, regionally, and globally. Depending on how well the vaccines cut transmission of COVID-19, the herd immunity threshold could rise or fall.




When enough people in a population are immune to an infectious disease like influenza, even unvaccinated people are protected. Credit: National Institutes of Health.

If the currently available vaccines are injected into arms fast enough on an international scale and confer herd immunity to COVID-19, what will it take to finally halt the spread of this disease in the United States? Estimates suggest that at the current pace 70 percent of the US population will be at least partially vaccinated by mid-September 2021. Researchers say between 70 to 90 percent of the population will need to get vaccinated before the country reaches herd immunity. How long that takes depends on a variety of factors including the herd immunity threshold, vaccine supply, and pace of vaccination. More contagious and virulent coronavirus variants that are resistant to vaccines, as well as vaccine hesitancy, could also complicate the path to herd immunity.

A recent article in the *New York Times* presented three scenarios for the United States to achieve vaccine-induced herd immunity for COVID-19. The first scenario suggests that at our current pace of injecting 1.7 million shots per day, we could theoretically reach herd immunity by July 2021 with an additional 100,000 deaths. If the vaccination rate were to double to approximately 3 million shots per day, we could reach herd immunity by May 2021, with 90,000 additional deaths. By tripling the pace of vaccination to 5 million shots per day, the United States could achieve herd immunity by April of this year with 80,000 additional deaths. In other words, the more people that get vaccinated, the faster the United States could reach the threshold for herd immunity.

In addition to the question of how well the vaccines prevent COVID-19 from spreading, experts are unsure about whether the current crop of vaccines will continue to be effective against new strains of the virus. The United States does not conduct active genomic surveillance for COVID-19, and public health researchers are discovering these virus strains after they have become established and begun to spread within the community. While some companies are preparing for the possibility of producing new vaccines for the variants—developing new shots against the strain first identified South Africa, for instance—creating a new vaccine every time a new strain of the virus evolves is like playing a high-tech game of "whack-a-mole." And regrettably, in this particular game, if people stop wearing masks, using other physical control measures, and behaving as if the virus is no longer the threat that it is, the virus will continue winning.

So what exactly are people who've received the vaccine able to do now that they weren't able to do before? As Rachel Gutman wrote recently in *The Atlantic,* there is one guiding principle that could help the vaccinated and the unvaccinated navigate this brave new world: "When deciding what you can and can't do, you should think less about your *own* vaccination

status and more about whether your neighbors, family, grocery clerks, delivery drivers, and friends are themselves still vulnerable to the virus." If they are and if virus cases are increasing in someone's area then all the mask wearing, social distancing, and hand hygiene practices employed prior to vaccination need to continue post-vaccination. The Centers for Disease Control and Prevention, meanwhile, issued new guidance on Monday that vaccinated people could meet inside without masks and also meet unmasked with low-risk people from another household.

Amid the uncertainty over the trajectory of the pandemic, public health officials are still urging caution. Fauci warned Sunday on *Face the Nation* that Americans shouldn't get complacent about following mitigation measures to combat the spread of the coronavirus, even though the number of new cases is leveling off and more Americans are getting a shot(s) in the arm. He stressed that "Americans should continue to comply with public health measures such as wearing masks, avoiding large gatherings, and social distancing." Despite Fauci and other federal government officials urging continued vigilance, the governors of Texas and Mississippi have issued executive orders lifting their states' mask mandates and letting all businesses reopen at full capacity.

President Joe Biden criticized the Republican governors, calling their decisions to end state-wide mask mandates "a big mistake." He said the country was on the "cusp of being able to fundamentally change the nature of this disease" with the distribution of vaccines. "The last thing we need is Neanderthal thinking that in the meantime, everything's fine."

Until we know how well the current vaccines protect against infection and transmission or until a new vaccine platform is developed that will block the transmission of COVID-19, the old standbys of social distancing, hand hygiene, molecular testing of symptomatic and more importantly asymptomatic individuals, and mask wearing will go along way toward stopping viral transmission and slowing the evolution of this virus. These practices, and more, have been and continue to be successfully applied in countries like Australia and New Zealand to bring their COVID-19 case numbers down to near zero. The United States can do this as well; dramatically reducing US case numbers just requires the will to do it.

***Eileen Choffnes** is the immediate past director of the National Academy of Medicine's Forum on Microbial Threats, a program focused on emerging, reemerging, and novel diseases and the role of human and environmental factors in disease emergence and spread. She has served as a senior scientist with both the Environmental Protection Agency and the Department of Energy. From 1988-93 she served as staff scientist to the Senate Governmental Affairs Committee, working on chemical and biological arms control issues.*

## COVID-19 Vaccine Combos Aim to Boost Immunity

**By Asher Jones**

Source: https://www.the-scientist.com/news-opinion/covid-19-vaccine-combos-aim-to-boost-immunity-68529

Mar 09 – About a dozen COVID-19 vaccines have been approved around the world, providing a possible path out of the pandemic. But hurdles have emerged, including logistical issues around vaccine rollouts, a rising tide of worrisome variants, and uncertainty around the longevity of immunity. New trials underway to test combinations of different manufacturers' vaccines seek to overcome some of these challenges.

"It's really exciting that we have these combination trials," says Sarah Caddy, a viral immunologist at the University of Cambridge. "If we can use different vaccines, that opens opportunities for vaccinating more people." In addition, she notes, "there's some evidence that mixing and matching vaccines could give us better immune responses."

Vaccines induce immunity by training the immune system to recognize a piece of SARS-CoV-2 called an antigen—usually the spike protein, which the coronavirus uses to unlock human cells. Most currently authorized COVID-19 vaccines deliver this training via two shots: the prime and the boost. Moderna's and Pfizer's versions, the first to receive emergency use authorization in the US, use mRNA to deliver the transcript encoding the virus's spike protein. Oxford/AstraZeneca's and Russia's Sputnik V vaccines, which use harmless adenoviruses as vectors to deliver the gene for the protein, have also been approved for use in other countries.

But with demand for doses greatly outweighing supply, vaccine rollout has been slow, complicated in part by the requirement for two doses of the same shot. Only two vaccines authorized for use in various countries so far—Johnson & Johnson's and CanSino Biologics's adenovirus-based vaccines—are administered as a single injection. A solution to this problem could be to mix-and-match the prime and boost, so recipients could get whatever shot was on hand for their second dose.
The US Centers for Disease Control and Prevention (CDC) guidelines state that different approved vaccines can be combined in "exceptional situations," but stipulate that they are otherwise not interchangeable due to a dearth of clinical evidence about the safety and efficacy of these combinations. "We have an incredible array of [vaccines] . . . but we don't know anything about how compatible they are," says Bruce Gellin, the president of global immunization at the Sabin Vaccine Institute. "Given that we're likely to have increasing products out there, it would be good to know how they work when you can't get the exact regimen that was in the clinical trial."

**The logic behind combining vaccines**

In addition to the practical advantages of being able to switch between vaccines, a combo approach could induce greater immune responses if the two shots use different platforms, says Shan Lu, a physician-scientist and the director of the Laboratory of Nucleic Acid Vaccines at the University of Massachusetts Medical School. Scientists call this strategy heterologous prime boosting. "The format of the vaccine is different, but the antigen is the same," Lu explains. For example, the prime shot could deliver the instructions for cells to make the spike protein via RNA, while the booster could be a viral vector vaccine or one based on a recombinant version of the spike protein, says Lu. No recombinant protein COVID-19 vaccines have yet received widespread approval, but those from US company Novavax and the Russia-based Vector Institute are currently in Phase 3 trials.
A robust immune response involves not only virus-neutralizing antibodies but also helper T cells, which boost antibody production, and cytotoxic T cells, which clear away infected cells. T cells are therefore likely to be important for long-lasting immunity, and two non-peer reviewed studies suggest that they are better than antibodies at thwarting SARS-CoV-2 variants in vitro.
Previous studies on other diseases have found that while some vaccine formats are better at inducing antibodies, others do a better job at stimulating T cell production. DNA and mRNA vaccines provoke the body to produce the antigen itself, a process that activates T cells and facilitates the production of antibody-producing B cells, explains Lu. In contrast, "protein vaccines or inactivated vaccines don't involve T cells very much because the antigen isn't actually produced inside the body," he says.
By combining different vaccine formats that rev up different arms of the immune system, "you can get the best of both worlds," says Wolfgang Leitner, the chief of the innate immunity section at the National Institute of Allergy and Infectious Diseases. "If you alternate between platforms, it turns out you can get more than the sum of the two. . . . They seem to work synergistically." But, he adds, "to be honest, we don't understand the mechanisms yet."
Although the currently approved COVID-19 vaccines are up to 95 percent effective at preventing disease, it's too early to tell how long-lasting this protection is and how well vaccine-conferred immunity protects against variants that have emerged since the vaccines were designed. "Improving the quality [of vaccines] is not just about the level of efficacy," says Leitner, "better also means . . . improving the breadth of the immune response." If combining vaccines induces stronger T cell responses, this approach might have a leg up on variants, says Leitner. But, he adds, "this is all hypothetical because it hasn't been tested yet."

**Mix and match**

Heterologous prime boosting isn't new. An Ebola vaccine was recently authorized in the European Union that uses an adenovirus vector carrying the gene for a viral protein, followed by a booster shot of another harmless vector called modified vaccinia virus Ankara that bears the same gene. The Russian Gamaleya Center's Sputnik V COVID-19 vaccine, which is about 92 percent effective at preventing disease, also uses a heterologous prime boost approach. The two shots deliver the same SARS-CoV-2 spike protein gene, but the adenovirus vectors, known as rAd26 and rAD5, differ for each shot. Switching up the viral vector can overcome a well-established problem with this type of vaccine whereby the body develops immunity not only to the target gene, but to the vector as well.
Other heterologous prime boost strategies have paired two different vaccine formats. In Lu's work on HIV vaccines, he and his colleagues found that a prime shot of a circular piece of viral DNA followed by a boost of recombinant protein induced better immune responses than either shot alone or in the reverse order. Phase 3 trials of this vaccine are currently underway.
"The order matters," says Lu. "We found that DNA first, protein after is better than protein first, DNA after. You cannot reverse that." DNA vaccines for other diseases, when used alone, have failed to confer strong immunity. This may be because, unlike protein-based or adenovirus vector vaccines, DNA vaccines don't induce the production of enough antigen to stimulate high antibody titers, a reason why DNA may be better suited as the prime shot.

Yet heterologous prime boost vaccinations for different diseases have occasionally reversed this order. And studies have found other combinations, such as an adenovirus vector with a protein subunit vaccine, can produce promising results. "It is virtually impossible to make predictions of which combination in which order is going to be the best," says Leitner.
Another strategy is the codelivery of different vaccine formats in the same shot, Lu says. In a study published on March 1 in *Emerging Microbes & Infections*, he and his colleagues describe a novel COVID-19 vaccine that delivers DNA encoding the SARS-CoV-2 spike protein as part of a larger piece of circular DNA called a plasmid, and the recombinant spike protein itself in a single shot. In monkeys, the injection induced strong antibody and T cell responses and completely prevented infection when they were exposed to the coronavirus. Several other DNA-based COVID-19 vaccines are in clinical trials.

### COVID-19 combo trials

A handful of COVID-19 combination trials are now in the works. A UK study known as Com-Cov will compare immune responses in participants receiving two Pfizer doses, two Oxford/AstraZeneca doses, or one of each in either sequence. It will also compare dosing schedules with four or 12 weeks between the prime and boost shot.
In December, the Gamaleya Center announced plans to commence combination trials of Sputnik V with Oxford/AstraZeneca's chimp adenovirus vector vaccine. The Russian institute is also negotiating another combination trial with the Chinese company CanSino, *Bloomberg* reported in early February.
One challenge with developing heterologous prime boost regimens is figuring out which vaccines to combine and which should be the prime and which the boost. Leitner says that any combination of the licensed COVID-19 vaccines could be beneficial. "My attitude would be that there's probably no downside to any of the combinations. **The worst you can get is an additive effect—that's not a bad thing. The goal, of course, is a synergistic effect."**

*Asher Jones is a science journalist based in Arlington, Virginia, and* The Scientist*'s editorial intern. She recently completed a PhD in entomology from Penn State University, and she was a 2020 AAAS Mass Media Fellow at Voice of America.*

## 5 strategies to prepare now for the next pandemic

**By Tiffany A. Radcliff and Angela Clendenin**
Source: https://theconversation.com/5-strategies-to-prepare-now-for-the-next-pandemic-154317

Mar 08 – While the world is still reeling from the COVID-19 pandemic, public health and emergency management experts are already preparing for the next one. After all, biologists are certain another dangerous new pathogen will emerge sooner or later.
We are public health researchers engaged in both leading public health disaster response and evaluating emergency management. Here are five strategies that will give the world a head start – and maybe even help prevent the next outbreak or epidemic from blowing up into a pandemic.

### 1. Shore up the systems already in place

The identification in February 2021 of a new outbreak of Ebola in Guinea showed how critical surveillance and reporting are for rapidly responding to and containing infectious disease.
The process generally works like this: Once an astute clinician diagnoses a disease that is on the watch list of the World Health Organization and the Centers for Disease Control and Prevention, she reports the case to local health authorities to investigate. The information gets passed up the chain to the state, federal and international levels.
Clinicians, public health practitioners and labs all around the world send disease reports to groups like the WHO's Global Outbreak Alert and Response Network. It aggregates all that data and helps identify outbreaks of new infectious diseases and their pandemic potential.
If a pathogen does make it past local monitors and starts to spread, governments have emergency management systems in place to respond. These incident command structures provide a framework to respond to crises that range from infectious disease to natural disaster to terrorist attack.
In the U.S., various federal agencies have different responsibilities. They monitor emerging infectious diseases, establish a strategic national stockpile of resources and support the states in their preparedness and response. Responsibility for the emergency response lies

with each state – that's in the U.S. Constitution – so they have flexibility in how they implement everything on a local level.
One practical way to be prepared for a future pandemic is to ensure that all these systems and structures remain stable. That means maintaining funding, training and personnel for a rapid global response even when no pandemic threats are visible on the horizon.

**2. Prepare the public to do its part**

Effective pandemic response requires a clear, consistent voice and an actionable message that reflects best practices based on sound science. Messaging and data that clearly explain how each individual has an important role in curbing the pandemic – and that it might evolve as the pandemic unfolds over time – are critical.
The message to stay home and "flatten the curve" to avoid overwhelming health care resources with COVID-19 cases was an essential early public health message that resonated with many Americans who were not designated as essential workers. However, once initial shutdown orders were lifted and new treatments emerged, there was general confusion about the safety of public gatherings, particularly since guidance varied by state or locality.
Guidance is also most effective if it's tailored to different audiences. In the South, distrust of testing and vaccination efforts by government and health care providers is directly linked to language barriers and immigration concerns. One strategy to reach diverse and often underserved populations is to rely on leaders in the local faith community to help deliver public health messages.
Preparedness requires an "all of community approach" that engages everyone in the planning stages, especially those from underserved or vulnerable populations. Building relationships now can improve access to information and resources when the next disaster strikes, helping ensure equity and agility in response.
Science and risk communication scholars have started talking about the best ways people can manage the flood of information during a pandemic. Lessons from what's been called the infodemic of COVID-19 news – some trustworthy but some certainly not – can inform new strategies for sharing reliable info and fostering trust in science.

**3. Get coordinated and practice**

Emergency managers and health care leaders have long recognized that a coordinated response by diverse teams is critical for public health emergencies.
Tabletop exercises that simulate real emergencies help officials prepare for crises of all types. Like a fire drill, they bring together community stakeholders to walk through a hypothetical disaster scenario and hash out roles and responsibilities. These practice sessions include people who work in public health, emergency management and health care, as well as federal, tribal, state and local front-line responders.
Practice scenarios must also include the reality of "stacked disasters," like a hurricane or winter storm that puts even more stress on the disaster response system.
These exercises enable a community to test parts of the overall emergency management plan and determine gaps or areas to strengthen. Ongoing testing and training to the plan ensures everyone is as ready as they can be.
Beyond this training, health care professionals could be cross-trained to back up specialized clinical staff, who may need support over the course of a long pandemic.
The COVID-19 pandemic delivered lessons about infrastructure and supply chains. Strategic investments can shore up existing strategic national stockpiles of supplies and vaccinations for the future. If necessary, the president can use the Defense Production Act to order private companies to prioritize federal orders.

**4. Polish the playbook**

After every major disaster response, all of the different groups involved – law enforcement, EMS, fire, emergency management, public health, search and rescue and so on – conduct what are called "after action reviews." They can improve plans for the next time around.
For instance, after the 2009 influenza pandemic, the Department of Health and Human Services found that while CDC communication efforts were widely successful, some non-English-speaking populations missed important messages. The after action review noted that distrust in the government increased when vaccine supplies did not meet public expectations. In turn, officials could plan exercises to test and tweak approaches for next time.
A thorough review of the response to the current COVID-19 pandemic at all levels will identify gaps, challenges and successes. Those "After Action" findings need to be integrated into future planning to improve preparedness and response for the next pandemic.

### 5. Build on the new normal

Back when the 1918 H1N1 influenza pandemic unfolded, few Americans had a telephone. Quarantine rules led more households to use phones and hastened research that reduced reliance on human telephone operators. Similarly, no doubt COVID-19 triggered some rapid changes that will last and help the U.S. be ready for future events.

It's been easier to adapt to the necessary lifestyle changes due to this pandemic thanks to the ways technology has changed the workplace, the classroom and the delivery of health care. Business analysts predict the quick move to video teleconferencing and remote work for offices in 2020 will be lasting legacies of COVID-19. A multidisciplinary team here at Texas A&M is tracking how robotics and automated systems are being used in pandemic response in clinical care, public health and public safety settings.

Some of the sudden, dramatic changes to norms and behaviors, like the use of face masks in public, may be among the easiest strategies to keep in place to fend off a future pandemic from a respiratory virus. Just as telephone systems continued to improve over the last 100 years, ongoing innovation that builds on rapid adoption of technologies around COVID-19 will help people adjust to sudden lifestyle changes when the next pandemic strikes.

***Tiffany A. Radcliff*** *is Associate Dean for Research and Professor of Health Policy and Management @ Texas A&M University*

***Angela Clendenin*** *is Instructional Assistant Professor of Epidemiology and Biostatistics @ Texas A&M University*

**EDITOR'S COMMENT:** Strategies are nice and useful provided that they are practical as well – e.g., strategy #2. But during the current and ongoing pandemic certain gaps are still open and need to be fixed – e.g., beds, lots of hospital beds; oxygen supplies; mass transportation means to avoid overcrowding; healthcare personnel; PPE; critical ICU equipment to mention a few. Because the next pandemic might be a continuation of this one without a break to re-organize.

## Clofazimine broadly inhibits coronaviruses including SARS-CoV-2

**By Shuofeng Yuan, Xin Yin, et al.**

*Nature | 16 March 2021*

Source: https://www.nature.com/articles/s41586-021-03431-4


### Abstract

COVID-19 pandemic is the third zoonotic coronavirus (CoV) outbreak of the century after severe acute respiratory syndrome (SARS) in 2003 and Middle East respiratory syndrome (MERS) since 2012. Treatment options for CoVs are largely lacking. Here we show that clofazimine, an anti-leprosy drug with a favourable safety profile[3], possesses pan-coronaviral inhibitory activity, and can antagonize SARS-CoV-2 and MERS-CoV replication in multiple in vitro systems. The FDA-approved molecule was found to inhibit viral spike-mediated cell fusion and viral helicase activity. In a hamster model of SARS-CoV-2 pathogenesis, prophylactic or therapeutic administration of clofazimine significantly reduced viral load in the lung and faecal viral shedding, and also mitigated inflammation associated with viral infection. Combinatorial application of clofazimine and remdesivir exhibited antiviral synergy in vitro and in vivo, and restricted upper respiratory tract viral shedding. Since clofazimine is orally bioavailable and has a comparatively low manufacturing cost, it is an attractive clinical candidate for outpatient treatment and remdesivir-based combinatorial therapy for hospitalized COVID-19 patients, particularly in developing countries. Taken together, our data provide evidence that clofazimine may have a role in the control of the current pandemic SARS-CoV-2, and, possibly most importantly, emerging CoVs of the future.

## FDA Warns Against Using Ivermectin to Treat COVID-19

Source: https://www.medscape.com/viewarticle/947049

Mar 08 – The US Food and Drug Administration (FDA) has issued guidance warning consumers against using the antiparasitic drug ivermectin to treat or prevent COVID-19.

The agency says it issued the guidance on Friday in light of growing interest in the drug as a COVID-19 treatment and multiple reports of patients hospitalized or needing medical support "after self-medicating with ivermectin intended for horses."
Ivermectin, which is not an antiviral, has not been approved by the FDA for treating or preventing COVID-19, the guidance emphasized.
"Using any treatment for COVID-19 that's not approved or authorized by the FDA, unless part of a clinical trial, can cause serious harm," the FDA says.
Ivermectin tablets are FDA-approved to treat two conditions caused by parasitic worms: intestinal strongyloidiasis and onchocerciasis (river blindness). Some topical applications of ivermectin are approved to treat head lice and skin conditions such as rosacea.
Some forms of ivermectin are used to prevent heartworm disease in animals, as well as certain internal and external parasites.
The FDA says, "It's important to note that these products are different from the ones for people, and safe when used as prescribed for animals, only."
The guidance points out that the concentrations of ivermectin for cows and horses can be highly toxic to humans.
"If you have a prescription for ivermectin for an FDA-approved use, get it from a legitimate source and take it exactly as prescribed," the guidance says. "Taking large doses of this drug is dangerous and can cause serious harm."

**Adverse Effects**
Interactions with other drugs, such as blood thinners, are also potentially dangerous even at the levels specified in approved uses, the FDA says.
"You can also overdose on ivermectin," the FDA warns, adding that ivermectin can cause nausea, vomiting, diarrhea, hypotension, allergic reactions, dizziness, ataxia, seizures, coma, and even death.
The FDA has not reviewed data to support use of ivermectin to treat or prevent COVID-19, but research is beginning.
An article published on Thursday in *JAMA* found that ivermectin, tested in a randomized trial of 476 patients, did not significantly shorten duration of symptoms for adults with mild COVID-19 who received a 5-day course of ivermectin compared with placebo (median time to resolution of symptoms, 10 vs 12 days; hazard ratio for resolution of symptoms, 1.07).
As for adverse effects, the most commonly reported in the *JAMA* study was headache, reported by 104 patients (52%) in the ivermectin group and 111 (56%) in the placebo group. The most common serious adverse event was multiorgan failure, which occurred in four patients (two in each group).
"The findings do not support the use of ivermectin for treatment of mild COVID-19, although larger trials may be needed to understand the effects of ivermectin on other clinically relevant outcomes," the authors write.
Excitement about the drug has grown after some smaller studies have shown positive results for the drug related to COVID-19.
However, the National Institutes of Health (NIH) says, "[M]ost of these studies had incomplete information and significant methodological limitations."
The NIH's COVID-19 Treatment Guidelines, in guidance last updated February 11, said there is insufficient evidence to recommend either for or against the use of ivermectin for the treatment of COVID-19.
That recommendation was upgraded from guidance in August that recommend against ivermectin's use in treating or preventing COVID-19, as *Medscape Medical News* has reported.
"Results from adequately powered, well-designed, and well-conducted clinical trials are needed to provide more specific, evidence-based guidance on the role of ivermectin in the treatment of COVID-19," the NIH panel writes.

## COVID Positive After Two Vaccine Doses? What It Means

## Five-Day Course of Oral Antiviral Appears to Stop SARS-CoV-2 in Its Tracks - II

Source: https://www.medscape.com/viewarticle/947061

Mar 08 – A single pill of the investigational drug **molnupiravir** taken twice a day for 5 days eliminated SARS-CoV-2 from the nasopharynx of 49 participants.
That led Carlos del Rio, MD, distinguished professor of medicine at Emory University in Atlanta, Georgia, to suggest a future in which a drug like molnupiravir could be taken in the first few days of symptoms to prevent severe disease, similar to Tamiflu for influenza.

"I think it's critically important," he told *Medscape Medical News* of the data. Emory University was involved in the trial of molnupiravir but del Rio was not part of that team. "This drug offers the first antiviral oral drug that then could be used in an outpatient setting."
Still, del Rio said it's too soon to call this particular drug the breakthrough clinicians need to keep people out of the ICU.
"It has the *potential* to be practice-changing; it's not practice-changing at the moment."
Wendy Painter, MD, of Ridgeback Biotherapeutics, who presented the data at the virtual Conference on Retroviruses and Opportunistic Infections, agreed. While the data are promising, "We will need to see if people get better from actual illness" to assess the real value of the drug in clinical care.
"That's a phase 3 objective we'll need to prove," she told Medscape Medical News.
Phase 2/3 efficacy and safety studies of the drug are now underway in hospitalized and nonhospitalized patients.
In a brief pre-recorded presentation of the data, Painter laid out what researchers know so far: preclinical studies suggest that molnupiravir is effective against a number of viruses, including coronaviruses and specifically SARS-CoV-2. It prevents a virus from replicating by inducing viral error catastrophe — essentially overloading the virus with replication and mutation until the virus burns itself out and can't produce replicable copies.
In this phase 2a, randomized, double-blind control trial, researchers recruited 202 adults who were treated at an outpatient clinic with fever or other symptoms of a respiratory virus and confirmed SARS-CoV-2 infection by day 4. Participants were randomly assigned to three different groups: 200 mg of molnupiravir, 400 mg; or 800 mg. The 200 mg arm was matched one-to-one with a placebo-controlled group, and the other two groups had three participants in the active group for every one control.
Participants took the pills twice daily for 5 days, and then were followed for a total of 28 days to monitor for complications or adverse events. At days 3, 5, 7, 14, and 28, researchers also took nasopharyngeal swabs for PCR tests, to sequence the virus, and to grow cultures of SARS-CoV-2 to see if the virus that's present is actually capable of infecting others.
Notably, the pills do not have to be refrigerated at any point in the process, alleviating the cold-chain challenges that have plagued vaccines. "There's an urgent need for an easily produced, transported, stored, and administered antiviral drug against SARS-CoV-2," Painter said.
Of the 202 people recruited, 182 had swabs that could be evaluated, of which 78 showed infection at baseline. The results are based on labs of those 78 participants.
By day 3, 28% of patients in the placebo arm had SARS-CoV-2 in their nasopharynx, compared to 20.4% of patients receiving any dose of molnupiravir. But by day 5, none of the participants receiving the active drug had evidence of SARS-CoV-2 in their nasopharynx. In comparison, 24% of people in the placebo arm still had detectable virus.
Halfway through the treatment course, differences in the presence of infectious virus were already evident. By day 3 of the 5-day course, 36.4% of participants in the 200 mg group had detectable virus in the nasopharynx, compared with 21% in the 400 mg group and just 12.5% in the 800 mg group. And although the reduction in SARS-CoV-2 was noticeable in the 200 mg and the 400 mg arms, it was only statistically significant in the 800 mg arm.
In contrast, by the end of the 5 days in the placebo groups, infectious virus varied from 18.2% in the 200 mg placebo group to 30% in the 800 mg group. This points out the variability of the disease course of SARS-CoV-2. "You just don't know" which infections will lead to serious disease, Painter told *Medscape Medical News*. "And don't you wish we did?"
Seven participants discontinued treatment, though only four experienced adverse events. Three of those discontinued the trial due to adverse events. The study is still blinded, so it's unclear what those events were, but Painter said that they were not thought to be related to the study drug.
The bottom line, said Painter, was that people treated with molnupiravir had starkly different outcomes in lab measures during the study. "An average of 10 days after symptom onset, 24% of placebo patients remained culture positive" for SARS-CoV-2 — meaning there wasn't just virus in the nasopharynx, but it was capable of replicating, Painter said. "In contrast, no infectious virus could be recovered at study day 5 in any molnupiravir-treated patients."

## Could Pollen Be Driving COVID-19 Infections? – II

Source: https://www.medscape.com/viewarticle/947141

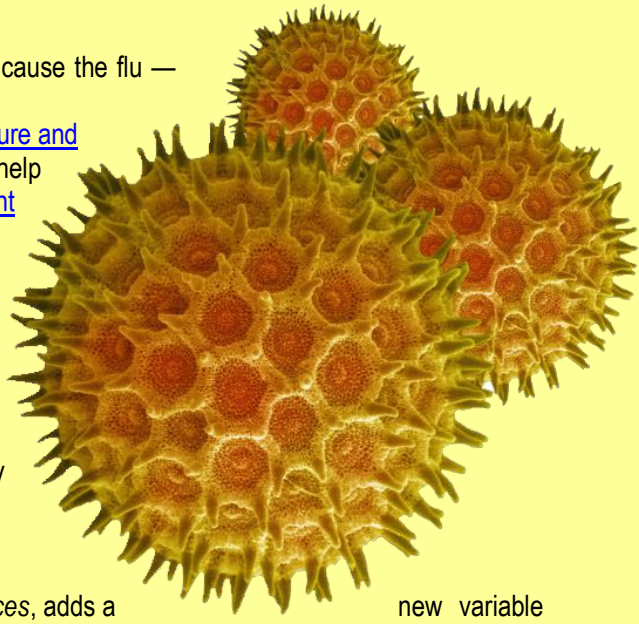
Mar 09 – Some scientists say they've noticed a pattern to the recurring waves of SARS-CoV-2 infections around the globe: as pollen levels increased in outdoor air in 31 countries, COVID-19 cases accelerated.

Yet other recent studies point in the opposite direction, suggesting that peaks in pollen seasons coincide with a fall-off in the spread of some respiratory viruses, like COVID-19 and influenza. There's even some evidence that pollen may compete with the virus that causes COVID-19 and may even help prevent infection.

So, which is it? The answer may still be up in the air.

Doctors don't fully understand what makes some viruses — like the ones that cause the flu — circulate in seasonal patterns.

There are, of course, many theories. These revolve around things like temperature and humidity — viruses tend to prefer colder, drier air — something that's thought to help them spread more easily in the winter months. People are exposed to less sunlight during the winter, as they spend more time indoors, and the earth points away from the sun, providing some natural shielding. That may play a role both because ultraviolet light from the sun acts like a natural disinfectant, and may help keep circulating viral levels down.



In addition, exposure to sunlight helps the body make vitamin D, which may help keep our immune responses strong. Extreme temperatures — both cold and hot — also change our behavior, so that we spend more time cloistered indoors, where we can more easily cough and sneeze on each other and generally swap more germs.

**Spike in Pollen, Jump in Infections**

The new study, published in the *Proceedings of the National Academy of Sciences*, adds a new variable to this mix — pollen. It relies on data from 248 airborne-pollen-monitoring sites in 31 countries. The study also took into account other effects, such as population density, temperature, humidity, and lockdown orders. The study authors found that when pollen in an area spiked, so did infections, after an average lag of about 4 days. The study authors say pollen seemed to account for, on average, 44% of the infection rate variability between countries.

The study authors say pollen could be a culprit in respiratory infections, not because the viruses hitch a ride on pollen grains and travel into our mouth, eyes, and nose, but because pollen seems to perturb our immune defenses, even if a person isn't allergic to it.

"When we inhale pollen, they end up on our nasal mucosa and here, they diminish the expression of genes that are important for the defense against airborne viruses," study author Stefanie Gilles, PhD, chair of environmental medicine at the Technical University of Munich in Germany, said in a press conference.

In a study published last year, Gilles found that mice exposed to pollen made less interferon and other protective chemical signals to the immune system. Those then infected with respiratory syncytial virus had more virus in their bodies compared with mice not exposed to pollen. She seemed to see the same effect in human volunteers.

**The study authors think pollen may cause the body to drop its defenses against the airborne virus that causes COVID-19, too.**

"If you're in a crowded room and other people are there that are asymptomatic, and you've just been breathing in pollen all day long, chances are that you're going to be more susceptible to the virus," says Lewis Ziska, PhD, a plant physiologist who studies pollen, climate change, and health at Columbia University's Mailman School of Public Health in New York City. "Having a mask is obviously really critical in that regard."

Masks do a great job of blocking pollen, so wearing one is even more important when pollen and viruses are floating around, he says.

Other researchers, however, say that, while the study raises some interesting questions, it can't prove that pollen is increasing COVID-19 infections.

"Just because two things happen at the same time doesn't mean that one causes the other," says Martijn Hoogeveen, PhD, a professor of technical sciences and environment at The Open University in the Netherlands.

Hoogeveen's recent study, published in *Science of the Total Environment*, found that the arrival of pollen season in the Netherlands coincides with the end of flu season, and that COVID-19 infection peaks tend to follow a similar pattern — exactly the opposite of the *PNAS* study.

Another preprint study, which focused on the Chicago area, found the same thing — as pollen climbs, flu cases drop. The researchers behind that study think pollen may actually compete with viruses in our airways, helping to block them from infecting our cells.

**Patterns May Be Hard to Nail Down**

Why did these studies reach such different conclusions?

Hoogeveen's paper focused on a single country and looked at the incidence of flu infections over four seasons, from 2016 to 2020, while the *PNAS* study collected data on pollen from January through the first week of April 2020.

He thinks that a single season, or really part of a season, may not be long enough to see meaningful patterns, especially considering that this new-to-humans virus was spreading quickly at nearly the same time. He says it will be interesting to follow what happens with COVID-19 infections and pollen in the coming months and years.

**Hoogeveen says that in a large study spanning so many countries it would have been nearly impossible to account for differences in pandemic control strategies. Some countries embraced the use of masks, stay-at-home orders, and social distancing, for example, while others took less-stringent measures in order to let the virus run its course in pursuit of herd immunity. Limiting the study area to a single country or city, he says, helps researchers better understand all the variables that might have been in play along with pollen.**

"There is no scientific consensus yet, about what it is driving, and that's what makes it such an interesting field," he says.

# The AstraZeneca COVID-19 Vaccine and Risk of Blood Clots: What You Need to Know

**By Gideon Meyerowitz-Katz**

Source: https://www.sciencealert.com/a-scientist-explains-why-you-don-t-need-to-panic-about-the-astrazeneca-rollout-pause

Mar 17 – Vaccines are amazing, life-saving innovations, and the COVID-19 vaccines are no different. As with any medical procedure, there are potential drawbacks to using them, but we know from massive pieces of scientific research that the COVID-19 vaccines are both safe and effective.

And yet, as you have probably heard on the news, for one specific vaccine most of Europe has stopped their rollout. Rather than giving millions of people the AstraZeneca/Oxford (AZ) vaccine against COVID-19, a dozen countries have decided to stop vaccinating due to fears of side-effects.

So, I thought I would explain what's happening, and why you probably don't need to worry even if you've had the AZ vaccine.

**How It All Works**

The basic idea of vaccine rollouts is simple. You exclude common and dangerous side-effects in clinical trials, and identify all the common and moderate ones as well like headaches and pain at the vaccine site.

However, even with mammoth studies, with 10,000s of people in them, it's impossible to exclude things that happen really rarely. If a side-effect only happens to one in 200,000 people who get the vaccine, you'd need a clinical trial including literally millions of individuals to be certain to catch it in the numbers.

This raises an issue – we give vaccines at a population level, after all. Something that happens to one in 200,000 people might sound incredibly rare, and it is, but it will also happen dozens of times if you vaccinate 80 million people. And remember, it is vitally important to most of Europe that they vaccinate as many people as quickly as possible, given the vast COVID-19 outbreaks across the continent.

So, we do something clever. We set up monitoring systems that look at people in the general population who have been given the vaccine. That way, we can see if there are any signals of risk in the enormous group of people who get the vaccine after it is licensed for the general public.

What's happened to the AZ vaccine is that some countries have seen a very small but potentially significant increased risk of a rare type of blood clot in their monitoring data, and so have temporarily paused their vaccine rollouts to investigate it further.

Is this a good decision? Well, that depends on quite a few things.

**Pausing Rollouts**

The first question is pretty obvious – what is the signal of risk that has caused the worry in Germany, Norway, Spain, and elsewhere?

**According to the regulatory agencies of the countries involved, it comes down to a rare but serious type of blood clot in the brain called venous sinus thrombosis. These have mostly been in quite young people (aged 20-55) which is part of the reason that there is a cause for concern.**

The German public health agency has published their findings, showing that there were a total of seven cases of these blood clots in the vaccinated population of 1.6 million people aged 20-55 when they would've expected only one by chance.

**Now, for the real question. What does this mean?**

Well, it's probably useful to work out the rate here. If it is true that all seven clots were caused by the vaccine, with 1.6 million immunizations, then that works out to a rate of roughly one clot per 230,000 jabs or 0.00044 percent.

While the relative risk increase here sounds scary, that means that this equates to an absolute risk increase for people who have been vaccinated of 0.00038 percent, which is not quite as huge as the headlines are suggesting.

We can also compare this to the risk of COVID-19. Even 20-year-olds are not immune to the disease, and while their risk of death is much lower than the elderly, it comes out to about 1 death per 16,000 infections.

**So, if the vaccine really is causing these blood clots, which can be fatal, then the risk of dying from COVID-19 for a 20-year-old is about 15 times higher than the risk of having a clot. Again, because both of the risks are very small, the absolute difference is also tiny, at about 0.004 percent.**

Note the 'if'. This is very much an open question. Remember, adverse event reporting systems are only there to identify the signal of risk, not whether one thing definitely causes another. That's what the investigation that is currently ongoing is meant to do.

Moreover, it's actually quite unlikely that the vaccine is causing these blood clots. Why? Well, the data from Germany comes from 1.6 million people, which sounds like a lot, but they are not the only country giving the AZ vaccine. The United Kingdom has given more than 10 million doses of AZ, and the reporting system shows no such increased risk.

If you trawl through the MHRA reports – the UK medical regulator – you'll see that there were three cases of this specific type of clot post-vaccine in people in the UK, which is actually less than you'd expect simply by chance. If you combine the UK and German numbers, suddenly there's no increased risk of blood clots at all!

**Bottom Line**

**What does this all mean to you, the person getting the vaccine?**

Well, firstly, these risks are tiny at an individual level. Even if this association turns out to be true – which is entirely possible – you are at a greater risk of drowning in a bathtub or being struck by lightning than having a blood clot induced by the AZ vaccine, based on evidence to date.

Yes, the risk of blood clots may be important at a population scale, but that is very different to ordinary people like you and me.

On the other hand, the risk of death from COVID-19, even for a young, healthy 20-year-old, is not inconsiderable. If you're 50, the risk is very concerning. We have shown this time and again, including in my own research – COVID-19 is a very nasty disease.

The decision to halt the AZ vaccine rollout in European countries is, of course, up to them, but it is a bit confusing. While there may be some signal of risk, that signal is pretty small and certainly not worse than getting the disease itself.

What would I do if offered the AZ vaccine? I can't speak for other people, and obviously risk and benefit is something we all have to think about for ourselves, but as a hospital worker in Australia I'm scheduled to get the AZ vaccine some time in the next two months. I look forward to it.

***Gideon Meyerowitz-Katz** is an epidemiologist working in chronic disease in Sydney, Australia.*

**EDITOR'S COMMENT:** There is no doubt that epidemiologists can do magics with numbers and statistics and this article is a fine example of this! But, in order to persuade ME, I need an article writing that "*… of course, even if the percentage is extremely very-very much low, if it has a name like George, John or Elen, then for this particular individual the chance to suffer the specific adverse reaction is 100% positive*". Something like this will mean that the author is honest and is not cooking numbers in order to persuade lay people about a specific policy. Of course, this is my way of thinking and I might be wrong but nobody is perfect!

## The 1 question you should never ask others about their COVID-19 vaccine

**By Rachel Grumman Bender**

Source: https://www.yahoo.com/lifestyle/question-you-should-never-ask-others-covid-19-vaccine-141835163.html

Mar 16 – Chances are, you've seen some co-workers, family members or friends posting on social media about getting the COVID-19 vaccine — and likely cheered them on from afar.

But if you're one of the many still patiently waiting to become eligible for the vaccine and see that a seemingly healthy friend or co-worker around your age or younger gets vaccinated before you do, it may be tempting to ask, "How were you able to get it before me?" But experts say, in general, it's better to keep that question to yourself.

There are several reasons why someone may get vaccinated earlier than you'd expect, including because of where they live. States across the country are in different phases of the vaccine rollout right now. For example, if you're a healthy 55-year-old without a high-risk health condition, you're eligible for the COVID-19 vaccine in Connecticut but not in California. But experts say that it's not always obvious what makes an individual eligible to receive the vaccine — and understandably, they may not want to broadcast why they qualify.

"Many of my patients have cancer, have had an organ transplanted — both of which can cause immune system problems — or have some other problem with their immune system," Dr. Anne Liu, infectious disease physician at Stanford Health Care, tells Yahoo Life.

"Most of them do not look outwardly ill and don't wear signs broadcasting their underlying condition. Some of them work full-time or part-time, work in frontline positions and take care of their families. A kidney transplant patient might be scanning your groceries. Pregnancy is also a qualifying condition in some counties, and early pregnancy is not outwardly apparent. Type 2 diabetes is very common in adults, and people with this condition usually just look like anyone else."

It's possible that someone you've worked with for years or even a friend never shared that they have an underlying health condition, which makes them eligible for the COVID-19 vaccine — and experts say that, in general, we shouldn't ask how someone was able to get vaccinated. "Sometimes people are asking others how they got the vaccine to see if they themselves might learn of a way to get it, but it can come across other ways, too," says Liu.

As Janet Malek, associate professor at the Center for Medical Ethics and Health Policy at Baylor College of Medicine, puts it: "People should have a right to privacy regarding their health. People may prefer to keep their medical information confidential for a variety of reasons, including concerns about discrimination, stigma or how others may view them if they know. Others just prefer not to share too much about themselves. These can be sensitive issues and that inquiring about how someone qualified for vaccination may violate some personal boundaries."

Although Liu says there isn't "data right now on how often someone who doesn't meet current eligibility criteria skips the line to get the vaccine," she's heard stories of "young, healthy people who do not have frontline jobs getting vaccines." Liu adds: "I think those stories will become more common as each county continuously updates guidance on who is eligible for the vaccine." Malek also tells Yahoo Life there are "many examples of people getting vaccines who aren't qualified under federal or state guidelines," adding: "There are also good reasons to create a culture in which people are held accountable for acting ethically by waiting their turn for the vaccine."

However, both experts agree that doesn't necessarily mean someone ineligible has skipped the line. "Counties where there is more vaccine available per person will have different rules than populous counties where there might be a tighter supply," explains Liu. "In addition, we can't assume that a person is healthy without underlying conditions just because we don't know otherwise."

Malek agrees, saying, "Sometimes this is because vaccination sites have leftover doses, but it is also because there are people at those sites that aren't enforcing [the eligibility requirements]. It seems that much of the system is based on individuals being honest about their health status and that doesn't always work."

So if it seems like a co-worker or friend has skipped the line, should you call them out? That depends. "I think it is ethically acceptable in most cases, but may not be the best approach socially," says Malek. "If you know someone well who is signing up [and] is not qualified, I think it is appropriate to ask them about their reasoning for going ahead. But that has the potential to cause a rift in that relationship. And if you don't know the person well enough, it could come across as an overly personal or invasive question."

Liu suggests not judging others — especially in light of the fact that every person (eligible or not) who gets vaccinated may also help protect you from COVID-19, per the Centers for Disease Control and Prevention. "Even as people are eagerly awaiting their turn to get the vaccine, we should not make the mistake of spending a lot of energy on judging whether others are deserving of the vaccine before us," says Liu. "The goal is to get every willing adult vaccinated in the next few months. To do that, the system needs to be designed to make vaccination as easy as possible for those who are eligible, minimizing the barriers to vaccination as can be done reasonably."

# The WHO Confirms that the Covid-19 PCR Test is Flawed: Estimates of "Positive Cases" are Meaningless. The Lockdown Has No Scientific Basis

**By Prof Michel Chossudovsky**

Source: https://www.globalresearch.ca/nucleic-acid-testing-technologies-use-polymerase-chain-reaction-pcr-detection-sars-cov-2/5739959

***The Real Time Polymerase Chain Reaction (RT-PCR)*** *test was adopted by the WHO on January 23, 2020 as a means to detecting the SARS-COV-2 virus, following the recommendations of a Virology research group (based at Charité University Hospital, Berlin), supported by the Bill and Melinda Gates Foundation. (For Further details see the Drosten Study). Exactly one year later on January 20th, 2021, the WHO retracts. They don't say "We Made a Mistake". The retraction is carefully formulated. While the WHO does not deny the validity of their misleading January 2020 guidelines, they nonetheless recommend "****Re-testing"*** *(which everybody knows is an impossibility).*

Mar 16 – The contentious issue pertains to the number of amplification threshold cycles (Ct). According to Pieter Borger, et al
The number of amplification cycles [should be] less than 35; preferably 25-30 cycles. In case of **virus detection, >35 cycles** only detect signals which do not correlate with infectious virus as determined by isolation in cell culture…(Critique of Drosten Study)
The World Health Organization (WHO) tacitly admits one year later that ALL PCR tests conducted at a 35-cycle amplification threshold (Ct) or higher are INVALID. But that is what they recommended in January 2020, in consultation with the virology team at Charité Hospital in Berlin.
If the test is conducted at a 35 Ct threshold or above (which was recommended by the WHO), the virus cannot be detected, which means that **ALL the so-called confirmed "positive cases" tabulated in the course of the last 14 months are invalid.**
Below is the WHO's carefully formulated "retraction". The full text with link to the original document is in annex:
WHO guidance Diagnostic testing for SARS-CoV-2 states that **careful interpretation of weak positive** results is needed (*1*). **The cycle threshold (Ct)** needed to detect virus is inversely proportional to the patient's viral load. Where test results do not correspond with the clinical presentation, **a new specimen should be taken and retested** using the same or different NAT technology. (emphasis added)
WHO reminds IVD users that disease prevalence alters the predictive value of test results; as disease prevalence decreases, **the risk of false positive increases** (*2*). This means that the probability that a person who has a positive result (SARS-CoV-2 detected) is truly infected with SARS-CoV-2 decreases as prevalence decreases, irrespective of the claimed specificity.

**"Invalid Positives"**
This is not an issue of "**Weak Positives"** and **"Risk of False Positive Increases".**
What this admission of the WHO confirms is that **the estimate of covid positive from a PCR test** (with an amplification cycles of 35 cycles or higher) is **invalid**. In which case, the WHO recommends retesting: **"a new specimen should be taken and retested…".**
That recommendation is pro-forma. It won't happen. Millions of people Worldwide have already been tested, starting in early February 2020. Nonetheless, we must conclude that unless retested, **those estimates (according to the WHO) are flawed.** I should mention that there several other flaws regarding the PCR test which are not addressed in this article. (See Michel Chossudovsky E-book, Chapter II)
From the outset, the PCR test has routinely been applied at a Ct amplification threshold of 35 or higher, following the January 2020 recommendations of the WHO. What this means is that the PCR methodology as applied Worldwide has in the course of the last 12-14 months led to the compilation of faulty and misleading Covid statistics.

And these are the statistics which are used to measure the progression of the so-called "pandemic". Above an amplification cycle of 35 or higher, the test will not detect the virus. Therefore, the numbers are meaningless.
It follows that there is no scientific basis for confirming the existence of a pandemic.
Which in turn means that the lockdown / economic measures which have resulted in social panic, mass poverty and unemployment (allegedly to curtail the spread of the virus) have no justification whatsoever.
According to scientific opinion:
"if someone is tested by PCR as positive **when a threshold of 35 cycles or higher is used** (as is the case in most laboratories in Europe & the US), **the probability that said person is actually infected is less than 3%**, **the probability that said result is a false positive is 97%** (Pieter Borger, Bobby Rajesh Malhotra, Michael Yeadon, Clare Craig, Kevin McKernan, et al, Critique of Drosten Study)

> **3. The number of amplification cycles (less than 35; preferably 25-30 cycles);**
>
> In case of virus detection, >35 cycles only detects signals which do not correlate with infectious virus as determined by isolation in cell culture [reviewed in 2]; if someone is tested by PCR as positive when a threshold of 35 cycles or higher is used (as is the case in most laboratories in Europe & the US), the probability that said person is actually infected is less than 3%, the probability that said result is a false positive is 97% [reviewed in 3]

At the time of writing (March 2021), despite the WHO retraction, the test is being used extensively to hike up the numbers with a view to sustaining the fear campaign, justifying the ongoing lockdown policies as well as the implementation of the Covid vaccine.
The WHO confirms that the Covid PCR test procedure as applied is invalid. **It's a "pack of lies".**
There is absolutely no scientific basis for implementing the Covid Vaccine.
Both the WHO and the scientific assessment of **Pieter Borger**, et al (quoted above) confirm unequivocally that the tests adopted by governments to justify the lockdown and the destabilization of national economies are INVALID.
Moreover, those PCR tests are not routinely accompanied by a medical diagnosis of the patients who are being tested.

▶▶ Full text of the WHO directive dated January 13, 2021

***Michel Chossudovsky*** *is an award-winning author, Professor of Economics (emeritus) at the University of Ottawa, Founder and Director of the Centre for Research on Globalization (CRG), Montreal, Editor of Global Research. He has taught as visiting professor in Western Europe, Southeast Asia, the Pacific and Latin America. He has served as economic adviser to governments of developing countries and has acted as a consultant for several international organizations. He is the author of eleven books including The Globalization of Poverty and The New World Order (2003), America's "War on Terrorism" (2005), The Global Economic Crisis, The Great Depression of the Twenty-first Century (2009) (Editor), Towards a World War III Scenario: The Dangers of Nuclear War (2011), The Globalization of War, America's Long War against Humanity (2015). He is a contributor to the Encyclopaedia Britannica. His writings have been published in more than twenty languages. In 2014, he was awarded the Gold Medal for Merit of the Republic of Serbia for his writings on NATO's war of aggression against Yugoslavia.*

## New Ebola Outbreak Suggests the Virus Might Lurk for Years Inside People

Source: https://www.sciencealert.com/a-person-infected-in-ebola-s-last-epidemic-might-have-just-sparked-a-new-outbreak

Mar 17 – This time last month, national authorities in the African nation of Guinea declared they were dealing with an outbreak of Ebola deep in its rural southern region of Nzérékoré.
With the outbreak currently consisting of 14 confirmed cases and four suspected, the World Health Organization is employing a range of protective and tracing measures to contain the virus's spread.

Suspicions over the source of the cluster have so far focused on a 51-year-old nurse who died at the end of January, having sought help from both medical facilities and a traditional healer after a bout of high fever, vomiting, weakness, and diarrhea.
After first being diagnosed with typhoid and later malaria, it now appears her illness was caused by the far more deadly *Zaire ebolavirus*, a pathogen so deadly that at least five of the cases in the latest outbreak have already succumbed to its effects.
It's a tragic outcome for the woman and her family, who made up six of the the first seven known cases identified – the last being the healer she turned to for help.
Yet the consequences of the virus's unmitigated spread could be far worse. From late 2013 until 2016, the pathogen raged across the nations of Guinea, Liberia, and Sierra Leone in an outbreak that saw roughly 40 percent of the 28,610 infected die.
Smaller outbreaks have arisen since in the Democratic Republic of the Congo, but researchers now have reason to doubt that this most recent emergence is connected to any of those outbreaks, and may even have been lurking inside a carrier in Guinea for the past five years or more.
A genomic analysis of samples of the virus taken from four of the patients was carried out by the Guinea Center for Research and Training in Infectious Diseases (CERFIG) and the National Hemorrhagic Fever Laboratory, revealing they belonged to the West African epidemic's highly virulent Makona strain.
This conclusion was backed up by a second analysis on three samples conducted by the WHO reference laboratory at Senegal's Pasteur Institute, which compared the genes of these most recent virus specimens with 1,063 genomes from the 2013-2016 West Africa outbreak.
Taken together, the results tell a rather shocking, if rather speculative story, suggesting the nurse's husband may have quietly hosted the virus in his body years longer than anybody would have previously thought possible.
In general, it takes roughly a week or so for the Zaire ebolavirus to start causing problems in the human body, which commences with targeting a variety of immune cells to open the way to a rapid spread.
White cells called macrophages eventually catch up with the onslaught, gobbling up the cells in all-out war. The consequences lead to capillaries leaking and clots settling into vessels, putting whole organ systems at risk of collapse.
It's during this period that infected secretions of bodily fluids can most easily pass the virus on.
Studies on the infectiousness of Ebola tend to use the presence of these 'wet symptoms' as a way of defining an average infectious period, which is typically around five to 15 days.
Yet there are signs the virus might hang around inside the body for far longer, with its RNA detectable in urine after a month, sweat after about 40 days, and in semen more than a year.
Even if these examples reflect a talent for lying dormant months after recovery, a whole five years is a shocking stretch.
Nonetheless, the virus particles analyzed in this new outbreak have a great deal in common with the West Africa epidemic, and evidence suggests it was most likely not picked up from a local animal reservoir.
It's not impossible that the virus might have bounced from one human host to another during the past five years, but researchers from the Pasteur Institute aren't viewing it as probable either.
"This number of substitutions is far less than what would be expected during sustained human-to-human transmission," the team notes in its report.
**Even as a rare case, the finding challenges thoughts on how such outbreaks might start, and how to effectively communicate health and safety measures in affected communities.**

**Victims of Ebola already face heavy stigma in many African cultures, not just from others in their community but significantly in their own impression of self-worth.**

**While the message that Ebola in some instances remains transmissible many years after infection could help save lives, it's a statement that could also come with a heavy price.**

▶▶ **This research was published on virological.org** here, here, and here.

## Long COVID Symptoms Are Vanishing for Some Vaccinated Patients, And We Don't Know Why

Source: https://www.sciencealert.com/woman-with-months-of-long-covid-finds-her-symptoms-vanish-after-vaccination

Mar 18 – A woman who had long COVID said her symptoms were gone 36 hours after getting her second dose of COVID-19 vaccine, according to *The Washington Post*.

Arianna Eisenberg, 34, said she experienced muscle pains, insomnia, fatigue, and brain fog for eight months after getting sick. These symptoms are typical of what has become known as "long COVID".
But 36 hours after receiving a second dose of COVID-19 vaccine, her symptoms were gone, the *Post* reported.
Eisenberg's story is one of several describing a similar effect.
The *Philadelphia Inquirer* and the Huffington Post also reported on people for whom long COVID symptoms improved after vaccination.
Daniel Griffith, an infectious diseases clinician and researcher at Columbia University, told The Verge on March 2 that around a third of his long COVID patients reported that they were feeling better after the vaccine.
In a YouTube video, Gez Medinger, a science journalist who reports on long COVID, did a survey of 473 long haulers among support groups on Facebook, The Verge reported, around a third of whom saw their symptoms improve after vaccination.
One small study from the UK's University of Bristol, which has not been peer reviewed, looked at giving vaccines to people with long COVID-19 symptoms, per the *Washington Post* report.
The scientists gave the vaccine to 44 COVID long-haulers, and compared their reaction to a group of long-haulers who didn't get the vaccine.
They reported that those who had received the vaccine had a "small overall improvement in long COVID symptoms".
However, the authors said that this could be down to the placebo effect.
This is just one of a series of puzzling reports surrounding long COVID.
On March 3, Kaiser Health News reported that a 15 year-old dancer developed COPD, a disease which is usually seen in older people, after contracting COVID-19 last summer.
As reported by Insider's Aria Bendix, scientists also cannot explain why most of the people who develop long COVID are women, although some scientists think that it could be because women tend to mount stronger immune responses than men.
Recovery clinics for long COVID patients have been opening up, Insider's Sophia Ankel reported.
But the condition is still not well understood. The US National Institutes of Health has been given over $US1 ($1) billion by Congress to investigate long COVID.

## Virus found in hearts of many who die with Covid-19, scientists find

Source: https://www.thenationalnews.com/uae/health/virus-found-in-hearts-of-many-who-die-with-covid-19-scientists-find-1.1186314

Mar 18 – Sars-CoV-2 was found in the hearts of most people who died as a result of complications from the virus, a small study has found.
Scientists in the US examined about 1,000 pieces of heart tissue from 41 patients, in what is thought to be the most detailed study of its kind.
The virus, which causes Covid-19, was found to be present in the hearts of 30 of them.
It was only these patients who developed new abnormal heartbeats, which were fast, irregular or included early or extra heartbeats, compared with the other patients.
The surprise was that this respiratory virus makes a beeline for the cells lining blood vessels
Scientists do not know why the virus attacked the hearts of the patients.
“Comorbidities are present in many patients with Covid-19 with critical illness,” said the scientists, who carried out the study at Massachusetts General Hospital.
“However, cardiac inflammation was associated with neither the underlying medical conditions nor the composite risk factor scores.”
Instead, it correlated strongly with the duration of symptoms and hospital stay, suggesting heart damage may result in “many patients with a long Covid-19 illness prior to death”.
The authors pointed out the research focused on patients with fatal Covid-19 whose bodies underwent postmortem examinations.
They said the results might not be applicable to all patients dying with Covid-19.
“In a study of our hospital’s Sars-CoV-2 testing facility, the median age of all patients testing positive for Sars-CoV-2 during the spring of 2020 was 47, with 50 per cent being men, compared with a median age of 67 and 66 per cent men in our autopsy series.
“Thus, our observations may not be generalisable to all patients with Sars-CoV-2 infection.”
Some doctors have questioned whether Covid-19 is a vascular disease, rather than a respiratory one, due to its ability to cause clots.
In a study published last summer, researchers compared the lung tissues of people who died from complications related to Covid-19 with those who died from influenza.

Surprisingly, they found that lung tissue of Covid-19 patients had nine times as many tiny blood clots as those of the flu patients. In addition, the endothelial tissue in coronavirus-infected lungs exhibited "severe" injury.
"The surprise was that this respiratory virus makes a beeline for the cells lining blood vessels, filling them up like a gumball machine and shredding the cell from the inside out," Dr William Li, a vascular biologist who led the study, told broadcaster NPR.
"We found blood vessels are blocked and blood clots are forming because of that lining damage."

## CBRN defense capabilities within the biological defense domain based on Covid-19 Lessons Learned (SARS-CoV-2 Response Report)

The COVID-19 pandemic has illustrated how unprepared the world and NATO were to handle a pandemic of this scale, even after the improvements made in civil and military biological defence and consequence management based on previous pandemics, most recently influenza A(H1N11). The security and resilience of NATO depends substantially on NATO and its member states being prepared for future pandemics.
The Joint CBRN Defence Centre of Excellence (JCBRND Defence COE) initiated a comprehensive report to address CBRN defence capabilities within the biological defence domain based on COVID-19 observations, lessons identified, and lessons learned. The JCBRN Defence COE intends to provide CBRN expertise and experience to the benefit of the Alliance in prevention, protection, and recovery. In addition, the JCBRN Defence COE intends to continue to provide operations support to NATO's current and future crisis efforts; especially with our CBRN reachback, modelling and simulation, and strategic-level and operational-level planning.

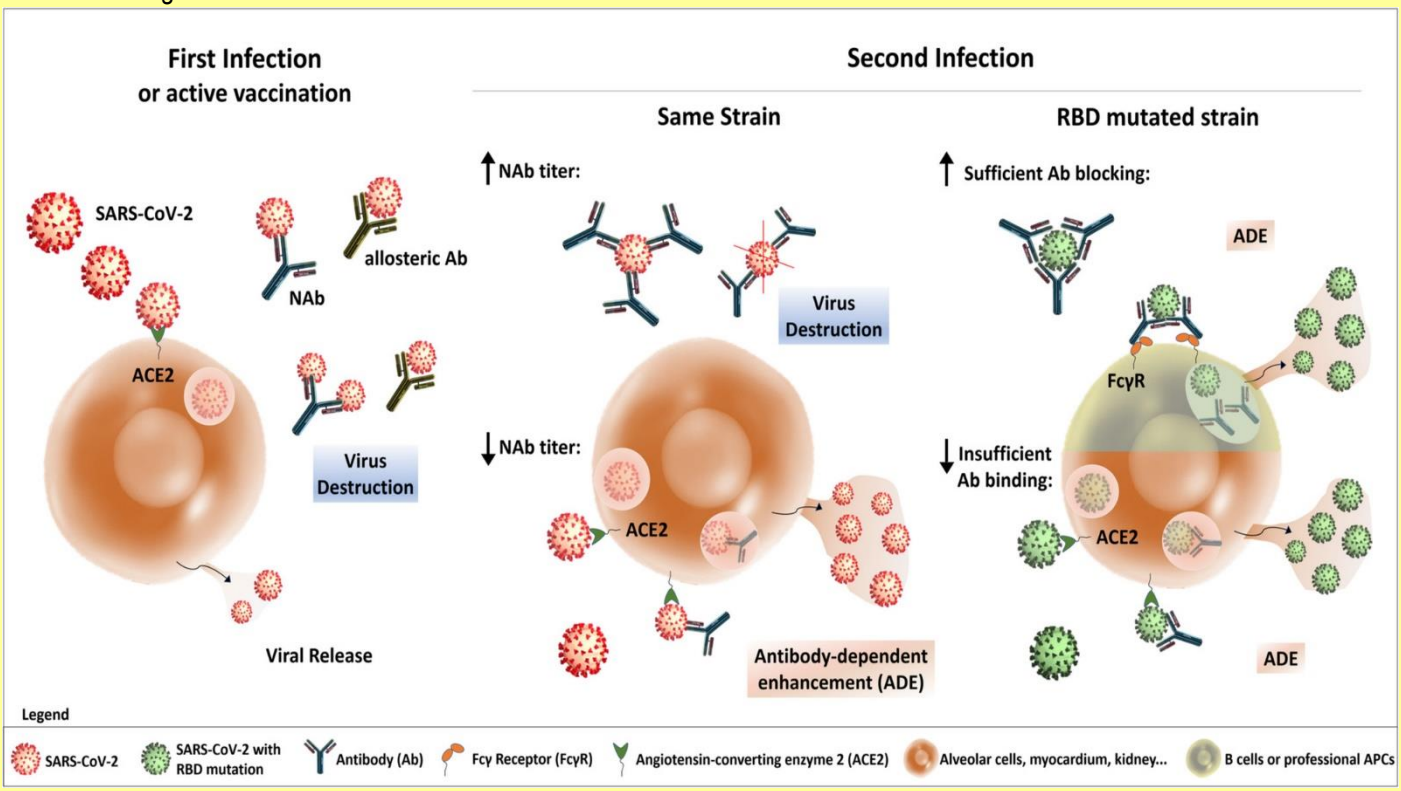
▶▶ **A presentation on the report can be found** here.
Author/Photos: Lieutenant Colonel Bernd Allert, Deputy Director/Transformation Support Department Chief/Doctrines & Terminology Section, JCBRN Defence COE, DEU - A

Antibody-Dependent Enhancement and the Coronavirus Vaccines
**By Derek Lowe**
Source: https://blogs.sciencemag.org/pipeline/archives/2021/02/12/antibody-dependent-enhancement-and-the-coronavirus-vaccines

Feb 12 – I'm getting a lot of queries about antibody-dependent enhancement these days, and I can only assume that's because there's a lot of talk about this making the rounds of various social media platforms. Many of the people who are contacting me sound a lot more worried than I would have thought, so that prompts me to follow up on the post I did on the subject back in December.

**What's ADE, Again?**
First, a quick recap. ADE is a problem that has shown up in several sorts of viral infection, although it also has to be said that there are other viruses in which it's never really been seen at all. It happens when a previous infection or vaccination has generated antibodies that fit some specific criteria. First, these existing antibodies have to be non-neutralizing against the new viral infection: that is, they bind to the second virus, but not in a way that shuts down its activity. It's important to realize, though, that *all* immune responses to a viral infection generate a mixture of neutralizing and non-neutralizing antibodies. That's one of the things about the immune system – it revs up production of a wide variety of antibodies, selected from the untold billions of them circulating around in your bloodstream. Some of them bind to one part of the pathogen, and some to another. And they bind in different conformations, sticking to different parts of the surface of the invading virus from different directions.
Some of these are inevitably going to be more effective than others at stopping that virus' activity – and remember as well that there are several ways that can happen, too. An antibody can bind to and cover some key part of a virus protein without which it can't infect human cells (in the case of the current coronavirus, that could be the receptor-binding domain (RBD) out on the end of the Spike proteins that decorate its surface. Antibodies can also cause aggregation, sticking viral particles in clumps that can't function as they would otherwise. And they can also signal various kinds of defensive cells to attack an antibody-bound viral particle directly and destroy it.
But if none of these work as hoped for, then you have a non-neutralizing antibody. The immune system is actually optimized for selecting and amplifying the neutralizing ones, though. So it's usually not a problem having the non-neutralizing ones around at the same

time, since the other more useful potent ones are out there taking care of business. But what if you don't have any of those, just the non-neutralizing ones?




Potential pathways of aggravation of SARS-CoV-2 infection by ADE. Initially, the spike protein of SARS-CoV-2 binds through the RBD to angiotensin-converting enzyme 2 (ACE2) on the host cell surface for virus invasion. After some days, humoral responses develop against the virus, eliminating infection through allosteric and neutralizing antibodies (NAbs). After a second infection with the same SARS-CoV-2 strain virus destruction may occur, if the NAb titer is high enough. However, in case of a low NAb titer, ADE may be observed following binding of the SARS-CoV-2/antibody complex to ACE2, internalization of the complex and IgG induced stimulation. In addition, immunized patients may be re-infected with a different SARS-CoV-2 strain, such as a RBD-mutated strain. In this context, already existing Abs could bind with reduced affinity to mutated RBD, inducing low levels of SARS-CoV-2/antibody complexes, following by internalization through the ACE2 receptor and ADE. On the other hand, immunized patients re-infected by an RBD-mutated strain may present sufficient Ab blockade of the heterotypic SARS-CoV-2 strain. In this case, SARS-CoV-2 covered by Abs may connect to Fcγ receptors II (FcγRII) on the surface of B cells or other professional antigen-presenting cells (APCs). This receptor mediates SARS-CoV-2 invasion into immune cells, further spreading viral infection into all organs and ADE.

That's what happens, for example, with Dengue fever. Dengue comes in four different varieties (which is probably the single hardest thing about trying to treat it or prevent it through vaccination). The antibodies you generate that can get you past one of the infections really don't match up well enough with the others to be effectively neutralizing, and if you get one of those later on you can actually get a worse case of Dengue than you would have had otherwise. That's the "enhancement" part of ADE. As mentioned in that December post, there are at least two different mechanisms that have been worked out for this. One of them (the most straightforward) seems to be that when some types of non-neutralizing antibody are stuck to the denguevirus particle, that it actually speeds up its entry into human monocyte cells. The monocyte membrane proteins treat the incoming antibody surface like an incompetent bar doorman letting people through with fake IDs: "Looks good to me, come on in". Which is exactly what you don't want.

That December post has links to times this has been seen with vaccinations, too: there has been one RSV vaccine candidate and one measles vaccine candidate that have certainly shown this problem (the antibodies they generated made the next exposure even worse). It's not common, by any means, but it can most certainly happen. And you can believe that vaccine developers are aware of this. Which brings us to:

**ADE and Coronaviruses**

Now, when SARS appeared in the human population back in 2003, there was a lot of work done on it to try to make vaccines, should it erupt again. And (links in the earlier post) some of these candidates did show signs of ADE. When vaccinated animals were re-exposed to the same virus, some of them got even sicker than usual. (As an aside, this seems to have been through yet another different mechanism: an altered T-cell response, rather than a direct effect of binding antibodies on cell entry). Immunology being what it is, this certainly didn't happen in every animal. Every mammal's immune system is different, like a fingerprint, and it's clear that with such a vaccine some people (through sheer bad luck, impossible to predict with current techniques) would be more vulnerable.

What you can do is see what the statistics are like – if you see any sign of ADE at all in an animal model experiment, that's bad news, because the sample sizes for these are far, far smaller than the population that's going to be getting vaccinated. And that would mean completely unacceptable risks in that human population. So animal studies (both rodents and primates) are specifically designed to look for such effects, and if ADE is seen, well, it's back to the drawing board. You'll also be watching your clinical trial data and (indeed) the eventual real-world rollout for any signs of this as well.

The SARS experience taught us a lot of extremely useful lessons, as it turned out. SARS-Cov-2 is rather closely related to the 2003 SARS coronavirus, and if you're going to have a worldwide pandemic, you're far better off with one that's so much like something you've already poured R&D investments into! In this case, the two big take-homes were that coronavirus vaccines could indeed suffer from ADE, and that *this seemed to depend on which protein you chose to base your vaccine around*. Specifically, it was the vaccines that targeted the N (nucleoprotein) antigen of the coronavirus that had ADE problems, ~~while the ones that targeted the S (Spike) protein did not~~. *Update: this isn't accurate. There was trouble after immunization with a nucleoprotein-directed vaccine, but ADE could also be seen with some of the Spike-directed vaccine candidates as well – see reviews here, here, and here.* That experience was thoroughly taken to heart in the vaccine developments of the last year: no one, to the best of my knowledge, even bothered to target the SARS-Cov-2 N protein at all, for just this reason. If you look at the antibodies generated in people who've been infected by the virus, they most certainly did make N-targeting ones, along with Spike-targeting ones and antibodies directed against the various ORF proteins. But for vaccine work, everyone has stuck with the Spike.

**The Current Vaccine Data: Any Sign of ADE?**

So now the Moderna and Pfizer/BioNTech vaccines have been rolled out in many parts of the world, along with the AstraZeneca/Oxford, Gamaleya, and CanSino adenovirus vector vaccines. Those look to be joined soon by J&J's adenovirus vector and Novavax's recombinant protein subunit vaccines, and likely more after that. So here's the key question: did any of these show ADE hints during their development? And are any of them showing signs of it now?

The short answers: they did not. And they are not. Antibody-dependent enhancement was specifically tested for in the animal models as these candidates were being developed (re-exposure of vaccinated animals to coronavirus to see how protective the vaccine was). And no cases of more severe disease were seen – I've gone back through the reported preclinical studies, and I don't think I've missed one, and what I'm seeing is *not one single case* of ADE for any of them. Indeed, as mentioned above, if something like that had shown up, it would have immediately released a bucket of clin-dev and regulatory sand into the gears of the whole project.

How about the human clinical trials? Again, no signs of ADE were seen. This is a bit less definitive, since we did not run deliberate "Here, have another blast of virus" challenges on the human participants the way we did in the preclinical studies. But at the same time, these trial participants were out there in the real world being monitored for signs of infection. The dramatic plots of the data after even one dose of the vaccines speak for themselves: the trials did hardly saw people getting infected at all after vaccination, and most certainly not with even more severe disease. To the contrary: one of the big features of the vaccines is that *across the board* they seem to almost totally wipe out the appearance of severe coronavirus symptoms. We're still collecting data on transmissibility after vaccination and so on (things are looking good, though), but what seems to be beyond doubt is that the vaccinated subjects, over and over, show up with no severe coronavirus cases and no hospitalizations.

That is the *opposite of what you would expect* if ADE were happening. Remember, the bad thing about antibody-dependent enhancement is that it leads to more severe disease when you're exposed again to the pathogen (or when you're exposed after being vaccinated for it). And we're just not seeing that. At all. We are, and I am very, very happy to be able to say this, seeing exactly the reverse. Watching the real-world data will alert us to any of the potential mechanisms (antibodies, T-cell effects, etc.) and nothing is showing up.

**What About the Variants?**

That's a really good question. The earlier trials were run against what I've been calling "coronavirus classic", and now we have several variant strains to contend with. The worse

case is that one or more of these spread out to be as different as (say) the four types of Dengue fever, and that the antibodies raised by vaccination are inadequate to deal with them. That would mean several bad things: that people who are vaccinated would still be at significant risk for a regular infection, and even worse, that they cold be at risk for an even worse one than if they'd never gotten vaccinated at all. That seems to be the fuel for the current brushfire of ADE worries.

The news about vaccine efficacy against these variants is actually not as bad as you might have thought, based on some news reports. The B.1.1.7 variant (the one that was first characterized in the UK) seems actually to be handled quite well by the various vaccines, with only a very small dropoff in efficacy (and definitely not enough to start worrying about ADE). The B.1.351 variant that was first characterized in South Africa is a bit tougher. There's no doubt that the antibodies generated by the various vaccines have a harder time with this one, but it looks like the degree of dropoff varies. On one end, the AstraZeneca/Oxford vaccine appears to lose potency to a degree that the South African government stopped vaccinating with it entirely. Now, that may or may not have been a hasty decision – the vaccine, even in South Africa, is a hell of a lot better than nothing – but that's another topic. Meanwhile the J&J and Novavax vaccines show less efficacy against B.1.351, although apparently not to the degree that the AZ/Oxford one showed, and word has come within the past few days that the Moderna and Pfizer/BioNTech vaccines may be holding up even better than that: a drop in potency in lab experiments, but maybe not enough to even show up much in the real world population at all.

And so far, I have been able to find *no reports of more severe disease* after vaccination in South Africa. Please correct me if I'm wrong, those of you following this closely, but this would mean that there is (so far) no evidence of antibody-dependent enhancement against even this variant. There are of course other variants, and we most certainly need to keep an eye on them. But variants are what viruses do. This isn't something weird and sinister – it's expected and we know what to look out for. I'm going to have another post on these strains up on Monday or Tuesday, but I'll just say that I'm actually relieved that we're weathering these as well as we are.

**The Bottom Line**

So, here's the short version: no sign of ADE during the preclinical animal studies. No sign during the human clinical trials. No sign during the initial vaccine rollouts into the population. And (so far) no sign of ADE even with the variant strains in different parts of the world. We have things to worry about in this pandemic, but as far as I can tell today, antibody-dependent enhancement does not seem to be one of them. I understand why people would worry about it, and want to avoid it. But if you're coming across reports that say that it's a real problem right now and that you should avoid getting vaccinated because of it, well, I just don't see it. Some of that is well-intentioned caution, and some of it is probably flat-out anti-vaccine scaremongering. Anyone with different data or different impressions, well, that's why the comments are open around here!

***Derek Lowe**, an Arkansan by birth, got his BA from Hendrix College and his PhD in organic chemistry from Duke before spending time in Germany on a Humboldt Fellowship on his post-doc. He's worked for several major pharmaceutical companies since 1989 on drug discovery projects against schizophrenia, Alzheimer's, diabetes, osteoporosis and other diseases.*

## COVID – Bioethics, Eugenics and "Death Panels": "A Warning"

## EU regulator declares AstraZeneca vaccine safe, but experts fear damage has been done

Source: https://edition.cnn.com/2021/03/18/europe/ema-astrazeneca-vaccine-blood-clots-decision-intl/index.html

Mar 18 – The European Union's medicines regulator has concluded that the Oxford-AstraZeneca Covid-19 vaccine is safe to use after several EU countries suspended their rollouts following reports that it could be linked to blood clots.

The European Medicines Agency (EMA)'s executive director Emer Cooke said the agency had "come to a clear scientific conclusion: this is a safe and effective vaccine."

Cooke said the group did not find that the vaccine causes clotting, though it could not rule out definitively a link to a rare blood clotting disorder, of which seven cases have been

reported out of several million doses given in the UK. She said the benefits of using the vaccine outweighed the risk.
The committee "concluded that the vaccine is not associated with an increase in the overall risk of thromboembolic events, or blood clots," Cooke said.
The agency's decision comes after more than a dozen European countries halted their use of the vaccine, citing reports of a handful of patients across Europe who developed clotting after being inoculated.
Most of the countries said they would await the EMA's green light before resuming rollouts, but concerns remain about the impact of the suspensions on vaccine hesitancy across the continent.
"I want to reiterate that our scientific position is this: this vaccine is a safe and effective option to protect citizens against Covid-19," Cooke said at a press conference Thursday.
"It demonstrated that at least 60% efficacy in clinical trials and preventing coronavirus disease, and in fact the real world evidence suggests that the effectiveness could be even higher than that."
The group said it recommended raising awareness of blood clot reports so that they could be further analyzed. But they said those reports were rare, and that more than 7 million people have received the vaccine in the EU.
Virtually all of western Europe had temporarily stopped using the shot in recent days, even amid a third wave of coronavirus infections across the region, after a small number of reports of clots emerged.
The death of a person in Austria, a woman in Denmark and a third patient in Norway sparked the suspensions. But the decisions were criticized by much of the medical community, and other countries continued to back the use of the vaccine -- including the UK, which has given out more than 11 million AstraZeneca doses so far.
In the EU, leaders will now face the question of how to rebuild any trust in the AstraZeneca vaccine that has been lost over the past week. The bloc's rollout of the jab has stumbled from one obstacle to another since it was approved for use in January, with governments scrambling to secure limited supplies of the jab while simultaneously casting doubts over its efficacy and safety.
Milan's largest vaccine center told CNN it would resume AstraZeneca vaccinations on Friday if given the green light from the EMA, and would overbook appointments in an attempt to make up for the shortfalls of the past few days. Ireland's Prime Minister had earlier told CNN he hoped his country could "catch up fairly quickly" once the vaccination program resumed.
But experts fear that some damage has already been done. In France, an Elabe poll showed this week that only 22% of the population now trusts the AstraZeneca vaccine. Remi Salomon, a senior French hospitals' official, told BFM TV on Thursday that "people are being overly cautious" in the country and that he feared "people will not interpret" the suspensions in "the right way."
"A scare like this has the potential to increase vaccine hesitancy," Michael Head, senior research fellow in Global Health at the University of Southampton in Britain, told CNN earlier in the week. "These vaccines are to protect against a pandemic virus. There is an urgency to the rollout."

**'Safe and effective'**

The EMA did not explicitly advise countries to resume their rollouts, though most have indicated they would do so if the agency reached this conclusion.
But Cooke noted during Thursday's press conference that "a lot of member states are waiting for this outcome," and said the conclusions would allow those countries to "make informed decisions."
And in some European countries, the clamor to make up for lost time began immediately.
"We must resume vaccination as quickly as possible," Michel Chassang, a French GP and president of the Confederation Of French Medical Trade Unions, told BFM after the EMA announcement.
"The only way to stop the circulation of this virus is precisely to make sure people are vaccinated," he said, admitting that a loss of confidence in the vaccine could hamper those efforts. "It won't be easy, we will swim against the tide, because this vaccine (has) now got bad press ... and even since the start."
Its rollout on the continent has been affected by myriad problems; several countries cast doubts over whether it was effective in older people last month, before subsequently concluding that it was.
The EU has also been involved in a tug-of-war over limited supplies after AstraZeneca said it was unable to deliver its full amount of promised supplies; Italy blocked exports of the shot to Australia just days before suspending its rollout.
Shortly before the EMA's announcement, Britain's regulatory agency ruled that "the available evidence does not suggest" the vaccine caused clotting. It said it will continue to review five reports of blood clots in the country, out of more than 11 million people it had vaccinated.
"There is no evidence that that blood clots in veins is occurring more than would be expected in the absence of vaccination, for either vaccine," MHRA chief executive June Raine said, referring to the Pfizer vaccine which the UK is also rolling out.

"You should therefore continue to get your jab when it is your turn," she said. AstraZeneca has itself repeatedly insisted its product is safe.
Real-world data from the UK, where far more doses have been given, has shown that it is already having an impact there; a single dose of the vaccine reduced the risk of hospitalization from Covid-19 by more than 80% in people aged over 80, data from Public Health England showed earlier this month. The vaccine is given in two doses, though countries differ in how far apart they are spreading those shots.
Cooke cited such data during the briefing, calling the vaccine "a safe and effective option to protect citizens against Covid-19."
AstraZeneca isn't the only vaccine available in Europe. Doses of the BioNTech-Pfizer and Moderna vaccines are currently being rolled out to Europeans, while the first deliveries of the Johnson & Johnson vaccine aren't expected to arrive until mid-April. On Tuesday, Pfizer agreed to accelerate delivery of 10 million doses of its Covid-19 vaccine to the EU, days after AstraZeneca said it would have a "shortfall" in planned vaccine shipments to the bloc.

## The European Medicines Agency's COVID-19 Vaccine Leaks: Hacks, Regulatory Pressures and Manufacturing Concerns

Source: https://healthpolicy-watch.news/the-ema-covid-19-vaccine-leaks-hacks-regulatory-pressures-and-manufacturing-concerns/

Feb 23 – A series of recent leaks of emails and documents surrounding the EMA's approval of the first COVID-19 vaccine by Pfizer/BioNTech highlight the **intense political pressures regulatory agencies are under during the pandemic** – as well as an oft-forgotten aspect of vaccine approvals – the quality control of vaccines during the leap from clinical trials to large-scale commercial production. Priti Patnaik & Lucien Hordijk explore.

## Differential Effects of Antiseptic Mouth Rinses on SARS-CoV-2 Infectivity In Vitro

**By Chuan Xu, Annie Wang, Eileen R. Hoskin, et al.**
*Pathogens* 2021, *10*(3), 272
Source: https://www.mdpi.com/2076-0817/10/3/272

### Abstract

Severe acute respiratory syndrome-related coronavirus (SARS-CoV-2) is detectable in saliva from asymptomatic individuals, suggesting a potential benefit from the use of mouth rinses to suppress viral load and reduce virus spread. Published studies on the reduction of SARS-CoV-2-induced cytotoxic effects by mouth rinses do not exclude antiseptic mouth rinse-associated cytotoxicity. Here, we determined the effect of commercially available mouth rinses and antiseptic povidone-iodine on the infectivity of replication-competent SARS-CoV-2 viruses and of pseudotyped SARS-CoV-2 viruses. We first determined the effect of mouth rinses on cell viability to ensure that antiviral activity was not a consequence of mouth rinse-induced cytotoxicity. **Colgate Peroxyl** (hydrogen peroxide) exhibited the most cytotoxicity, followed by povidone-iodine, chlorhexidine gluconate (CHG), and **Listerine** (essential oils and alcohol). The potent antiviral activities of Colgate Peroxyl mouth rinse and povidone-iodine were the consequence of rinse-mediated cellular damage when the products were present during infection. The potency of CHG was greater when the product was not washed off after virus attachment, suggesting that the prolonged effect of mouth rinses on cells impacts the antiviral outcome. To minimalize mouth rinse-associated cytotoxicity, mouth rinse was largely removed from treated viruses by centrifugation prior to infection of cells. A 5% (v/v) dilution of Colgate Peroxyl or povidone-iodine completely blocked viral infectivity. A similar 5% (v/v) dilution of Listerine or CHG had a moderate suppressive effect on the virus, but a 50% (v/v) dilution of Listerine or CHG blocked viral infectivity completely. Mouth rinses inactivated the virus without prolonged incubation. The new infectivity assay, with limited impacts of mouth rinse-associated cytotoxicity, showed the differential effects of mouth rinses on SARS-CoV-2 infection. Our results indicate that mouth rinses can significantly reduce virus infectivity, suggesting a potential benefit for reducing SARS-CoV-2 spread.



▶▶ View Full-Text

# Astronauts test virus-killing substance in space station

Source: https://www.upi.com/Science_News/2021/03/19/nasa-international-space-station-tests-virus-microbes-boeing/3101615926092/


NASA astronaut Shannon Walker touches antimicrobial surface coatings on various surfaces as part of a test for Boeing aboard the International Space Station. Photo courtesy of NASA

Mar 19 – Astronauts on the International Space Station are testing surface coatings intended to kill viruses and germs, including the coronavirus that causes COVID-19.

The test for The Boeing Co. has astronaut Shannon Walker touch a dozen coated items daily -- like seatbelt buckles and plastic and cloth samples -- to transfer microbes commonly found on humans to them.

After six months in space, the items will return to Earth in early May, where researchers will determine how the microbes fared on the treated surfaces.

NASA already has determined from previous experiments that microbes, especially bacteria, grow more readily in the microgravity of orbit.

Boeing hasn't revealed exactly what the surface coating is, but a spokesman confirmed that it is a polymer substance sprayed onto the items.

That is similar to a product used in some commercial aircraft, which is called SurfaceWise2. It's made by Dallas-based Allied BioScience, which received an emergency use authorization from the U.S. Environmental Protection Agency to battle the coronavirus.

Excessive amounts of microbes in food or water aboard the space station could create health risks, said Liz Warren, senior program director for the International Space Station U.S. National Laboratory, which manages all science aboard the orbiting platform.

"If you can, for example, understand what makes microbes more virulent in microgravity. that may help you design new antibiotics or other tools to combat microbes for us here on Earth."

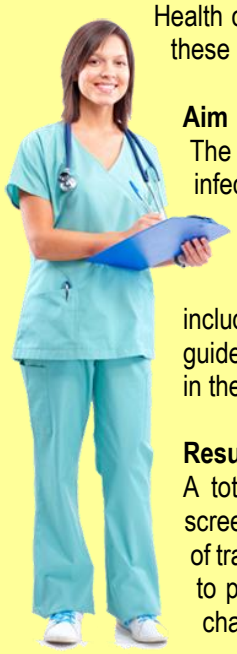
The National Laboratory found the experimental substance was safe for use in the space station, Warren said.
Boeing tests the substance for use in aircraft and spacecraft, said Mike Delaney, Boeing's chief aerospace safety officer. The company is the primary contractor for the space station, so it may want to deploy the antimicrobial coating on surfaces there in the future, he said.
"While testing continues on orbit and on Earth, we're encouraged by the preliminary results of the antimicrobial chemical compound," Delaney said in an email.
Much of the work on such antimicrobials has been led in the United States by Charles Gerba, professor of microbiology and leading anti-microbial researcher with the University of Arizona.
"SurfaceWise2 creates an invisible barrier on surfaces, which physically breaks down and kills virus cells," Gerba said in an email, adding that the Boeing substance acts in the same manner.
The goal is to coat high-touch areas, such as seats, armrests, tray tables and overhead bin doors, he said.
"We have published work showing hospital-acquired infections can be reduced by 36% by antibacterial coatings that last up to 90 days," Gerba said.
Walker and three other astronauts are scheduled to return home with the samples in sealed containers during the second week of May in a SpaceX Crew Dragon capsule.

# Factors Influencing Health Care Workers' Willingness to Respond to Duty during Infectious Disease Outbreaks and Bioterrorist Events: An Integrative Review

**By Eleanor J. Murray, Matt Mason, Vanessa Sparke and Peta-Anne P. Zimmerman**

*Prehospital & Disaster Medicine | 23 February 2021*

Source: https://www.cambridge.org/core/journals/prehospital-and-disaster-medicine/article/factors-influencing-health-care-workers-willingness-to-respond-to-duty-during-infectious-disease-outbreaks-and-bioterrorist-events-an-integrative-review/5A04E842D638C9C0246F7268AA922A5A



## Abstract

Infectious disease emergencies are increasingly becoming part of the health care delivery landscape, having implications to not only individuals and the public, but also on those expected to respond to these emergencies. Health care workers (HCWs) are perhaps the most important asset in an infectious disease emergency, yet these individuals have their own barriers and facilitators to them being willing or able to respond.

**Aim**

The purpose of this review was to identify factors affecting HCW willingness to respond (WTR) to duty during infectious disease outbreaks and/or bioterrorist events.

**Methods**

An integrative literature review methodology was utilized to conduct a structured search of the literature including CINAHL, Medline, Embase, and PubMed databases using key terms and phrases. PRISMA guidelines were used to report the search outcomes and all eligible literature was screened with those included in the final review collated and appraised using a quality assessment tool.

**Results**

A total of 149 papers were identified from the database search. Forty papers were relevant following screening, which highlighted facilitators of WTR to include: availability of personal protective equipment (PPE)/vaccine, level of training, professional ethics, family and personal safety, and worker support systems. A number of barriers were reported to prevent WTR for HCWs, such as: concern and perceived risk, interpersonal factors, job-level factors, and outbreak characteristics.

**Conclusions**

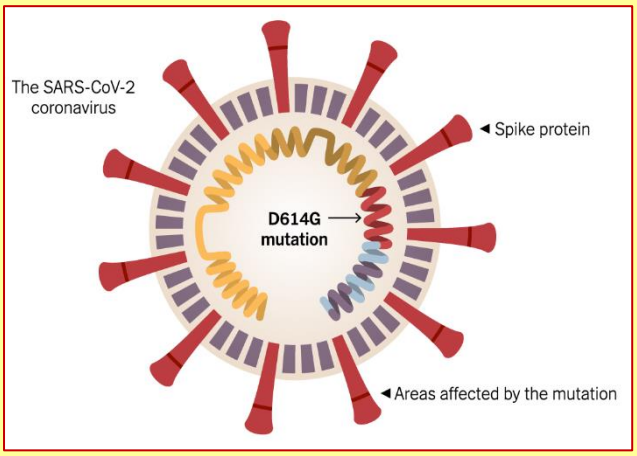
By comprehensively identifying the facilitators and barriers to HCWs' WTR during infectious disease outbreaks and/or bioterrorist events, strategies can be identified and implemented to improve WTR and thus improve HCW and public safety.

# SARS-CoV-2 D614G Mutation Stabilizes Spike Protein, May Explain Faster Spread

Source: https://www.genengnews.com/news/sars-cov-2-d614g-mutation-stabilizes-spike-protein-may-explain-faster-spread/

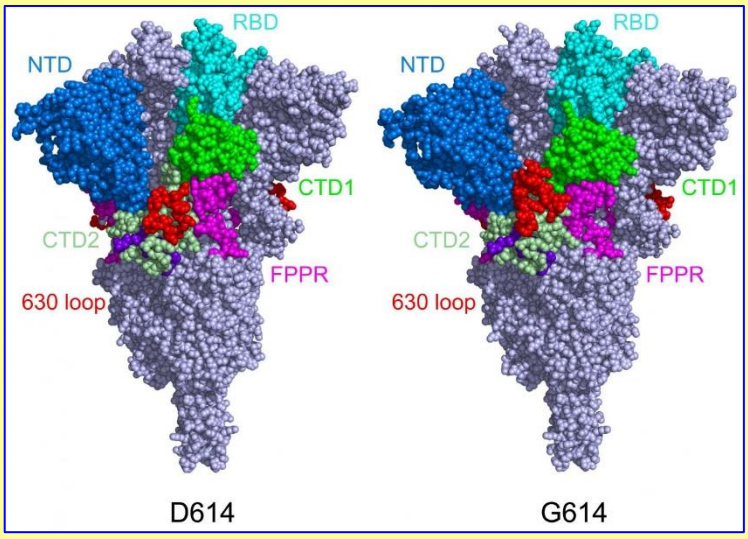
Mar 19 – The SARS-CoV-2 variants that have emerged in the past few months have attracted an immense amount of speculation. Specifically, whether the mutations may confer an advantage to the virus, render our antibodies ineffective, and lead to vaccine escape. New research has uncovered why the G614 strain (with a substitution for aspartic acid by glycine at position 614 in the spike protein) and its recent variants—which are now the dominant circulating forms of the virus—facilitate rapid viral spread.

The work, led by Bing Chen, PhD, at Boston Children's Hospital, analyzed how the structure of the spike protein changes with the D614G mutation. Using cryo-electron microscopy (cryo-EM), which has resolution down to the atomic level, they report structures of a full-length G614 spike trimer which adopts three distinct prefusion conformations differing primarily by the position of one receptor-binding domain (RBD). Chen's team found that the D614G mutation makes the spike more stable as compared with the original SARS-CoV-2 virus.




This model shows the structure of the spike protein in its closed configuration, in its original D614 form (left) and its mutant form (G614). In the mutant spike protein, the 630 loop (in red) stabilizes the spike, preventing it from flipping open prematurely and rendering SARS-CoV-2 more infectious. [Bing Chen, PhD, Boston Children's Hospital]

This work is published in *Science*, in the paper, "Structural impact on S ARS-CoV-2 spike protein by D614G substitution."




In the original coronavirus, the spike proteins would bind to the ACE2 receptor and then dramatically change shape, folding in on themselves. This enabled the virus to fuse its membrane with our own cells' membranes and get inside. However, as Chen and colleagues reported in July 2020, the spikes would sometimes prematurely change shape and fall apart before the virus could bind to cells. While this slowed the virus down, the shape change also made it harder for our immune system to contain the virus.

"Because the original spike protein would dissociate, it was not good enough to induce a strong neutralizing antibody response," said Chen.

When Chen and colleagues imaged the mutant spike protein, the authors noted that a loop disordered in the D614 spike trimer wedges between domains within a protomer in the G614 spike. This added interaction, they added, appears to "prevent premature dissociation of the G614 trimer, effectively increasing the number of functional spikes and enhancing infectivity, and to modulate structural rearrangements for membrane fusion." In short, the more functional spikes are available to bind to cells' ACE2 receptors, making the virus more infectious.

The researchers found that the D614G mutation stabilizes the spike by blocking the premature shape change. Interestingly, the mutation also makes the spikes bind more weakly to the ACE receptor, but the fact that the spikes are less apt to fall apart prematurely renders the virus overall more infectious.

"Say the original virus has 100 spikes," Chen explained. "Because of the shape instability, you may have just 50% of them functional. In the G614 variants, you may have 90% that are functional, so even though they don't bind as well, the chances are greater that you will have infection."

Chen proposes that redesigned vaccines incorporate the code for this mutant spike protein. The more stable spike shape should make any vaccine based on the spike more likely to

elicit protective neutralizing antibodies, he said. Indeed, the Moderna, Pfizer, and Johnson & Johnson vaccines are all based on the spike protein.
Chen and his colleagues are further applying structural biology to better understand how SARS-CoV-2 binds to the ACE2 receptor, with an eye toward therapeutics to block the virus from gaining entry to our cells.
In January, the team showed in *Nature Structural & Molecular Biology* that a structurally-engineered "decoy" ACE2 protein binds the virus 200 times more strongly than the body's own ACE2. The decoy potently inhibited the virus in cell culture, suggesting it could be an anti-COVID-19 treatment. Chen is now planning to advance this research into animal models.

## How the West Lost COVID

### How did so many rich countries get it so wrong? How did others get it so right?

**By David Wallace-Wells**
Source: https://nymag.com/intelligencer/2021/03/how-the-west-lost-covid-19.html

It is January 2021, and the Florida-born, Edinburgh-based professor of global public health is looking back on the pandemic year, marveling and despairing at opportunities lost. From early last winter, Sridhar has been among the most vocal critics of the shambolic U.K. response — urging categorically more pandemic vigilance, which she believed might have yielded a total triumph over the disease, a cause that has picked up the shorthand "Zero COVID." "This is where I started," Sridhar says. "An elimination approach to the virus. My mind never went, 'Oh, we should treat this like flu.' It started off with, like, 'We treat it like SARS until I see evidence otherwise.'"
In 2003, SARS had been eliminated after only 8,000 infections; its biggest foothold outside Asia was in Canada, which reported just a few hundred suspected cases. With COVID, Sridhar says, "I was following the response in China. They went into lockdown. You saw New Zealand pivoting that way and then Australia after." But not the U.K., where an erratic series of scientific advisories pushed the government first to embrace a target of herd immunity, then to backpedal, but not enough. Sridhar describes those advisories with retrospective horror, an inexplicable preemptive surrender by the public-health apparatus.
"Basically, going back to January, they'd be like, 'China's not going to control it; 80 percent of the population is going to get it; all efforts to contain it are going to fail; we have to learn to live with this virus; contact tracing and testing make no sense; this is going to be everywhere; right now we need to build up hospitals' — which they didn't even do. But they really didn't think it was stoppable," she says. "And then all of a sudden you started to see, in February, South Korea stopping it, Taiwan stopping it, and China stopping it. Then, in March, New Zealand. And then Australia. And then there's this realization of, 'Oh, wow. Actually, it is controllable.'"
At the beginning of March, South Korea was averaging more than 550 new daily confirmed cases, compared with just 53 in the U.K. At the end of the month, South Korea had 125; the U.K. was at 4,500 and climbing. "In the UK we have had nine weeks to listen, learn and prepare," Sridhar wrote angrily in the *Guardian*, berating the British regime for failing to establish basic systems for supplies, testing, and contact tracing. "Countries such as Senegal were doing this in January," she wrote. "We had a choice early on in the UK's trajectory to go down the South Korean path," but instead the country was at risk of sleepwalking from small failures into giant ones. "We must race to make up for the time lost during two months of passivity," Sridhar concluded. Of course, the country didn't, and now its death toll measures in the six figures. Sound familiar?
"I mean, the U.K. was consumed with Brexit," Sridhar says now. "The U.S. had Trump. To them, this is something happening somewhere else across the world. And they just want to ignore it as long as they could." As the pandemic progressed, both exhausted countries flipped from denial to capitulation, choosing to treat almost any caseload plateau as an opportunity to relax, no matter how high a level of ongoing spread it represented. "It was like, 'We're gonna have a great summer and holidays,'" she says, laughing ruefully. "Can you believe it? Last summer, I was up on panels with Tory politicians where they're saying, 'You're safer flying to Greece or to Spain than being in the U.K. because they have lower rates than us.' And they are 100 percent serious! It's like it's a basic human right, to have a holiday and go abroad, and we can't possibly take it away. Everyone was saying elimination was impossible. You still hear it, right? 'Impossible, it's impossible.' Which is kind of the choice that we've made here. Elimination is just too difficult."
Sridhar is pointing her finger at British authorities, but in her diatribe you could comfortably substitute for the U.K. almost any nation in Europe. In its broad strokes, the picture has been the same in Belgium and France and Italy and the Czech Republic, too, in Portugal and Poland, Sweden and Switzerland and Spain, even Germany and the Netherlands, and dozens of other countries across the Continent. From the spring panic through the fall surge, pandemic policy differed nation to nation, but failure was general all across Europe. Aside from the three Nordic outliers of

Finland, Norway, and Iceland, no European state has managed the coronavirus well by global standards — or by their own much higher ones.

For decades, the richest nations of the world had told themselves a story in which wealth and medical superiority offered, if not total immunity from disease, then certainly a guarantee against pandemics, regarded as a premodern residue of the underdeveloped world. That arrogance has made the coronavirus not just a staggering but an ironic plague. Invulnerability was a myth, of course, but what the pandemic revealed was much worse than just average levels of susceptibility and weakness. It was these countries that suffered most, died most, flailed most. Gave up most easily, too, acquiescing to so much more disease that they might have been fighting a different virus entirely. For nearly the entire year, the COVID epicenter was not in China, where the pathogen originated, or in corners of South Asia or sub-Saharan Africa, where limited state capacity and medical infrastructure seemed, at the outset, especially concerning, but either in Europe or the United States — places that were rated just one year ago the best prepared in the world to combat infectious disease.

This fact, though not unknown, is probably the most salient and profound feature of what has been a tremendously uneven pandemic with the world's longtime "winners" becoming by far its biggest losers. The gold-standard responses were those in East Asia and Oceania, by countries like South Korea, New Zealand, and Australia — countries that saw clearly the gravest infection threat the world had encountered in a century and endeavored to simply eradicate it within their borders. Mostly, they succeeded. When it mattered most, no nation in what was once grandly called "the West" even really bothered to try.

The opera audience on October 18, 2020, in Wuhan, China. Photo: Getty Images

The virus is the virus," says Gregg Gonsalves, the former AIDS activist turned epidemiologist, now a MacArthur "genius" with a public-health position at Yale. "There's ways to stop it, and then there's …" He pauses for a moment.

"It has its own logic and its own trajectory."

In the U.S., the story of the pandemic year has been dominated by the character of the president who presided over it so ineptly, often with such indifference it seemed he was rooting for the disease. But the problem with assigning Donald Trump all, or even most of,

the blame for America's suffering is that the country's failure isn't unique. In fact, before the arrival of vaccines, the American experience of the coronavirus was not exceptional but typical — at least among those European nations it typically considers its peers. And as the New Year has brought a new administration, experts in fields from public health to economics have grown more comfortable acknowledging that catastrophe was much bigger and deeper than the denier-in-chief and indeed much more "normal" than Americans outraged or mourning are likely to understand.

The metric of deaths per capita is crude, obscuring issues of demography and comorbidity, but by this basic standard the U.S. has suffered less than the U.K., Portugal, and the Czech Republic. It sits clustered with a number of other European nations — Italy, Spain, France — near the E.U. average. The South American average is just below. None of these countries, save Brazil, had presidents or prime ministers who so callously downplayed the threat of the disease as Trump, or who tried to suppress testing, or who held indoor political rallies during a local surge. "But that's not to say that in some counterfactual scenario where someone else was president, we would not be having difficulty," Natalie Dean, a biostatistician at the University of Florida, told me. "There are only so many tools at our disposal."

Francois Balloux, an infectious-disease epidemiologist and computational geneticist at the University College of London, goes further. "It's not obvious that different measures taken in different places have clearly led to different outcomes," he says. "There's a lot of idiosyncrasy, and I think it's simplistic to say that the countries that have controlled or eliminated the virus did things extremely differently. If you just list, for instance, the interventions that places like New Zealand or Australia have implemented, they're not drastically different — in stringency nor duration — than in some other places. The country that had the strictest lockdown for longest in the world is Peru, and they were absolutely devastated. I think the slightly depressing message," Balloux says with a sigh, "is that there is not just a set of policies that will bring success and can just be applied to any place in the world."

This is not how the disease has been regarded by most American liberals, who've tended to see COVID as a straightforward management challenge, in which the pandemic can be "solved" through science-first policy and dutiful compliance — a perspective that has given the pandemic features of a morality play, in which matters of social distancing and masking become tests of executive and personal virtue that determine the course of the disease. But local disgust is not exclusively an Anglo-American phenomenon. "If you read the national press from any country, be it Germany or Switzerland or France, whatever, there's a strong feeling in most places that, actually, the situation is the worst locally," says Balloux. The historian Adam Tooze, at work on a rapid-fire account of 2020, argues that this intuition is less an insight into pandemic policy than it is a reflection of national narcissism. "It is clear that both the U.K. and the U.S. will almost perforce frame what's happened in terms of narratives of national crisis," he says. "But in general I just don't think it's all that helpful either in the U.K. or the U.S. to talk in terms of a specific national failure."

Even within America, the coronavirus hasn't precisely cooperated with the spirit of determinism. The highest per capita death rate, for instance, is not found in Texas but in New Jersey. Through the devastating fall surge, a poll found that 90 percent of American adults were wearing a mask "sometimes, often, or always." Close contacts in states with heavy restrictions were not dramatically higher than in laissez-faire places, and even draconian lockdowns produced, typically, plateaus or slow caseload declines, not rapid descent to zero. There are, within the U.S., a few relative success stories—Hawaii, notably, has registered almost no excess mortality. But death rates in Florida, proudly one of the loosest states, are hardly any higher than they are in California, self-flagellatingly one of the strictest.

None of this is especially surprising to epidemiologists, who have spent whole careers swimming in viral uncertainty. The rest of us are left to shout in bafflement, *How can this be?* "I took this question for like two months, basically, to every expert I know in California," says Soumya Karlamangla, the reporter at the Los Angeles *Times* most deeply embedded in the Southern California pandemic, who'd become somewhat obsessed with trying to explain the contrast, seemingly paradoxical, with Florida. "I'd just ask them over and over. And the thing I kept hearing from these experts was something I was kind of surprised by. They don't know. They just don't have a good explanation." My experience has been largely the same. When I asked Shane Crotty, a virologist at the La Jolla Institute for Immunology in San Diego, if he had a sense of why the country's worst autumn surge had come in Southern California, a place without a traditional autumn, his short answer was: "No, I don't."

This is not to say that policy and behavior don't matter — only that containing a novel disease we understand incompletely is not as simple as hitting the "Science" button. The mitigation measures on which the country has focused the most — masking, social distancing, school closures, restaurant restrictions — are curve-benders, not firewalls. And many of the factors playing a much larger role in shaping the spread of the pandemic fit much less comfortably in a technocrat's shoulder bag or a liberal's scolding moralism. A partial list: There is stochasticity, better known as chance, driven in part by superspreader dynamics, whereby the vast majority of new cases are produced by a thin slice of existing infections and most disease chains simply die out. There is demography, with the skew of lethality so dramatic that many of the world's younger countries have almost no death toll. There is distribution of comorbidities throughout the population. There is geography, with

islands enjoying obvious advantages, and with communities at higher latitudes apparently more at risk, perhaps due to the salubrious effects of sunlight. There is a country's relationship to its own borders, and who its neighbors are, and its position in the networks of travel and commerce. There is climate, with temperature and especially humidity appearing to shape national outcomes much as they've shaped some seasonal rhythms of the disease within countries. There is air conditioning — whether you have it, and what kind. There is what Crotty described to me as a version of the "hygiene hypothesis" — the possibility that regular exposure to pathogens generally might train your immune system like it does your gut biome. There is the catchall of "cultural forces," covering everything from multigenerational living and employment structures to cheek-kissing and handshakes.

I could go on: residential density, blood type, vitamin D, ICU capacity, proximity to bats. But any time you try to put a finger on a single, dominant factor, the disease slips away, defying reductive models and suggesting counterpoints and counterfactuals: Japan is old, Brazil is largely tropical, England is an island, and there's hardly any air conditioning in France. And even beyond all of those factors, with relative impacts of unclear scale, there is what the controversial Stanford epidemiologist John Ioannides recently called the "chaos" of the disease — the seemingly random, and still mysterious, dynamics of spread, even beyond stochasticity, which can be at least mathematically modeled.

The recent collapse in American case numbers, for instance, came right after the New Year, in the middle of what the country had just been warned — by epidemiologists and the new president, in his inauguration speech — would likely be the pandemic's darkest season. Looking back, you could find a few lonely voices suggesting winter would be calmer than autumn. But the CDC aggregates and showcases 26 pedigreed models predicting the near-term course of the disease. On January 18, only two of the 26 showed the dramatic case decline the country experienced by February 1 as being within what's called the 95 percent confidence interval. In other words, 24 of the 26 models said what ended up happening over just the next two weeks was, more or less, statistically impossible. The other two gave it, at best, a sliver of a chance.

And yet for all that mystery, one distinct pattern stands out, with national outcomes falling into three obvious clusters whose basis and cause may be investigated for decades as the most significant feature of the whole global pandemic.

In Europe, North America, and South America: nearly universal failure. In sub-Saharan Africa and South Asia: high caseloads and low death rates, owing largely to the age structure of populations. In East Asia, South-East Asia and Oceania: inarguable success. You can compare countries within these clusters, and wonder why Canada has outperformed the U.S. or why Uruguay has outshone Argentina, why Iran suffered so much or how Japan, which never locked down and never tested all that widely, succeeded so brilliantly. But the differences in outcomes between the groups of nations are far greater than those within them, so much so that they appear almost as the burn scars of entirely different diseases. By damage, the coronavirus has not been a "Chinese flu" but a western malady, and if you were making guesses about how a particular nation has fared, by far the most significant piece of data would be where on the planet it was located.

Take Germany. Since the beginning of the pandemic, Angela Merkel has been celebrated as a beacon of rational leadership — a technocrat with a doctorate in quantum chemistry, presiding calmly over an unprecedented crisis, with a citizenry often stereotyped as compliant, orderly, respectful of science. To judge by death, Germany has indeed outperformed the U.S., with fewer than 900 per million citizens, compared to our more than 1,600. But New Zealand, to pick one counterexample, has registered just over five per million. That is, for every Kiwi per million who died, so did 162 Germans. And 298 Americans.

New Zealand has natural advantages — it's small, it's an island, it's got national health care; when the disease arrived and containment mattered most, it happened to be summer; there's an inspiring prime minister, and social trust is high. (The country's approach has been described as "treat every case like a murder," and indeed, the entire city of Auckland recently shut down in response to a single family's positive test.) Which of these factors, or what combination, is decisive? Nearby Australia is a much larger nation, with a divisive media powered by Rupert Murdoch, and a Trump- or at least Boris-like leader. It has bigger airports and plenty of A/C. You might expect Australia to look a lot more like the U.S. or U.K. But its death rate is under 36 per million — less than one-50th the American rate. They had crowds at much of the Australian Open, you might've seen. Of course, the players had to quarantine for weeks before getting on the court.

In East Asia, though, nobody envies the Antipodes. In Taiwan, the death rate is a minuscule 0.42 per million. The European Union performed, on average, 3,000 times worse. Cambodia hasn't reported a single COVID death all year, and while it is probably fair to assume that the official data don't tell the full story, what is most startling across East and Southeast Asia — an incredibly heterogeneous region, with wealthy nations and poor ones, democracies and authoritarian regimes, national health-care systems and patchwork networks — is just how consistent the story is. In Vietnam, there have been 0.36 deaths per million, in China 3.36. In Singapore, the number is around five; in South Korea, it is close to 32; in Japan, in many ways the best contrast for the aging and wealthy nations of Europe and North America, it's about 67. Again, you can doubt some of these

numbers, the Chinese figures especially. But in the U.K., remember, the level is north of 1,800.

An outdoor concert on February 13 in Wellington, New Zealand. Photo: Mark Tantrum/Getty Images

What few people realize is that, yes, the virus originated in China, but the true focus of the epidemic that spread to the world was actually in northern Italy," says Balloux, who has observed the pandemic from London. "We think it happened in Asia first. But the countries that were seeded most massively, the countries that were hardest hit, were not the countries that had the most contact with China. Many of the countries that were hardest hit were the countries that had contact with northern Italy."

You can plausibly chalk this up to some combination of chance, "natural" or cultural factors, and Asia's experience with SARS and MERS, which functioned as useful dry runs — exposing public-health shortcomings and acculturating local populations to dramatic preventative measures. Taiwan and Singapore, Balloux says, closed up "before the virus was really there," perhaps fast enough to entirely eliminate local transmission. In Italy, by contrast, "by the time they realized they had a serious outbreak, it was far, far too late."

As early as the spring, the former Portuguese diplomat Bruno Maçães was suggesting that indifference in Europe and the U.S. reflected a kind of pandemic Orientalism. When China put Wuhan into lockdown, he told me, the intervention was doubly and catastrophically discounted by the NATO states. The disease was dismissed as a culturally backward outgrowth of wet markets and exotic-animal cuisine, and the shutdown was seen not as a demonstration of extreme seriousness but as a sign of the reflexive authoritarianism of the Chinese regime (and the imagined servility of its population). In fact, China was not in the habit of quarantining entire metropolises. "It was a huge shock for them," Tooze says now. "With SARS, they hardly did a shutdown at all … We should have said, 'Oh my God, it's Wuhan — 11 million super-affluent people. Jesus, that's what we're going to have to do.'" But that "would have required the West to really own what was going on in China," he says. "I think that's the big problem. You would have had to have said to people in the West, 'Look, this is going to look crazy — we are going to stop JFK and Heathrow in their tracks. But look what they're doing in China.'"

An early, globally coordinated pause on travel, the virologist Florian Krammer says, would have likely averted catastrophe even if it had only lasted a few weeks — a shutdown that, in retrospect, would qualify as impossibly modest, given the billions of people sheltering in place in the spring and the trillions of dollars disgorged from treasuries and central banks since to support them. "But right now I think there's a huge gap between the reality of globalization and our ability to actually apprehend what that means," Tooze says.

Tooze is an economic historian whose last major work was an authoritative history of the 2008 financial crisis and its global fallout, and for him, the echoes are unmistakable. "One of the ways in which we deal with the radical nature of the experiment that we're running — massive economic growth at the global scale, involving most of 7.8 billion people — is that we live in a state of denial. We don't actually take in what this implies most of the time at lots of different levels. And of course there are Cassandras, there are people whose job it is to say, 'No, no, no, it's all connected.' But they're siloed off and placed in, as it were, cognitive bubbles, whose relationship to actual key decision-making is arbitrary." And in general, he says wryly, "I've been impressed by the Sinophobia that it has revealed in Europe."

But it wasn't just Sinophobia. Even after the disease arrived in Europe, nearly every western nation chose to play wait-and-see — hoping they wouldn't have to intrude on the lives of their citizens and economies, and trusting that, if they needed to, they could simply play catch-up without paying anything like a true pandemic price. Italy's outbreak didn't inspire immediate responses elsewhere on the Continent, and neither did Spain's. In the U.S., cases in Washington State didn't inspire leaders in New York to move, and though the horrible New York spring did inspire lockdowns in many "virgin" states, they were often short-lived, unaccompanied by real public-health preparation, and brutal enough for residents and politicians both that they made later pandemic measures harder to enact. Once the disease did come, officials tended to make the same mistake — ratcheting up restrictions as the disease worsened and ratcheting them down as it dissipated. In almost every venue, life-as-usual proved too expensive, or too difficult, or too protected by interested parties to disrupt.

When the efforts came, they weren't just late but inadequate. Lockdowns dominated debate over pandemic policy, but failures on testing, contact tracing, and quarantine were much more notable. In April, the Nobel economist Paul Romer suggested screening every American every two weeks — about 25 million tests each day. The country barely ever cracked 2 million. In the U.K., in February, it was estimated contact tracers could manage a total of five new cases each week. Five. In response, Boris Johnson promised a "world-beating" contact-tracing system, then delivered one where less than half of close contacts of new patients were even reached by the NHS, and perhaps as few as 11 percent of those who were reached actually chose to self-isolate in response to exposure. In the U.S., when contact tracers called, hardly anyone bothered to pick up the phone.

"If you look at last spring, many of the European countries were doing well," says Gonsalves, the epidemiologist. "And last summer people took their foot off the accelerator and decided that they would reopen." This was "basically capitulation," he says. "We gave up on eradication or elimination early on. I don't think it was ever on the table, and it's certainly not on the table now. By the time we get to the spring, I don't think anybody was thinking about it in any real terms. I never felt like anybody was driving the car."

Gonsalves has spent much of his academic career, he says, focused on "what we called the social determinants of health, everything that's around you that keeps you healthy: housing, access to food, care in your old age, et cetera." At the outset of the pandemic, those were a wreck in many of these countries, especially America, with outrageous health disparities across populations exacerbated by a threadbare social-welfare state. "We've been told that the government is our problem, but the point is health care is a public good, not a private commodity," he says, and one nontrivial aspect of pandemic performance was how shallow, or how deep, local willingness to fund even non-medical support proved to be. "But this is not just about the structure of social welfare, health care, and the will of the state," he adds. "It's about human behavior and decisions that were made about relaxing restrictions before anybody was near out of the woods, before we even knew we had vaccines. Some of that human behavior, around the globe — it's not necessarily a structural issue. It's tied to human nature and how people respond to the pandemic outside the systems of governance and the state. How do you change human behavior? I don't know."

"The problem," Balloux agrees, "is that you have to deal with humans. They might like doing things; they might *tell* you they do things and they might *do* other things. I think people might have complied better if there was a real feeling that it could be very useful. But I think a large part of the population in Europe felt there's not a chance the virus could have been eliminated locally." He adds, "I say, rightly so."

"Clearly, the West was betting on a magic bullet," Tooze says. "Developing the vaccine has to be understood holistically as part of our reaction, if there's any kind of rationale behind that reaction at all. It was a part of our strategy individually and collectively — fundamentally, we've all basically been expecting the vaccine to arrive. Because without that, it's pretty difficult to kind of figure out what the hell any of us really thought we were doing."

The Australian Open on February 18 in Melbourne, Australia. Photo: Daniel Pockett/Getty Images

On March 13, 2020, Mike Ryan, WHO's executive director of health emergencies, took the podium at a Geneva press conference and delivered in just a minute what is, to me, probably the most chilling and illuminating speech of the entire pandemic. Asked what lessons from a career fighting outbreaks of Ebola were called to mind by the arrival of COVID-19, Ryan replied with terse, cinematic force. "What we've learned through the Ebola outbreaks is you need to react quickly. You need to go after the virus. You need to stop the chains of transmission. You need to engage with communities very deeply — community acceptance is hugely important. You need to be coordinated; you need to be coherent."

When it came to this pandemic, he said, speaking in a clipped Irish lilt, the lessons were the same: "Be fast. Have no regrets. You must be the first mover. The virus will always get you if you don't move quickly." He continued, "If you need to be right before you move, you will never win. Perfection is the enemy of the good when it comes to emergency management. Speed trumps perfection. And the problem in society we have at the moment is everyone is afraid of making a mistake, everyone is afraid of the consequence of error. But the greatest error is not to move. The greatest error is to be paralyzed by the fear of failure."

Ryan's speech was delivered as an admonition, but it may as well have been an indictment. As Peter Baldwin documents in his forthcoming comparative history of the pandemic, *Fighting the First Wave*, speed was probably the most significant factor in determining national outcomes, and just about every nation in the West failed to move quickly enough. With the exception of Japan, whose light pandemic remains something of a mystery even within the context of the "Asian miracle," all of the successful national campaigns resemble each other in the speed and intensity of response, and all of the failures share a similar reluctance to move preemptively — instead needing to be forced into action by the disease. "I kind of come down to a kind of almost deterministic line, which is that we are dealing with an exponential or semi-exponential kind of a process," says Tooze.

"Either you control this early on, in which case the trade-offs are relatively manageable and all sorts of conventional things make sense, or you don't and you end up in a space which really no advanced polity's decision-making process is very good at coping with. And so then it's really a matter of degrees of failure across the board."

The pattern had already been established when Ryan spoke. A hundred and seven Italians were dead, and many more were infected, before the country took any measures at all to prevent spread, which it did on March 4. When Spain went into lockdown ten days later, it had more than 6,000 confirmed cases. In France, local elections were held in person on March 15, despite there being almost 5,000 confirmed cases. In the U.K., with infections doubling every few days, 250,000 people attended the Cheltenham Festival beginning March 16. Germany shut all the way down only on March 23 with almost 30,000 cases. Officially, in the U.S., on the day of Ryan's speech, only 51 Americans had died, but according to pandemic modeler Youyang Gu, perhaps 1.85 million had already been infected across the country. New York hadn't even begun to shelter in place. When the state did move into lockdown one week later, Gu estimates the national number had grown to 3.64 million. At that point, even if you had dispatched a contact-tracing army, the disease might well have been impossible to contain. The die had largely been cast, the mark of arrogance and indifference.

In June, in an early attempt to get beyond the "matter of regime type" and answer why some countries were beating COVID and others were failing, Francis Fukuyama suggested three major factors: political leadership, social trust, and state capacity. This formulation turns out to have been inadequate, or at the very least premature. Germany is led by Merkel. One of the highest levels of social trust in the world is found in much-maligned Sweden, with just under 1,300 deaths per million. No nation has more capacity for action than the U.S., as even Fukuyama acknowledged. And here the American experience is telling.

On February 11, a month before Ryan's press conference, Anthony Fauci, Nancy Messonnier, and Ron Klain had taken the stage at an Aspen Institute panel on the novel coronavirus led by the superstar infectious-disease journalist Helen Branswell. Several times, Fauci repeated that he believed the virus was low-risk — later clarifying that it was important to communicate to the public that it was low-risk, in part to protect his own credibility and the credibility of the public-health Establishment. "To this day I do not understand why," Branswell recently wrote. A few days after the panel, Fauci described the risk of the coronavirus to Americans as "minuscule." This was a time when the U.S. public-health infrastructure assuming (or even pretending to assume) a war footing might have made a meaningful difference. But at every opportunity, Fauci was counseling the opposite — calm in the face of the storm. On February 15, he told an interviewer that the flu was a bigger threat to Americans. For another month, he was still advising against masks. It wasn't just Fauci (whom the upstart leftist magazine *The Drift* recently mocked as "Dr. Do-Little" in what likely won't be the last reconsideration of the sainted physician). New York governor Andrew Cuomo, a cable-news hero in the spring, has already come in for reconsideration, and in his self-aggrandizing pandemic memoir, he is unintentionally revealing. "Most of all, I was concerned about public panic," Cuomo writes, reflecting on the need to "socialize the notion of a shutdown," ideally slowly, rather than simply imposing it. "Panic is the real enemy," he adds. The coronavirus may not prove Cuomo's ultimate political undoing, but his formulation may nevertheless provide the most fitting epitaph for the entire western response: that disruption was scarier and less tolerable than the disease.

By American standards, Cuomo did move quickly — putting his state in lockdown just 20 days after the first confirmed case, three times faster than Washington State or California. But he waited for cases to arrive on his doorstep to act, and even then, his first instinct was to reassure rather than disrupt. In that, he was far from an outlier. Through the winter, the guidance from America's public-health Establishment was clear, beamed to the public through columns and op-eds like those in the New York *Times* warning "beware the pandemic panic" and, in the Washington *Post*, arguing "we should be wary of an aggressive government response to coronavirus." Other headlines from the time: "We Should Deescalate the War on the Coronavirus," from *Wired*; "Coronavirus Is Scary, but the Flu Is Deadlier, More Widespread" from *USA Today*; "The Flu Is a Far Bigger Threat to Most People in the U.S. Than the Wuhan Coronavirus," from Business Insider. Before flu comparisons became a talking point of the pandemic-denier right, they were the reassuring focus of the Establishmentarian left. Perhaps the short-sighted and self-interested president would never have moved more quickly or more emphatically in response to a different kind of warning. But governors might have, and mayors, and the public at large. Instead, the cause of the alarm was picked up not by those in positions of social authority or with the power to enact preparatory measures but by a rogues' gallery of outsiders and contrarians: Peter Navarro, Trump's personal China hawk; Scott Adams, the *Dilbert* guy; Balaji Srinivasan, a cryptocurrency evangelist from Silicon Valley; Eric Feigl-Ding, a nutrition-focused epidemiologist then affiliated with Harvard who got a bit out over his skis in a series of panic-inducing tweets, then came in for a professional drubbing by his colleagues.

Onstage in February, Messonnier — the CDC's coronavirus lead — seemed to be operating from the same playbook of reassurance as Fauci. She suggested that early estimates of the severity of the disease were likely too high, before acknowledging that "if the disease is transmittable by people who are asymptomatic or even just mildly symptomatic, it makes it really clear that we're not going to be able to keep it from spreading in the U.S." She joked, "The thing to think about in the U.S. is there's only so much worrying you can do every day." Later, she added, "People like responding. They don't like preparing."

A soccer match on June 5, 2020, in Nam Dinh, Vietnam. Photo: Nguyen Huy Kham/REUTERS

At this point, the U.S. had 13 confirmed cases, and though the true number was certainly much higher, preparation (or even response on the South Korea model) was still possible. But Messonnier was offering her observation as a statement of deep cultural truth, one that was echoed through the seasons in comparisons between the American and European response to the pandemic and those observed in East Asia: People here would never stand for lockdowns, it was said, or surveillance-scale testing, or mandatory quarantine. In a lot of these comparisons, there were problematic invocations of "Confucian" culture and mischaracterizations of liberal democracies like Japan and Taiwan as "authoritarian."

But then, in short order, many Americans did stand for something like lockdown. And while we never got to surveillance-scale testing or mandatory quarantine, the fact that we sheltered in place for that long, and in modified ways for almost a full year, suspending the majority of our social, romantic, professional, and educational lives in ways that would have been considered, just a month before, unthinkable, suggests that perhaps it would not have been understood as a civil-rights violation to take a rapid antigen test once a week or to pass through a temperature checkpoint to enter buildings, if it had been said to be necessary — or rather, "worth it." It wasn't that these countries did nothing, because ultimately, they did an enormous amount. It was that everything they did was late, unfocused, and poorly executed — at least as far as containing the actual disease was concerned. Lockdowns were supposed to be a last resort. But practically speaking, the only thing we did to make them less likely was give up.

In retrospect, it seems almost by design. At stage right at the Aspen event, beside Fauci and Messonier, was Klain, who had led the much-lauded Obama-era Ebola response team. "My overwhelming experience as the Ebola czar," he joked, "was that I was the czar of nothing, right? Because we don't have a command-and-control health-care system in the United States." This made rapid preparation — even if desired — difficult. "We have a system that's part public and part private, that is largely state and local based. Most of the troops in Nancy's army are state and local employees, when you get right down to it. If you're going to have a big monitoring program, or a big contact-tracing program, that's not going to be done by the fantastic people at the CDC; that's going to fall on state and local government. And if we have hundreds, or

thousands, of people in hospitals, those beds are going to be provided by private hospitals, public hospitals, state and local hospitals. You know," he said, gesturing at Fauci and Messonnier, "these two sits at the top of a federal health-care system that is not a federal health-care system. That's not what we have in America." Of course, there are national health systems in Canada, Mexico, England, and France, among many others, and the uniformity of failure across this heterodox group suggests that structure may have made less of a difference than culture.

"One of the common features is that we are a medical-centric group of countries," says Michael Mina, a Harvard epidemiologist who has spent the pandemic advocating for mass rollout of rapid testing on the pregnancy-kit model — only to meet resistance at every turn by those who insisted on a higher, clinical standard for tests. "We have an enormous focus on medicine and individual biology and individual health. We have very little focus as a group of nations on prioritizing the public good. We just don't. It's almost taboo — I mean, it is taboo. We have physicians running the show — that's a consistent thing, medical doctors across the western European countries, driving the decision-making." The result, he says, has been short-sighted calculations that prioritize absolute knowledge about everything before advising or designing policy about anything.

It's a perspective echoed by Zeynep Tufekci, the scholar of technology who has become perhaps the most treasured "outsider" analyst of the disease and pandemic policy in the U.S. — an independent thinker who has, again and again, called out the limitations and perversities of public-health guidance on everything from masking to asymptomatic transmission to the role of aerosols and the importance of ventilation. She recently surveyed the system's biggest failures — including that experts sometimes misled the public on key points out of fear that advising them honestly would lead them to take more risk; that hard rules (six feet apart, for no more than 15 minutes) were offered in place of broad principles ("like Japan's, which emphasize avoiding the three C's — closed spaces, crowded places, and close contact"); and a preference for false certainty ("There is no evidence of human-to-human transmission") rather than honest nuance ("There is increasing likelihood that human-to-human transmission is taking place, but we haven't yet proven this").

These were not narrowly American issues, or western ones—in fact, much of the problematic guidance came from the WHO. But in East Asia, countries didn't wait for the WHO's guidance to change on aerosols or asymptomatic transmission before masking up, social-distancing, and quarantining. "They acted fast. They acted decisively," says Mina. "They made early moves. They didn't sit and ponder: 'What should we do? Do we have all of the data before we make a single decision?' And I think that is a common theme that we've seen across all the Western countries—a reluctance to even admit that it was a big problem and then to really act without all of the information available. To this day, people are still not acting." Instead, he says, "decision-makers have been paralyzed. They would rather just not act and let the pandemic move forward than act aggressively, but potentially be wrong."

This, he says, reflects a culture of medicine in which the case of the individual patient is paramount. In the early months of the pandemic, the "heroic" medicine of doctors trying out experimental treatments on patients may have raised the death count considerably. And at the level of public guidance, throughout America and Europe, there has been a tendency to regard anything that didn't offer perfect and total protection against transmission as needlessly risky behavior — outdoor exercise, socializing with masks, holiday travel with a negative test in hand. If you're advising a single, vulnerable patient, Mina suggests, it might make sense to propose staying at home through a surge, but it's not necessarily useful advice for everyone, and neglects to offer practical guidance for how to navigate a pandemic world in favor of an indefinite, exhausting, abstinence-only piece of quasi-propaganda. That's not really public health, he says, it's medicine. And even so, the guidance that was offered wasn't all that illuminating at the individual level — with 10,000-times higher lethality rates hidden behind vague language like "the elderly are more at risk," or comorbidities discussed as an almost uniform additional risk, so that my kidney-patient father-in-law, for instance, didn't know that he was significantly more vulnerable than my mother with COPD.

"Some of these discussions are not scientific," Dean says. "It's more holistic than that. There's some core public-health communication that I wish had been a little more in center, coming from the harm-reduction world of HIV, acknowledging that people have a need for social interaction. Shaming doesn't really work. It can be counterproductive, can drive activity indoors. We needed to give people safer alternatives and provide people with information about how to do it." Some of this guidance, she says, made sense in an initial rush to respond, but the longer they went on, the more nuance and perspective should've been incorporated. "Back then, people were like, 'Okay, we can do this for a week, we can do this for three weeks.'" Only later, and somewhat quietly, did it "acquire a longer time period. And so we have to think also a bit with sustainability in mind. How do we communicate with people? What is the goal? What is the plan? Because I think there've been times when it felt like we were a little aimless as a country — just sort of muddling through. At least we should, you know, have a goal." The result was considerably more pandemic fatigue than was necessary.

"People often associate public health with froofy theory and froofy ideas, but that's not at all what real public health is about," Mina says. "Public health is engineering systems to benefit the population in a way that is sometimes entirely at odds with medicine. Sometimes you

need to sacrifice some people for the benefit of the population as a whole. You take risks that maybe a doctor isn't willing to take. Instead of optimizing the immunological response at the individual level" — for instance, by prioritizing a second dose of the vaccine, which for Moderna bumps efficacy from 80 to 95 percent — "you optimize the immunological protection of the population," say by spreading out first doses to more people, each of whom get that 80 percent protection. These kinds of decisions, he says, involve trade-offs and uncertainty, of course, but waiting for perfect data is a luxury from the before times.

"Now, the number of doctors who say, about testing or anything else, 'Well, hang on, you don't know that …' It's like, no, 'We don't know that, but you know what? Somebody who has a trillion viral particles in the respiratory tract is probably transmitting more than somebody with a thousand.' You know, those orders of magnitude are quite distinct. But even that question — 'Is a trillion viral particles more transmissible than a thousand?' — the average doctor, until they see the data that *shows* that somebody with a trillion viral particles is more likely to transmit to somebody than somebody with a thousand at that time, they don't believe it."

Again, and again, in conversations about the pandemic spanning months, the metaphor that Mina returned to, with an almost uncomfortable single-mindedness, was war. "This is a national emergency, this is a war that we're in, and instead of putting generals in positions of power, we've deferred to academics," he said. "Imagine in World War II, if that was how we treated it all — that we couldn't make a single mistake."

The metaphor, though vivid, also suggests its own answer to the question of pandemic lethargy and indifference. "Especially in a country like the U.S., but also in the other European countries — we haven't felt discomfort in a long time," Mina says. "I remember saying back in February or March, 'I don't think the U.S. is going to fare well here,' for no other reason than we won't even be able to know and to recognize that something bad is happening to us. And I think that has not abated in the United States or in Europe. We have continued to just think that something bad isn't happening to us, and that there's an out somewhere — that, of course we're going to solve this next month. It's always been one month away. And as long as the solution is always one month away, the urgency isn't there. And I do believe that this is a symptom of a bunch of nations and societies that really haven't had to deal with adversity on our shores in a really long time. We are uncomfortable with making the hard decisions that have to be made.

"China made really hard decisions — some could say they infringe on the rights of their population. That seems so insane to a bunch of privileged countries, that we would have allowed that kind of thing to happen on our shores. Because that would have been us admitting that something absolutely terrible was happening to us."

Of course, there are the vaccines, delivering Americans into a new pandemic era — and perhaps turning the page so definitively on the catastrophe of the last year we fail to learn anything meaningful from it.

Never before in the history of medicine has the spread of an infectious disease been halted so early by the development of vaccines. And here, the U.S. and the U.K. are world-class, on track to deliver shots to anyone who wants them by summer. It's the inverse of the story of pandemic containment, with two of the world's most striking national failures delivering two of the most impressive vaccine programs. Places that appeared as recently as a few months ago to represent perhaps an entirely new geopolitical category — what the essayist and consultant Umair Haque has called the "rich, failed state" — appear now quite enviable, especially among the Continental nations of Europe. There, vaccine rollouts have been caught up in far more red tape. Japan and South Korea are vaccinating at just a fraction of the British or American rates. "One big thing we're learning is what it means for a country to be good at things — it's not as unidimensional as one might've thought," the economist Tyler Cowen says. "Countries are good at very different things. And it's not all wrapped up in one happy bundle."

But what is most impressive about the mRNA technology in the Pfizer-BioNTech and Moderna vaccines is not just how quickly they've arrived. It's that the novel vaccines developed in response to the novel coronavirus herald the possibility of an entirely new era for medicine generally. These COVID-specific "platforms" could be easily adjusted for other variants or perhaps adapted into a universal coronavirus vaccine, and Moderna says that other of its mRNA tools could be used to customize new immunotherapies for cancer, among other things. Already in clinical trials, the company is sequencing the genes of a patient's tumor and designing personal mRNA drugs targeting that specific malignancy. In this sense, the western response to the pandemic is almost a caricature of neoliberalism: indifference to human suffering and unwillingness to disrupt the quotidian churn of a prosperous economy, combined with high-end scientific genius and capital-intensive investment by state actors in profit-oriented innovation, the fruits of which are then hoarded by the global rich (in this case, Americans).

What this all looks like a year from now remains, as a result, very much an open question, and it is striking, at this point, how little leaders have been punished. "Americans, in their lives as citizens and voters, have not rebelled against what has happened," Cowen says. "And you have to blame that as a more fundamental cause than whatever the government has screwed up, which is plenty." Trump, the face of America's pandemic incompetence, almost won reelection, falling by only a small margin in critical states. Gavin Newsom is likely to be recalled, and Andrew Cuomo is immolating in scandals both related

and unrelated to his management of the pandemic, but in Texas, Greg Abbott's approval ratings are above water, and in Florida, Ron DeSantis has gotten eight points more popular since summer.
The pattern holds abroad as well. In the U.K., Johnson's Tories are stronger than they've been in more than half a year. In Mexico, with nearly 1,500 deaths per million citizens, the net approval rating of Andrés Manuel López Obrador is +33. Perhaps that is another sign of broad acquiescence to sclerosis, state failure, and political decay. But it also complicates intuitive narratives about cultural decline, like, perhaps, the one that hangs over this essay. The vaccines may have been the only real response the U.S. managed to the new disease; they may also mark a generational biotech turning point and an end to what Cowen has long lamented as the "Great Stagnation" of American innovation and growth.
"Unless current trends change dramatically," Fukuyama wrote in his June essay, "the general forecast is gloomy." He was not just predicting the rise of China at the expense of the U.S. as a result of the pandemic, but considering the possible arrival of a dark timeline for liberal democracy more generally. Nine months later, despite all the American death, the forecast is improbably sunny. The country's GDP is now expected to grow beyond what pre-COVID economists predicted for 2021. With the CARES Act, a cruel Republican administration somewhat shockingly improvised a dramatic, if temporary, expansion of the social-welfare state, and in Biden's $1.9 trillion COVID package, Democrats have endeavoured to almost single-handedly restore state capacity after two generations of market-based solutions and neoliberal austerity. The legislation is projected to cut the poverty rate by a third, significantly improving those "social determinants of health" and, perhaps, restoring at least some American faith in state capacity and the ability of the government to actually attend to the needs of citizens. **The question is, when the next pandemic comes, how much will it matter?**

## Where Europe Went Wrong in Its Vaccine Rollout, and Why

**By Matt Apuzzo, Selam Gebrekidan and Monika Pronczuk**
Source: https://www.nytimes.com/2021/03/20/world/europe/europe-vaccine-rollout-astrazeneca.html

Mar 20 — The calls began in December, as the United States prepared to administer its first batches of Covid-19 vaccine. Even then, it was clear that the European Union was a few weeks behind, and its leaders wanted to know what they could learn from their American counterparts.
The questions were the same, from President Emmanuel Macron of France, President Ursula von der Leyen of the European Commission, and Alexander De Croo, the prime minister of Belgium.
"How did you do it?" Dr. Moncef Slaoui, the United States vaccine czar, recalled them asking on the calls. "And what do you think we missed?"


Lining up to receive the Pfizer vaccine in Milan on Thursday.Credit...Alessandro Grassani for The New York Times

Since then, the rollout gap between Europe and the United States has only widened, and some of the countries hardest hit early in the pandemic are facing a deadly third wave of infections. France, large parts of Italy, and other regions are back in lockdown. Roughly 20,000 Europeans die of Covid-19 each week.

The Continent was dealt a further setback when a scare over blood clots and brain bleeds led several countries this week to temporarily halt the distribution of the AstraZeneca vaccine. Most of them resumed using it on Friday, after Europe's top drug regulator vouched for its safety, but public confidence in the shot has been badly shaken.
Vaccine salvation remains, for now, still tantalizingly out of reach. Only about 10 percent of Europeans have received a first dose, compared with 23 percent in the United States and 39 percent in Britain.
There is no single culprit. Rather, a cascade of small decisions have led to increasingly long delays. The bloc was comparatively slow to negotiate contracts with drugmakers. Its regulators were cautious and deliberative in approving some vaccines. Europe also bet on

vaccines that did not pan out or, significantly, had supply disruptions. And national governments snarled local efforts in red tape.
But the biggest explanation, the one that has haunted the bloc for months, is as much philosophical as it was operational. European governments are often seen in the United States as free-spending, liberal bastions, but this time it was Washington that threw billions at drugmakers and cosseted their business.
Brussels, by comparison, took a conservative, budget-conscious approach that left the open market largely untouched. And it has paid for it.
In short, the answer today is the same as it was in December, said Dr. Slaoui. The bloc shopped for vaccines like a customer. The United States basically went into business with the drugmakers, spending much more heavily to accelerate vaccine development, testing and production.
"They assumed that simply contracting to acquire doses would be enough," recalled Dr. Slaoui, whom President Donald J. Trump hired to speed the vaccine development. "In fact what was very important was to be a full, active partner in the development and the manufacturing of the vaccine. And to do so very early."
The result in Europe is a stumbling inoculation effort that has led to political fallout, with leaders pointing fingers over why some of the world's richest countries, home to factories that churn out vast quantities of vaccine, cannot keep pace with other wealthy nations in injecting its people.
Compared with nearly all the rest of the world, the European Union is in an admirable position. Its leaders say it remains feasible to vaccinate 70 percent of the Continent by this summer. The bloc has ordered enough doses to fully vaccinate its population at least three times, to the consternation of countries that will wait years for full coverage.
But Europeans are stung, especially, to see Britain's rollout going so well after the country exited the bloc. Everyone wants to know why the E.U. has not triumphed.

**'Not Equipped for a Gunfight'**
The European Union trailed the United States and Britain from the start.
Washington had already spent billions on clinical trials and manufacturing by the time Europe decided to pool its resources and negotiate as a bloc. In mid-June, the European Commission, the bloc's executive branch, announced a joint vaccine purchase with a $3.2 billion pot.
In Washington, Operation Warp Speed, the Trump administration's vaccine program, had a $10 billion budget. European officials say it's unfair to compare the two figures because neither amount is a complete picture of all the money spent on vaccines. But there is no dispute that in Washington, officials had decided that money was no object if vaccines could avert the economic cost of a lockdown. Europe, on the other hand, was on a tight budget, so its negotiators chased cheaper doses.
"Pricing has been important since the beginning," Sandra Gallina, the E.U.'s main vaccine negotiator, told lawmakers in February. "We are talking about taxpayers' money."
Europe's first deal, with AstraZeneca, came in August, months after the United States. And while Europe negotiated as a powerful buyer, it lacked the wartime procurement powers that the Trump administration had used to secure raw materials for companies. That meant that the bloc was not first in line for the doses.
The United States made the negotiations easy — its critics say far too easy — by signing away any right to intellectual property and absolving the drug companies of any liability if the vaccines disappointed. Washington paid for the development and the trials; the companies had essentially nothing to lose.
Drugmakers expected the same concessions in Europe, but the back and forth over liability was the major stumbling block, Ms. Gallina said. European negotiators had to reconcile disparate liability laws across multiple countries, finding common ground among 27 leaders.
"In a crisis, it always becomes clear that the E.U. is not a country," said Jacob Kirkegaard, of the German Marshall Fund. He said the bloc approached vaccine procurement like a contract negotiation when in fact "it was a zero-sum game with limited supply."
"It was not equipped for a gunfight," Mr. Kirkegaard said.
Dr. Slaoui said Washington and London approached the crisis in lock step. He recalled biweekly meetings with his British counterpart, Kate Bingham, but said Europe went its own way.
"If you're at the table from day one, and you paid to be the first to pick from the menu, you're going to eat first," he said.

**The Wrong Horses**
European institutions are, by design, risk-averse. One of the founding tenets of the European Union is called the precautionary principle: The bloc errs on the side of caution when risks are unclear.

That, some analysts have said, hurt the bloc. German leaders argued for a heftier bet on vaccines from Pfizer-BioNTech and CureVac, but they were based on unproven messenger RNA technology and were more expensive. The bloc had just settled a thorny economic rescue package, and there was little appetite among members for more risk or spending.
It didn't help that Europe backed the wrong horse in some cases. It spent billions on a vaccine candidate from French drugmaker Sanofi and Britain's GSK that was delayed by over a year after disappointing results.
So, the bloc relied heavily on AstraZeneca for its early rollout plans, a bet that had repercussions from the beginning. Italy, for example, embraced Europe's bet on AstraZeneca doses because they were cheaper and did not require extreme storage temperatures. But then Italian regulators recommended against giving the vaccine to the elderly until more data were available, leaving a country with the oldest population in Europe more vulnerable to the pandemic.
Britain bet heavily on AstraZeneca, too, but its close working relationship with the drugmaker and its early agreements gave it an advantage when the company hit supply problems in January. AstraZeneca has slashed its delivery plans, telling European leaders that it would hand over 100 million fewer doses by the middle of the year, according to the commission's president, Ms. von der Leyen.

Vaccinations underway at the Salisbury cathedral in January. Britain has been far ahead of the rest of Europe in inoculations. Credit: Andrew Testa for The New York Times

That has pitted the bloc against AstraZeneca and the dispute has spilled into public view. Leaders in Brussels have been all too happy to blame the company for the shortfalls and the dispute could end up in a Belgian court.
Europe lost even more time because its medical authorities were slow to approve the AstraZeneca vaccine, seeking to assure the public that it was safe. That "cost us two to three weeks of delay," Ms. von der Leyen said this week.
The bloc fell farther behind when national authorities in Germany, France, Italy and elsewhere raised concerns about dangerous clots and bleeding, and temporarily suspended use of the vaccine. Though the World Health Organization and European regulators reaffirmed its safety, the damage was done. Only one in five French people now trust the AstraZeneca vaccine, according to a poll by the Elabe Institute published Tuesday.
Now Europe is striking a more aggressive tone about protecting its interests. Italy blocked a small shipment of AstraZeneca vaccines to Australia earlier this month. Ms. von der Leyen upped the ante this week, threatening to use an emergency mechanism, last used during the 1970s oil crisis, that would allow the bloc to seize production of vaccines.
"It is hard to explain to our citizens why vaccines produced in the E.U. are going to other countries," Ms. von der Leyen said.

**'A Minor Communication Problem'**

Early this month, Toon Vanagt, a Belgian tech entrepreneur, accompanied his 77-year-old father to a vaccination center north of Brussels. Mr. Vanagt, 47, was not eligible for the vaccine himself, but a worker there offered him a leftover shot, which he gladly accepted.
Millions of Americans have been vaccinated this way, and software companies have rushed to link patients with doses that would otherwise expire. But in Belgium, when Mr. Vanagt tweeted that he had been vaccinated, it became a mini scandal. Health officials rebuked the vaccine center, which quickly apologized: "A minor communication problem, very quickly rectified."

Belgium's rollout is one example of the Continent's rigid approach to following vaccination guidelines. In a country where nursing home infections led to one of the highest per capita death tolls, the policy was intended to strictly prioritize the neediest residents.
Many European countries are also stockpiling doses to guarantee that everyone who receives a first injection will receive the second dose on time. The United States and Britain have been more flexible, erring on the side of giving more first injections.
"In the U.S., there is a much more flexible, liberal system and you just vaccinate people who come along. Same in the U.K. And it can go quicker. Here it is quite regulated," said Steven Van Gucht, the Belgian government's top virologist, who said it was too soon to know which system is better.
Administrative hiccups have exacerbated the problems. In Frankfurt, Elke Morgenstern was escorted out of a vaccine center because she enrolled using the wrong online application. "It was embarrassing," said Ms. Morgenstern, adding that she qualified for a vaccine because of a pre-existing condition.
Because of the AstraZeneca shortages, she cannot book another appointment before May.
"It is a catastrophe how they are handling things here," she said.
In the Lombardy region of Italy, once the epicenter of the pandemic, the vaccination campaign got off to a slow start in part because the top health care official refused to marshal medical workers over the Christmas holidays. Technical difficulties worsened the problems at the region's vaccination centers.
"Some sessions were empty," said Paola Pedrini, the regional secretary general for Italy's family doctors federation. "For some others, they called 900 people when they could only vaccinate 600."
For all the problems, Dr. Slaoui said Europeans are in an admirable position. By the numbers, the Continent is about five weeks behind the United States, with vaccine supply expected to increase steadily. "It's too late to have taken the first bite," he said. "But they're in a good place."
Dr. Van Gucht, of Belgium, agreed. But he said European leaders will likely take nationalistic lessons from the past months.
"I think we relied a little bit too much on the free markets," he said. "What you really need to do from the beginning is really make sure you produce the vaccines on your territory and that they're destined for your own population."

***Matt Apuzzo** is a two-time Pulitzer Prize-winning reporter based in Brussels. Before joining the international staff, he spent more than a decade in Washington covering law enforcement and security matters. He is the co-author of the book "Enemies Within." A graduate of Colby College, he joined The New York Times in 2014 after 11 years with The Associated Press. He teaches journalism at Georgetown University and once successfully argued a motion from the audience in federal court.*
***Selam Gebrekidan** is an investigative reporter for The New York Times based in London. She previously was a data and enterprise reporter for Reuters where she wrote about migration to Europe and the war in Yemen, among other stories. She has also covered U.S. oil markets.*
***Monika Pronczuk** is a reporter based in Brussels. She joined The Times in February 2020.*

## COVID-19 in Nursing Homes: Several GAO Recommendations to HHS Not Yet Implemented

Source: https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/covid-19-in-nursing-homes-several-gao-recommendations-to-hhs-not-yet-implemented/

Mar 18 – GAO's review of data from the Centers for Disease Control and Prevention (CDC) found that winter 2020 was marked by a significant surge in the number of COVID-19 cases and deaths in nursing homes. However, CDC data as of February 2021, show that both cases and deaths have declined by more than 80 percent since their peaks in December 2020. With the introduction of vaccines, observers are hopeful that nursing homes may be beginning to see a reprieve. Nevertheless, the emergence of more highly transmissible virus variants warrants the need for continued vigilance, according to public health officials.
GAO's prior work has found that nursing homes have faced many difficult challenges battling COVID-19. While challenges related to staffing shortages have persisted through the pandemic, challenges related to obtaining Personal Protective Equipment (PPE) and conducting COVID-19 tests—although still notable—have generally shown signs of improvement since summer 2020. Further, with the decline in nursing homes cases, the Centers for Medicare and Medicaid Services (CMS) updated its guidance in March 2021 to expand resident visitation, an issue that has been an ongoing challenge during the

pandemic. Some new challenges have also emerged as vaccinations began in nursing homes, such as reluctance among some staff to receive a COVID-19 vaccine.

The Department of Health and Human Services (HHS), primarily through CMS and the CDC, has taken steps to address COVID-19 in nursing homes. However, HHS has not implemented several relevant GAO recommendations, including:

- HHS has not implemented GAO's recommendation related to the Nursing Home Commission report, which assessed the response to COVID-19 in nursing homes. CMS released the Nursing Home Commission's report and recommendations in September 2020. When the report was released, CMS broadly outlined the actions the agency had taken, but the agency did not provide a plan that would allow it to track its progress. GAO recommended in November 2020 that HHS develop an implementation plan. As of February 2021, this recommendation had not been implemented.
- HHS has not implemented GAO's recommendation to fill COVID-19 data voids. CMS required nursing homes to begin reporting the number of cases and deaths to the agency effective May 8, 2020. However, CMS made the reporting of the data prior to this date optional. GAO recommended in September 2020 that HHS develop a strategy to capture more complete COVID-19 data in nursing homes retroactively back to January 1, 2020. As of February 2021, this recommendation had not been implemented.

Implementing GAO's recommendations could help address some of the challenges nursing homes continue to face and fill important gaps in the federal government's understanding of, and transparency around, data on COVID-19 in nursing homes. In addition to monitoring HHS's implementation of past recommendations, GAO has ongoing work related to COVID-19 outbreaks in nursing homes and CMS's oversight of infection control and emergency preparedness.

▶▶ Read the GAO report

## Bridge the Knowledge-to-Action Gap to Fight the Next Outbreak Now

**By J. Patrick Fitch, Ph.D. and Kirsten Taylor-McCabe, Ph.D.**

Source: https://www.hstoday.us/subject-matter-areas/emergency-preparedness/bridge-the-knowledge-to-action-gap-to-fight-the-next-outbreak-now/

Mar 19 – COVID-19 is not the first global pandemic and it certainly won't be the last. As the light at the end of the tunnel of this pandemic is in sight, now is the time to take stock in what we've learned over the last 12 months – namely, that effective response depends on timely integration of expertise and data across academia, industry, and government. As a national laboratory, we have participated in the establishment of dynamic R&D-to-operations teams that support this integration. The goal is to steward these capabilities to enable an efficient and effective response to the next event.

This unifying goal is the focus of the recently released COVID-19 strategy, which focuses on developing centers such as the National Center for Epidemic Forecasting and Outbreak Analytics. To support these efforts, the community must bridge the gap between the operational entities that deploy resources and the supporting science and research entities that innovate. The pandemic offers a case study for events of national significance where operational response must incorporate leading-edge scientific information.

For any disease outbreak, there are two well-understood sides of the response. The first is research and development, which looks closely at the disease to determine its origins, how it spreads, effective pharmaceutical and non-pharmaceutical interventions, etc. The second is operational, which includes determining and communicating decisions, distributing test kits, personal protective equipment, and vaccines, etc. But there is an important part of the scientific response between these two pieces that is often overlooked: evaluation and translation to actionable knowledge and market-ready products.

Many groups independently rallied around the COVID-19 response effort to answer these urgent needs.

Universities and industry intensified collaborations for vaccine research. The fashion world turned warehouses into mask-production sites. The automotive industry retooled sites to make face shields. And the Department of Energy put the technical power of the national

laboratories to work as an integrated National Virtual Biotechnology Laboratory through funding from the CARES Act to impact manufacturing, epidemiological planning, testing, and molecular therapeutic R&D.
At Los Alamos National Laboratory, when COVID-19 broke out, we were called on to answer difficult science questions: from the efficacy of different testing methods, to how aerosols are dispersed in different environments, to forecasting the spread of the virus. As a Department of Energy national security laboratory with expertise in bioassay, fluid dynamics, and agent-based computer modeling, we were able to quickly pivot our focus to answer those questions. We have also answered questions about how to best store and transport testing kits, how the variants mutate, how different mitigation strategies impact school reopenings, and how to prioritize certain populations for vaccination to maximize the benefits. We continue to answer these questions and others.
Part of the reason national laboratories are called on to answer these questions is our computing power. At Los Alamos, we've been able to harness this power to forecast disease transmission rates and predict outcomes based on various mitigation strategies.
For example, epidemiological models developed at Los Alamos over the past 15 years were put to work simulating the actions and interactions of individual or collective groups to analyze and forecast the spread of the disease, and to assess the impact of mitigation strategies. Think of it as a life-simulation video game, creating a virtual city populated with virtual citizens who can be assigned ages, incomes, children who attend school, and jobs that take them through the community – all of it based on information pulled from sources such as the U.S. Census Bureau's decennial census.
In addition to supercomputers, the national labs were called on for their diverse expertise in a broad range of scientific fields. For example, our expertise in weapons fluid dynamics provided insights into developing better ventilators to treat critical COVID-19 patients. And plume modeling that stems from our work mapping the travel path of potentially harmful gases and chemicals was utilized to understand how COVID-19 droplet plumes travel.
The result of all these nationwide endeavors was a host of tools and knowledge that decision makers could use at the state and national levels to address the challenges of COVID-19 head-on. But in order to effectively tackle the next challenge the nation may face, it is important to establish a consistent pipeline that integrates the expertise of academia, industry, and government to provide decision makers with the scientific answers they need before and during a crisis.

**Now is the time, while interest and momentum are high, to take the steps to ensure that we establish a bridge between the R&D effort and the operational one so we can effectively answer the quick-turnaround technical questions when – not if – the next outbreak lands on American shores.**

***Patrick Fitch, Ph.D.,*** *is the associate laboratory director for Chemical, Earth, and Life Sciences at Los Alamos National Laboratory, and also leads Los Alamos' Special Office for COVID-19 Research and Development.*
***Kirsten Taylor-McCabe, Ph.D.,*** *is the program manager for National Security and Defense, and Intelligence and Emerging Threats at Los Alamos National Laboratory.*

## Russia announced that by the end of April it will have a vaccine for animals against Covid19

Source: https://www.world-today-news.com/russia-announced-that-by-the-end-of-april-it-will-have-a-vaccine-for-animals-against-covid19-telam/

Mar 19 – A vaccine against the coronavirus intended for animals will be presented in Russia at the end of April, developed by scientists from the Federal Center for the Protection of Animal Health of that country, announced the Russian Veterinary and Phytosanitary Control Service.
"The vaccine is in the registration phase for approval and will be launched on the market shortly. Advance orders for the new preparation have already begun," the entity reported in an article published in its official journal Veterinary and Life and released by the agency. Russian Sputnik.
**The vaccine presentation is scheduled for April 20.**
The Russian Veterinary Control Service had already announced that in April of this year it would be ready to announce the development of its own vaccine for animals called "Carnivac-Cov" and clarify that "the vaccine for animals is different from the vaccine used for vaccination. of humans ".
**And they stated that "Carnivac-Cov appears to be 100% effective", although "its duration cannot be determined at the moment."**

The Carnivac-Cov vaccine, they state, **"It is intended to prevent Covid-19 both in animals that are raised for the use of their skin, as well as for pets, such as dogs and cats"**.

## Vaccine cocktail: what does mixing doses mean for the fight against Covid-19?

Source: https://www.thenationalnews.com/uae/health/vaccine-cocktail-what-does-mixing-doses-mean-for-the-fight-against-covid-19-1.1186710

Mar 19 – Research is under way around the world to see whether mixing vaccines could offer more protection against Covid-19.
On Wednesday, Kirill Dmitriev, the head of Russia's sovereign wealth fund, said he believes pairing Sputnik V with Oxford-AstraZeneca shots could be "highly effective".
Trials of the two are under way in several countries, including Russia. One is scheduled to run in the UAE.
A nd other studies are testing different "mix and match" combinations, including Pfizer-BioNTech.
Most of the vaccines against Covid-19 are administered in two doses.
But why combine different types and what are the risks?
*The National* explains.

**Why combine vaccines?**
There are a few main reasons.
First, it offers governments flexibility when supplies of one type are low.
Second, vaccines have varying levels of effectiveness against the variants. Sputnik's developers said on Wednesday the vaccine works against new strains of the coronavirus.
On state television, Alexander Gorelov, deputy head of research at Rospotrebnadzor's Institute of Epidemiology, said: "Trials have already been done in Russia and we can say with confidence that the [Sputnik V and EpiVacCoriona] vaccines registered in Russia also work against new strains."
It is not known which strains he was referring to. But trials show that the AstraZeneca vaccine offers as little as 10 per cent protection against developing mild to moderate symptoms against infection with the South African variant.
Combining two may improve protection against the virus.
Third, researchers believe using a combination of vaccines could actually strengthen immune responses by getting the best features from each.
Experiments in the UK involving mice showed that using combinations of Pfizer-BioNTech and Oxford-AstraZeneca worked well.
Offering one dose of each induced a stronger immune response than two doses of either one alone, according to Dr Matthew Snape, an associate professor in paediatrics and vaccinology at the University of Oxford, who is leading a study into the combination.
The practice of mixing vaccines has successfully been used on people before.
Immunisation programmes against Ebola, hepatitis, polio and measles, mumps and rubella in the past used different vaccinations to improve protection.

**Vaccine mixing trial in UAE**
In Abu Dhabi, scientists will study a combination of Sputnik and Oxford-AstraZeneca shots.
Both vaccines are known as viral vectors.
This means they use a virus – in this case a harmless cold-causing adenovirus – to carry the Sars-CoV-2 coronavirus gene to cells to deliver instructions to build antibodies against the spike.
AstraZeneca ordinarily uses only one strain of a chimpanzee adenovirus, which is administered twice.
But Sputnik uses different strains – adenovirus 26 and adenovirus 5 – of a human virus for each of the two doses.
The developers of Sputnik said the different strains were purposefully chosen to ensure the immune system does not recognise and attack the vector when the second dose is given before it has a chance to work.
It could help explain why Sputnik is more effective than AstraZeneca and why the two vaccines might work well in combination.
Because the combination uses a chimpanzee virus and a human virus, there will be no immunity built between the shots to impair the response.

Tests show Sputnik V to be 91.6 per cent effective, compared with AstraZeneca's rate of 70 per cent.

**How many people will the study involve?**
The UAE trial will involve 100 people, all of whom will receive a combination of the Sputnik and AstraZeneca vaccines.
"Fifty subjects will receive Sputnik followed by AstraZeneca and 50 subjects will receive AstraZeneca followed by Sputnik," said Dr Ahmed Al Hammadi, a consultant in infectious diseases at Tawam Hospital in Al Ain, at a recent public health conference.
Only the adenovirus 26 strain from Sputnik will be used.
"This provides a new way to use combinations of different vaccines, as well as to use the advantages of both vaccines," Dr Al Hammadi said.
"The [advantage of] AstraZeneca being the chimpanzee virus is less common. We expect humans to be less exposed to it. And the Sputnik, the 26 which is, again, less common, but a human virus."

**Mixing Pfizer and AstraZeneca**
In the UK, scientists are carrying out another mix-and-match trial involving two vaccines; Pfizer-BioNTech and Oxford-AstraZeneca.
It involves more than 800 people aged 50 or older and is testing a variety of combinations.
They will receive the AstraZeneca shot followed by the Pfizer vaccine, or vice versa, four or 12 weeks apart.
Unlike Sputnik and AstraZeneca, which are similar in composition, Pfizer is an entirely different type of vaccine that was built using messenger RNA technology.

**Is mixing vaccines safe?**
The technique has been used in the past.
However, scientists said research needs to be carried out to confirm it will work and be safe using the vaccines against Covid-19.
Speaking to *The National* last month, experts said long-term mixing of vaccines is unlikely to be harmful, and could even provide better protection against the virus if given as a booster later.
The practice is known as heterologous prime boosting and was used in the past to good effect.
"This has been known to greatly increase both antibody and T-cell immunogenicity when performed using certain vector combinations, above repeated dosing with the same vaccine candidate," the World Health Organisation said in a 2014 briefing document.
But experts said combining different vaccines in the short term needs to be studied.
Prof Paul Hunter, professor of medicine and infectious diseases at the University of East Anglia, said one drug could stimulate enzymes in the liver that break down another drug, making it less effective.
"Interactions are one of the things we hammer into medical students now," he said. "They have to be careful."

## Progesterone Eases Severe COVID-19 in Hospitalized Men

**By Mitchel L. Zoler, PhD**
Source: https://www.medscape.com/viewarticle/947822

Mar 20 – Women hospitalized with severe COVID-19 generally do better than men, which led to the notion that perhaps men hospitalized for COVID-19 could be treated with female hormones.
This concept has shown "very encouraging" results in a single-center, US pilot study that randomized 42 men hospitalized for severe COVID-19. Those who received up to 5 days of treatment with injected progesterone had significantly better outcomes than those who received standard of care, researchers report in *Chest*.
The new findings "suggest that administration of progesterone at a dose of 100 mg twice daily by subcutaneous injection may represent a safe and effective approach to treatment of COVID-19 by improving clinical status of men with moderate to severe illness," write Sara Ghandehari, MD, and coauthors, most of whom work at Cedars-Sinai Medical Center in Los Angeles, California.
"The potential utility of progesterone in treatment of early COVID-19 in men is compelling," they say.
They caution, however, that further study is needed with greater numbers and a more diverse range of participants, including postmenopausal women, as well as involvement of other treatment locations.
Progesterone, a steroid hormone produced by the ovaries during reproductive cycles, naturally occurs in only premenopausal women. The hormone's potential role in treating men

(or postmenopausal women) with more severe COVID-19 stems from the observation that premenopausal women with COVID-19 have fewer hospitalizations, shorter duration of hospitalizations, and less need for ventilatory support than postmenopausal women. Higher levels of progesterone may have an immunomodulatory role that dampens the exaggerated inflammatory immune cascade associated with more severe COVID-19, the authors suggest.

**Progesterone Doubles Rate of Improvement**

The primary study endpoint was change in patients' clinical status, assessed using a 7-point ordinal scale, from baseline to day 7. Secondary endpoints were hospital length of stay, days of supplemental oxygen use, and need for mechanical ventilation.

Results showed that men who received progesterone had a significant median improvement in clinical score status of 1.5 points at 7 days from baseline compared with controls.

Fourteen men in the progesterone group (70%) improved during the first 7 days, compared with seven (32%) in the control group.

Additionally, during the first 7 days of the study, the cumulative probability of clinical improvement was 0.76 among the 20 men who received progesterone compared with 0.55 among the 22 controls who received placebo, a significant difference.

The progesterone group also had a 3-day decrease in median time on supplemental oxygen and a 2.5-day drop in median length of hospital stay. The need for mechanical ventilation was also lower in the progesterone vs control group (0 vs 4 patients).

No patient had a serious adverse event attributable to progesterone, no adverse events occurred that required progesterone discontinuation, and the treatment seemed well tolerated.

Two thromboembolic events occurred in one patient in the progesterone group, and one thromboembolic event occurred in each of two patients in the control group. Patients in each of the two subgroups reported comparable numbers of serious adverse events, and one patient in each group died.

The study enrolled hospitalized adult men in April to August 2020 who tested positive for SARS-CoV-2, had evidence of lower respiratory tract involvement, had an oxygen saturation of 94% or less on room air, and who were on supplemental oxygen. The study excluded men on mechanical ventilation. Patients received chemoprophylaxis for thromboembolism, a precaution recommended for all patients hospitalized for COVID-19. There is currently no evidence that exogenous progesterone at the dosage used promotes thromboembolism, the authors note.

The treatment regimen called for twice-daily injections of 100-mg progesterone for up to 5 days, but patients could stop treatment early if they improved enough for hospital discharge. The protocol also allowed for use of other treatments with presumed benefit for COVID-19. Patients in the control group who had significant deterioration after 7 days could crossover to receive progesterone. Patients were followed for up to 15 days or until hospital discharge.

Enrolled patients were an average of 55 years old, 78% were White, and most were of Hispanic ethnicity. Overall, 85% were on supplemental oxygen at entry. Average body mass index was 31.6 kg/m$^2$, 48% had hypertension, 45% were obese, and 25% had diabetes.

**A 7-point assessment scale was used and scored based on the following criteria: 1. Death; 2. Hospitalized, on invasive mechanical ventilation or extracorporeal membrane oxygenation; 3. Hospitalized, on high-flow oxygen devices; 4. Hospitalized, requiring supplemental oxygen; 5. Hospitalized, not requiring supplemental oxygen; 6. Not hospitalized, limitation on activities; 7. Not hospitalized, no limitations on activities.**

## The Multibillion-Dollar Question: How Long Do COVID Vaccines Last?

Source: https://www.fool.com/investing/2021/03/21/the-multibillion-dollar-question-how-long-do-covid/

Mar 21 – Americans have received more than 120 million COVID-19 vaccine doses. Another 2.4 million shots are administered each day. Within the next few months, every adult in the U.S. who wants to be vaccinated will be. But there's a big unanswered question that affects anyone who receives a COVID-19 vaccine: How long will the vaccines provide protection against novel coronavirus infection? This isn't like the old TV game show *The $64,000 Question*, though. How long COVID-19 vaccines last is a multibillion-dollar question.

**Billions of dollars on the line**

**Pfizer** (NYSE:PFE) and **BioNTech** (NASDAQ:BNTX) were the first to win U.S. Emergency Use Authorization (EUA) for their COVID-19 vaccine, BNT162b2. In February, Pfizer

estimated that the vaccine would generate sales of around $15 billion this year based on supply deals in place at that time.
However, since then the two companies have received additional orders for BNT162b2 -- 100 million more doses for the U.S. and 200 million additional doses for the European Union. These deals should boost BNT162b2 sales above $20 billion in 2021.
**Moderna** (NASDAQ:MRNA) won EUA for its COVID-19 vaccine, mRNA-1273, soon after Pfizer and BioNTech. The biotech expects to generate $18.4 billion in sales this year from the vaccine.
**Johnson & Johnson** (NYSE:JNJ) secured EUA for its single-dose COVID-19 vaccine in late February. The healthcare giant is selling the vaccine at cost during the pandemic for around $10 per dose. J&J hopes to supply at least 1 billion doses of its vaccine this year. Assuming it achieves that goal, the company will make roughly $10 billion in sales.
These three vaccines alone could together make well over $48 billion this year. And we haven't included the sales for COVID-19 vaccines from **AstraZeneca** (NASDAQ:AZN) and **Novavax** (NASDAQ:NVAX), both of which could win U.S. EUA in the near future.

**The best guess right now**
No one knows for sure just how much of that enormous revenue these companies will make in 2021 will be recurring. In theory, COVID-19 vaccines could provide protection against infection for years. In that case, sales of vaccines would plunge in 2022.
On the other hand, let's assume that booster doses are needed every six months or so. That scenario would mean that Pfizer, Moderna, and the other companies could count on significant revenue every year.
The problem lies with our original question. We still don't know how long the immunity provided by COVID-19 vaccines will last. There's a good reason for the mystery: Not enough time has gone by since the first participants in clinical studies were fully immunized.
New variants could also be critical. Even if current COVID-19 vaccines provide long-lasting protection against existing coronavirus strains, the emergence of new viral variants could require more frequent booster shots.
Probably the best guess for right now is to go with Moderna CEO Stephane Bancel's prediction that COVID-19 will be like the seasonal flu. If he's right, annual vaccinations will be needed.

**Potential winners and losers**
A recurring COVID-19 vaccine market could be quite different from what we're seeing in 2021. Governments across the world are currently trying to get their hands on any vaccine that has won or is likely to win authorization. Going forward, though, other factors could be important.
As vaccine supply grows large enough to meet demand, price will become a bigger issue. That could benefit Johnson & Johnson since its vaccine requires only a single dose. However, Moderna is evaluating a next-generation COVID-19 vaccine that could also potentially be given as a single dose. Don't be surprised if Pfizer and Novavax, both of whose vaccines have high efficacy with two doses, move forward with testing single-dose regimens.
Perhaps the most critical differentiator in the future, though, will be how quickly companies can develop safe and effective vaccines targeting new coronavirus variants. That could give the edge to Pfizer/BioNTech and Moderna. Their messenger RNA technologies enable rapid development of vaccines.
AstraZeneca and Johnson & Johnson could be at a disadvantage because of their adenovirus delivery methods. It's possible that individuals could build immune resistance to the adenoviruses used.
Generally speaking, the biggest winners if frequent booster shots are needed will probably be the relatively smaller biotech stocks instead of the big pharma stocks. BioNTech, Moderna, and Novavax would feel the impact of strong recurring revenue from COVID-19 vaccine sales more than AstraZeneca, J&J, and Pfizer would. However, if it turns out that COVID-19 doesn't become similar to the seasonal flu, these biotech stocks would likely be the biggest losers.
When will we know the answer to the multibillion-dollar question looming over all of these drugmakers? Probably by the fourth quarter we'll at least have a pretty good sense of whether or not annual booster doses will be needed. That's when participants in the late-stage studies conducted by Pfizer/BioNTech and Moderna will have been fully vaccinated for at least one year.

**Should you invest $1,000 in Moderna, Inc. right now?**
Before you consider Moderna, Inc., you'll want to hear this.
Investing legends and Motley Fool Co-founders David and Tom Gardner just revealed what they believe are the **10 best stocks** for investors to buy right now... and Moderna, Inc. wasn't one of them.

The online investing service they've run for nearly two decades, *Motley Fool Stock Advisor*, has beaten the stock market by over 4X.* And right now, they think there are 10 stocks that are better buys.

## Rates and Characteristics of SARS-CoV-2 Infection in Persons with Hepatitis C Virus Infection

**By Adeel A. Butt and Peng Yan**

*Liver International. 2021;41(1):76-80*

Source: https://www.medscape.com/viewarticle/943618

### Abstract

Rate of SARS-CoV-2 infection and impact of liver fibrosis stage upon infection rates in persons with hepatitis C virus (HCV) infection are unknown.

**Methods:** We retrospectively analysed the Electronically Retrieved Cohort of HCV Infected Veterans (ERCHIVES), a well-established database of HCV-infected Veterans in care. We excluded those with missing FIB-4 score and those with HIV or hepatitis B virus co-infection. We determined the number of persons tested, proportion who tested positive for SARS-CoV-2 and the infection rate by age and liver fibrosis stage.

**Results:** Among 172,235 persons with HCV, 14,305 (8.3%) were tested for SARS-CoV-2 infection and 892 (6.2%) tested positive. Those with SARS-CoV-2 infection were older, more likely to be Black (55.2% vs 37.8%), obese (body mass index >30 kg/m$^2$ 36.2% vs 29.7%) and have diabetes or stroke ($P$ < .0001 for all comparisons). Mean FIB-4 scores and proportion of persons with cirrhosis (based on a FIB-4 > 3.25) were similar in both groups. Incidence rate/1,000 tested persons was much higher among Blacks (88.4; 95% CI 81.1, 96.2) vs Whites (37.5; 95% CI 33.1, 42.4) but similar among those with cirrhosis (FIB-4 > 3.25). The rates were also similar among those who were untreated for HCV vs those treated with or without attaining a sustained virologic response.

**Conclusions:** Testing rates among persons with HCV are very low. Persons with infection are more likely to be Black, have a higher body mass index and diabetes or stroke. The degree of liver fibrosis does not appear to have an impact on infection rate.

## New product for face masks – mask fitter & braces

# Why Certain Lifestyles and Interests May Have Influenced COVID-19 Decision-Making More than Others

**By Zac Greene and Maarja Luhiste**

Source: http://www.homelandsecuritynewswire.com/dr20210322-why-certain-lifestyles-and-interests-may-have-influenced-covid19-decisionmaking-more-than-others

Mar 22 – As the U.K. prepares to transition to the next stage of the COVID-19 pandemic, with declining infection rates and impressive vaccine uptake, discussion has turned to the relaxing of lockdown rules. Governments now weigh multiple trade-offs as they seek to reopen the country. Armed with substantially greater evidence from the 2020 lockdowns, cabinet ministers wrangle not only with difficult-to-interpret track-and-trace evidence that itself suffers from selection bias, but also with implementing policies consistent with their ideological positions.

The evidence available comes with substantial uncertainty, and even the choice to dogmatically follow a largely non-political scientific board's advice is a political decision affecting the way governments implement scientists' recommendations. And while representative democracy requires the ability for citizen deliberation, much of the rhetoric around what "following the science" means has sought to suppress public discussion, limiting citizens' ability to hold politicians accountable for their interpretations of scientists' recommendations.

Based on our research explaining politicians' preferences and policy decisions, we argue that linking substantive representation to descriptive representation by examining politicians' backgrounds, life-style choices, and professed lived experiences provides grounds for citizen deliberation. While research focuses on fairly descriptive elements of politicians' backgrounds including observed sex, race or ethnicity, their individual experiences derived from lifestyle choices likely matter as well. Earlier research presented compelling normative arguments for going beyond visible characteristics when discussing the link between descriptive and substantive representation. The assumption is that certain shared lived experiences will help a politician 'react more or less the way the voter would have done, on the basis of descriptive similarity'. Empirical research supports this contention. Professional experiences and class background predict politicians' selection to cabinet positions and policy priorities. As parenthood has been found to impact voters' political attitudes, politicians likewise emphasize children and aspects of their personal lives in decision-making.

Shared lived experiences with the represented are of particular importance to politicians in uncertain and unusual times. Preferences have not yet been (re-)formulated, articulated or legitimated on a range of issues in response to the pandemic, a situation few of us could have foreseen. We argue that certain lived experiences and common lifestyle choices have probably been better represented than others due to the profile of prominent politicians. Understandably, parenthood and family considerations centre in many discussions of lockdown restrictions.

Yet, there is a perception by many single people of having been treated as an afterthought in policymaking, which could be partially an artefact of citizen perception that there are few individuals in government facing comparable challenges. That schools were the priority for reopening in the current lockdown likely fed this narrative, even if it was the right policy for ethical and practical reasons, and come with a relatively low risk according to Scottish Track and Trace data in Figure 1 (below).

While parents are justifiably considered worthy of government assistance and consideration, other identities deriving from life choices and non-professional interests – which many parents also share – present a less studied element of politicians' backgrounds. For example, the UK Cabinet Secretary for Defence, Ben Wallace lists interest in "rugby, skiing, motor sports and horse racing" on his cabinet website. Likewise, the Scottish Cabinet Secretary for Rural Economy and Tourism, Fergus Ewing highlights interest in hillwalking (bagging munros), jazz piano, and being a former member of a Highlands outdoor rescue team. In both UK and Scottish government pages, however, there is limited information on personal experiences and life-style choices for most ministers, particularly as neither Johnson nor Sturgeon emphasise these aspects of their personal lives. There is even less such information on top civil servants and experts who increasingly develop governmental policies in public settings. While new media platforms do offer public figures the opportunity to post more about their personal lives, politicians seem rather hesitant to share such information on social media.

But although little studied, cabinet members' lived experiences and interests likely impact the decisions made, especially in a context of unarticulated interests. For instance, participation in activities and sports such as jogging, hiking, or cycling provides first-hand insights into their associated risks during a pandemic, driven by a virus that primarily spreads in indoor settings. While economic concerns encourage governments to consider opening non-essential shops, cafes, and pubs as soon as possible, the risk that each of these choices poses over relaxing other restrictions, such

as limits on outdoor exercising, is higher. Shopping and retail are one of the greatest locations identified for spreading the virus, whereas the figures for other areas are fairly limited. Even with increased cases from mixing over the holidays, a primary form of transmission was likely the packed shops immediately prior to Christmas, which then led to greater transmission among families.
Although there is no easy indicator of whether transmission occurred indoors or out, most activities more naturally held outdoors (such as exercise) show extremely low transmission rates. These findings are consistent with recent research in *Nature* and *Science* (relying on large cross-national datasets), evidencing the limited added benefit of stay-at-home orders and restrictions on internal movement. The beach "super-spreader" myth provides further local evidence and questions the decision of essentially locking city dwellers within their local area in England and within five miles of their local authority area in Scotland. With a lack of empirical evidence supporting these measures, why are political leaders not "following the science" in this case?
Intriguingly, there are few self-professed outdoorsmen/women in the UK or Scottish governments, but the latter's inclusion of Ewing (previously a member of a mountain rescue team) may have influenced the government's messaging. The slightly greater flexibility to travel within five miles of the local authority area has retained for his constituents in Inverness, in contrast to Glasgow or Edinburgh, an easy access to the Scottish Highlands. Yet, messaging surrounding outdoor sports came with a strong moral argument to stay home. Going to the Highlands was claimed to include substantial risk of requiring emergency support and putting the NHS at risk, despite fairly limited numbers of major emergencies even under normal tourist conditions. Similarly, participation in activities such as grouse hunting may have benefited only special interest groups.
Scholars find that the diversity of representatives in government during crises impacts the types of policies they pursue. The ongoing pandemic and resulting economic and health crises have substantially exacerbated pre-existing inequalities. Government policies intended to address the pandemic differ across countries working with the same or similar expert advice, with sometimes striking differences in practice, suggesting political considerations. But, claims of following the experts limit citizens' ability to have a reasoned discussion of decisions which are ostensibly political, not purely scientific ones. Perceptions of government policies in crisis situations are both structured by individuals' multiple overlapping identities and also likely create new ones. Persistent lack of representation within government across diverse backgrounds may hold the key to understanding the current crisis in citizens' support for democracy. Failure to account for citizens' broad experiences will exacerbate these tensions with substantial potential for major electoral and political shifts into the future.

***Zac Greene** is a Reader in the Department of Government and Public Policy at the University of Strathclyde.*
***Maarja Luhiste** is Senior Lecturer in the Politics of Gender at Newcastle University.*

## Scientists Chasing Origins of COVID-19 Add Southeast Asia to Search

**By Zsombor Peter**

Source: http://www.homelandsecuritynewswire.com/dr20210322-scientists-chasing-origins-of-covid19-add-southeast-asia-to-search


Mar 22 – Scientists hunting the origins of the virus behind COVID-19 and clues for how to prevent the next pandemic say a growing body of evidence argues for expanding the search beyond China into Southeast Asia.
Since the first confirmed outbreak of COVID-19 put the eastern Chinese city of Wuhan on the world map in December 2019, researchers looking for the source of the virus that causes the disease, SARS-CoV-2, have been training their gaze on China itself.
The pathogen's closest known relative, sharing some 96% of its genome, is another coronavirus found early last year in the southern province of Yunnan.
But a spate of recent studies has found more viruses nearly as similar to SARS-CoV-2 as the one in Yunnan further afield, in Thailand and Cambodia.
Virologists on a recent mission to Wuhan sponsored by the World Health Organization to trace the roots of COVID-19 also say that the next phase of the hunt should add Southeast Asia to the field.
Their advice is to follow the bats. Some species are well-known reservoirs of the coronavirus family and leading candidates for SARS-CoV-2 fountainhead.

**Bat Signals**

Scientists have already identified more than 100 SARS-related coronaviruses in bats across China, said Peter Daszak, a virologist who joined the WHO trip.

"But we haven't done enough work in Myanmar, Laos and Vietnam to really say that there aren't even more in those countries," he told VOA.

"When you plot out on a map where the bats live that carry these viruses, you start to see that those countries on the southern border of China have even more diversity of bats and likely even more diversity of viruses. So, it may be that the origin really was in Yunnan province, but my best guess is that we need to look in Myanmar, Laos, Vietnam and then even farther south into the whole region of Southeast Asia as a potential hotspot."

China has refused to hand over raw data on some of the earliest patients of COVID-19. Even so, Daszak said, the Chinese scientists and WHO delegation agreed that SARS-CoV-2's most likely route into humans was from bats via some sort of farmed wildlife as intermediary.

Early last year scientists from China and Australia reported finding viruses matching SARS-CoV-2 by more than 90% in Malayan pangolins — a potential intermediary hunted for their scales and meat — that had been smuggled into southern China from Southeast Asia.

A few months later, scientists found viruses akin to SARS-CoV-2 lurking in horseshoe bats that had been collected in Cambodia and freeze-dried more than a decade ago. They said in their report that the discovery "indicates that SARS-CoV-2-related viruses have a much wider geographic distribution than previously understood and suggests that Southeast Asia represents a key area to consider in the ongoing search for the origins of SARS-CoV-2."

Then, in February, scientists in Thailand also found viruses closely matching SARS-CoV-2 in a colony of bats not far from Bangkok, and antibodies effective against SARS-CoV-2 itself in a smuggled pangolin seized by local authorities in the country's south, near Malaysia.

**It's Relative**

Supaporn Wacharapluesadee, a virologist with the Thai Red Cross Emerging Infectious Diseases Health Science Center at Chulalongkorn University in Bangkok, who took part in the last study, called it an "important discovery in the search for the origins of SARS-CoV-2."

She said the search for those origins should lead wherever the bats that host its closest known relatives live.

"For example, if we find SARS-CoV-2-related virus in horseshoe bats in China, that means if you find horseshoe bats in other countries the virus can [potentially] be found in other countries also," she told VOA.

To narrow in further on the ultimate source of SARS-CoV-2, virus hunters are looking for matches even closer than the 96% of the strain found in Yunnan last year. The strains found in Thailand and Cambodia range in likeness from roughly 91% to 93%.

But given the population density and abundance of bat species in Southeast Asia, the team that found the SARS-CoV-2 relative in Thailand says the sub-region may be "a more likely hotspot for such viruses" than China and worth added attention.

Chee Wah Tan, a senior research fellow at the Duke-National University of Singapore Medical School and another member of the team, said the search should take in the region's bats and likely intermediaries alike.

The strains found in Thailand and Cambodia, "could be the ancestor or something close to the ancestor of SARS-COVID-2," he told VOA.

"That's why now maybe more work has to be carried out on this region to see whether we can identify any intermediate hosts that carry [a virus with] 99.9% genome similarity to the SARS-COVID-2."

**In Pursuit**

That work has already begun.

Daszak, president of EcoHeatlh Alliance, a U.S. non-profit fighting the threat of emerging diseases from animals, said his group is just getting started on surveillance work in Laos, Myanmar and Vietnam — which all border China — for signs of SARS-CoV-2 in bats. They've been doing similar work with coronaviruses in Thailand and Malaysia for a few years already, as have local scientists there and elsewhere.

His hope is that Beijing steps up its own surveillance and testing of wildlife farms and markets on its side of the border in southern China, as it has tentatively agreed to do. He also hopes to work with local police to test the animals they pluck from the illegal wildlife traffickers who cross those borders.

Daszak is not expecting any quick answers to exactly where SARS-CoV-2 began and how it jumped to humans. He said the search for the origins of the SARS virus took some five years and that scientists still aren't sure where the Ebola virus came from more than four decades after spotting it in Africa.
The search for those answers is far more than academic. By tracing SARS-CoV-2 back to its roots, scientists hope to find the other animal viruses and pathways most likely to cause the next pandemic and step in before they do.
"It's a bit like disrupting terrorist cells," Daszak said. "When you hear rumors of a terrorist attack, you don't wait for the attack, you go out there and you disrupt that network, and you close it down. That's what we need to do with pandemics."

***Zsombor Peter** is a journalist covering Southeast Asia.*

## Cuba begins final phase of trials for its homegrown COVID-19 vaccine, dubbed 'Soberana 2'

Source: https://www.cp24.com/world/cuba-begins-final-phase-of-trials-for-its-homegrown-covid-19-vaccine-dubbed-soberana-2-1.5356151

Mar 21 – Cuba announced on Sunday it would vaccinate 150,000 frontline workers as part of the final phase of a clinical trial of the country's leading COVID-19 vaccine candidate amid a surge in cases.
The shots using the Soberana 2 vaccine will start Monday and target medical and other personnel at high risk, the authorities said.
"Cuba could immunize 150,000 people immediately from COVID-19, as the phase 3 trial of this vaccine is demonstrating it is very safe," Foreign Trade and Investment Minister Rodrigo Malmierca tweeted.
Soberana 2 has been in the final phase of a clinical trial for the past three weeks involving 44,000 volunteers from the general population.
The Communist-run Caribbean island nation, which has long experience with developing and exporting vaccines, is one of a handful in the region that have not started vaccinating against COVID, as it is counting on its own candidates.
Cuba's drug regulatory authority on Thursday also approved a second COVID-19 vaccine candidate for late-stage clinical trials called Abdala.
Cuba is going through its worst coronavirus outbreak since the start of the pandemic after opening its borders late last year.
The island of 11 million inhabitants is registering 600 to 1,000 new cases each day, well above the scores or a handful per day for most of last year. Since the pandemic started, the country has reported 65,000 cases and 387 deaths, one of the lowest rates in the world per capita.
The government has vowed to vaccinate the entire population this year with one of its five experimental shots in development.

**EDITOR'S COMMENT:** Under a US embargo since 1962, Cuba began developing its own vaccines in the 1980s. Today, about 80% of the vaccines used in immunization programs are produced domestically. Lesson learned: autonomy!

## COVID-19 Vaccine in The Form of a Pill Is Set to Enter First Clinical Trials

Source: https://www.sciencealert.com/a-potential-pill-form-coronavirus-vaccine-could-soon-undergo-clinical-trials

Mar 23 – A coronavirus vaccine which exists in pill form could enter the first phases of clinical trials this year.
Oravax, the company working on the substance, announced in a press release that it hopes to begin the first phase of clinical trials in humans by June.
The step is only the earliest phase of developing a vaccine. There is no guarantee of success, and even if it works it could be a year or more before it is authorized for use (Moderna and Pfizer began their first human trials in March and May 2020 respectively).
Oral vaccines are an option being assessed for "second-generation" vaccines, which are designed to be more scalable, easier to administer, and simpler to distribute.
Oravax is joint venture by two firms: the Israeli-American company Oramed and the Indian company Premas Biotech. Its press release Friday said that trials could begin by June.
An oral vaccine could "potentially [enable] people to take the vaccine themselves at home," Nadav Kidron, CEO of Oramed, said in the release.

The vaccine could be shipped in a normal refrigerator and stored at room temperature, Kidron said, "making it logistically easier to get it anywhere around the world," the Jerusalem Post reported.
In an email to Insider, Prof. Paul Hunter, Professor in Medicine at the University of East Anglia, sounded a note of caution.
"We would need properly conducted studies to prove [oral vaccines'] worth," he said.
"But they may also be of value in people who are severely needle phobic and may be easier and more rapid to administer."
Oral vaccines could also offer other benefits over vaccines taken in the arm, Hunter told Insider.
"The thing about systemic vaccines (shots in arms) in that they are generally very good at preventing severe disease" but they are often not great at preventing infection.
The theory is that because the infection first happens in the nose and throat, that vaccines focused on those areas will help stop infection before it can develop to anything worse.
Data about the Oravax vaccine has not been published to date. "The results of the animal studies are encouraging", Hunter told Insider. "But don't assume that animal results always translate into human results".
"We need human studies to be sure," he said.
Other types of second-generation vaccines are being investigated, such as vaccines delivered by a spray through the nose. Scientists are also studying whether vaccines could be delivered through patches.
Prof. Sarah Gilbert, lead scientist on the development of the Oxford/AstraZeneca vaccine, said that Oxford is assessing the possibility of developing tablets and nasal-spray oral vaccines, the Independent reported on February 25.
Oxford University declined to answer questions about oral vaccines put by Insider before publication.
Another company, ImmunityBio, is running Phase 1 clinical trials of an oral version of the vaccine. However, this would be used more as a booster dose to the intramuscular vaccine, rather than the vaccine on its own.
The only test of an oral COVID-19 vaccine done in humans so far has not panned out.
In late 2020, a company called Vaxart announced good results in animal trials, but in the first human trials got disappointing responses.

## AstraZeneca Eyes EUA for COVID-19 Vaccine after Positive Results

The pharma giant released results from the Phase III D8110C00001 trial (NCT04516746), showing the vaccine to be 79% effective at preventing symptomatic COVID-19 and 100% effective at preventing severe disease or hospitalization in the whole cohort. The positive safety and efficacy results from the 32,449-participant Phase III study in the U.S., Chile, and Peru for its COVID-19 vaccine—and specifically, no increased risk of blood clots along the lines of the 30 reported in Europe earlier this month. **+ MORE**

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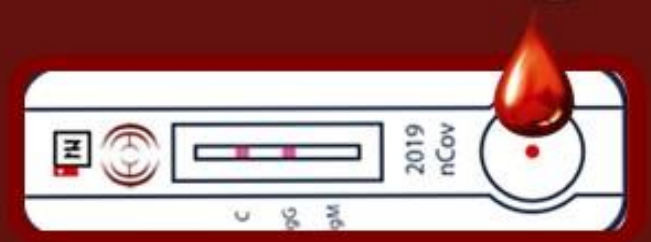


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