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First Responders*

DIARY

June 2020



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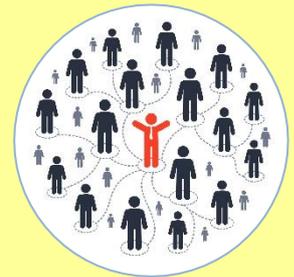
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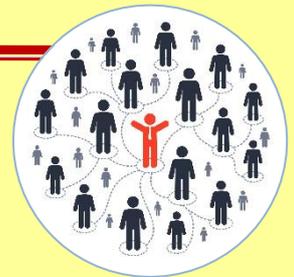




Editorial

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

Editor-in-Chief
H2S C²BRNE Diary



C²BRNE DIARY

Dear Colleagues,

**PANDEMIC WAS NOT ENOUGH!
LOCKDOWN WAS NOT ENOUGH!
POST-LOCKDOWN RESTRICTIONS WERE NOT ENOUGH!
FINANCIAL DESTRUCTION WAS NOT ENOUGH!
WHAT WORLD WAS NEEDING WAS AN ONGOING RACE WAR!**

US-wide (and internationally) peaceful protests – which have descended into violence and rioting at times and have been met occasionally with excessive force by authorities – continued with calls for justice for Minnesota resident Floyd who died on May 25, 2020. An emotional Terrence Floyd demanded that rioters stop violence and protest his brother George Floyd's killing peacefully as he visited the scene in Minneapolis where George was asphyxiated by police officers. Crying, kneeling, and praying at the intersection where his older brother died, Terrence Floyd told supporters on Monday that rioting and acts of violence "will not bring my brother back". "I understand you're upset ... but if I'm not over here wildin' out, if I'm not over here blowing up stuff, if I'm not over here messing up my community - then what are y'all doing? Nothing, because that's not going to bring my brother back at all," Floyd said angrily over a loudspeaker. "So, let's do this another way. Let's stop thinking that our voice doesn't matter and vote ... because it's a lot of us and we still going to do this peacefully." Floyd then led the crowd in a chant of, "Peace on the left and justice on the right."

Many grasp the opportunity for publicity; many for political reasons; many others for no apparent reason. An example of the latter was the 25-year-old Greek born (to Nigerian parents) basketball player and NBA superstar Giannis Antetokounmpo, who is a model and an idol for the city of Milwaukee, actively participated, along with his brothers Thanasis and Alex, to protest the murder of George Floyd and also handed out water bottles to protesters. He also took the lead in the demonstration that took place in the city, asking for "change and justice". What exactly the young millionaire wants to change and how he personally defines injustice in his new homeland? All of us – especially in Europe – who condemn the unnecessary police brutality leading to the death of an individual, do we know exactly the situation in the US when comes to Afro-Americans in order to demonstrate? Was the police officer who killed G Floyd declared innocent by court and reassumed duties? And when Europeans protest against racism, what does this means? That the rest of us do not love the illegal immigrants from all over the world flooding Southeast Europe and we must change attitude and invite them in our homes? That we are the bad guys and they are the good humane guys? That we enforce KKK tactics against these poor people that enjoy generous benefits without offering nothing back? Questions that cannot be answered because demonstrators do not want to answer them; because opposition to an unfortunate incident is confused with democracy and is spread in a way similar to SARS-CoV-2. Latest achievement is the statue attacks on both sides of the ocean and the critic on "European white Jesus Christ" (Shaun King). *O tempora, o mores!*

Going back to a slightly bigger problem – the ongoing pandemic and the post-lockdown era, it seems that we will continue to count deaths and observe new hot spots around the globe – i.e. Brazil. Due to summer time, many countries decided to return to what is called the "new normality" a rather stupid term with dozens of stupid rules dictated by infection experts who think that they know everything. These people are forgetting a basic principle when planning measures for the population. Planning should be based on what people will actually do; not on what they should do or it would be best to do! Anthropocentric planning determines the applicability and the success



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of a plan while avoiding directives and guidelines that are not been able to implement. The virus-human interaction is constant and difficult to be totally controlled by measuring distances or issuing fines and closing stores or threaten with a new lockdown. It is quite “amusing” to study the measures for tourism, schools, transportation, restaurants and for many of our daily activities (infectious diseases specialists issues rules even for brothels!) In Greece we were proud that we did well against the pandemic by showing unity and comply to the point with the official guidelines. But this was not something inherent; it was only a response to fines and strict policing. Now that the lockdown is over, people are showing their usual behavior that is caring for themselves but not for others! The presence of tourists and the usual summer behavior of both providers and customers will make an explosive combination that nobody can predict the final outcome. Fortunately, we have only one heavy industry to save – tourism; imagine if, instead of services, we had to produce things like cars, drones, cement, computers, bikes, or cucumbers! The only good thing is that Turkish aggressiveness and almost daily threats on everything help us ignore inappropriate corona-rules and restrictions. In the meantime, the only thing we can do is to be logic and take own preventive measures as we did for decades – quite successfully if I may say!

This issue and most probably those that will follow is almost entirely dedicated to the new coronavirus as if there is no C or R threats around. It is like all the diseases disappeared from hospitals during the peak of the coronavirus pandemic! Now we are worrying if terrorists will take advantage of the virus or other biological materials in order to produce what they know best: terror and surprise! Of course, we are not doing something to be ahead of the threat that is synonymous to a second wave of Covid-19. Keep also in mind that whenever we strengthen the door, we weaken the windows!

At the end of this month we experience the stabbing of three men in Reading, UK by a Libyan. The fact itself is not the only terrorism issue; the 25 years old man arrested was known to MI5 since 2019 after they received information, he had aspirations to travel abroad - potentially for terrorism – this is terrifying as well! Unfortunately, in our civilized world first you commit terrorism and then you are arrested or neutralized (in 5 [minutes](#)).

Take care First Responders and enjoy Summer – come to Greece; choose a small island, keep your distances and enjoy the most relaxing vacations in your life!

The Editor-in-Chief

Milos Island, Greece



Will there be a new era for Democracy Post-Covid 19?

By Aleksander Ksawery OLECH (RIEAS Research Associate and PhD Candidate, War Studies University, Warsaw, Poland)

May 11 – The purpose of this research paper is to analyze current trends in the world regarding the pandemic of Covid-19 and recommend specific initiatives to combat the growing problem of weakening democracy. Perhaps the most noticeable form of undermining democracy is the growing role of governments and their willingness to implement new laws without consulting citizens. The right to vote is an important component in the process of creating and maintaining the state and plays a key role in relation with other countries. This research paper addresses the contemporary main global concern which is the gradual limitation of democracy due to the threat of Covid-19...[Read more](#)

Covid-19 video presentations:

[Intelligence Studies and the Pandemic](#)

By Prof Joseph Fitsanakis

[Post-Covid Wildcards in International Relations](#)

By Dr. Daniel Little

[Covid19 International Relations, International Security and Role of Intelligence](#)

By Prof Darko Trifunovic

DomPrep Journal

May 2020

Source: <https://www.domesticpreparedness.com/journals/may-2020/>

The Acceptable Loss – The Trolley Dilemma of Managing COVID-19 Pandemic

By Isaac Ashkenazi & Carmit Rapaport

The COVID-19 pandemic takes its toll in terms of human lives and global economic consequences. Social distancing has proven to be the most promising strategy against emerging viruses without borders, but the heavy economic damage that follows puts in question the possibility of its continuation. In fact, weighing the two elements raises an important debate: What is the acceptable loss in order to win this battle?

Professor Isaac Ashkenazi is an international expert on disaster management and leadership, community resilience, and mass casualty events with both extensive professional and academic experience. He is considered one of the world's foremost experts in medical preparedness for complex emergencies and disasters. He is the former director of the Urban Terrorism Preparedness Project at the NPLI Harvard University.

Carmit Rapaport (Ph.D., the Technion-Israel Institute of Technology, 2011) is the academic coordinator of the MA programs in Disaster Management and Fire Studies at the Department of Geography and Environmental Studies at the University of Haifa, Israel. She is also the director of the Institute for Regulation of Emergency and Disaster at the College of Law and Business in Israel. Recently, she was appointed as the academic advisor and head of the evaluation unit at Israel's National Center for Resilience.

Avoiding the Three As: Apathy, Atrophy & Attrition

By Christopher Tantlinger

Emergency management is everything to everybody, but it often lacks the glue that is so desperately needed to manage catastrophic events. This is likely the result of two common pitfalls that the profession has long suffered from, pitfalls that can begin as soon as one walks out of the meeting or training room door: apathy and atrophy. Apathy can be defined as a lack of interest, passion, excitement, or concern. When not effectively addressed, apathy can then lead to atrophy, a long gradual decline in effectiveness. Such weakening is caused by underuse of key knowledge, skills, and abilities.



Christopher Tantlinger is the deputy emergency management coordinator, Westmoreland County Department of Public Safety, Pennsylvania. He serves as chief of the county HAZMAT team. He has 27 years in the fire service, is past president of the Fire Chief's Association of Westmoreland County, and is a proboard-certified HAZMAT technician.

How the Pandemic Is Helping the Military Prep for World War III

By Patrick Tucker

Source: <https://www.defenseone.com/technology/2020/05/how-pandemic-helping-military-prep-world-war-iii/165656/?oref=d-topstory>

May 26 – The April 14 briefing contained a warning for the commander of U.S. Northern Command: Stamford, Connecticut, about 56 miles northeast of New York City, was about to become a COVID-19 hotspot. It was a remarkably specific heads- up, and it arrived when only about 1 percent of the U.S. population had been tested, and well before tech companies began working through



the complexities of launching contact-tracing apps.

It was a first-of-its-kind warning generated by an experimental data collection system tied into the Pentagon's planned next-gen combat information effort. Although the data collection and prediction process were unproven, Gen. Terrance O'Shaughnessy and his commanders decided to trust it. O'Shaughnessy dispatched an additional 53 medical personnel north to Stamford — and just in time: Manhattanites fleeing to the Connecticut suburbs helped cause a [spike in Stamford's coronavirus cases](#): 412 new cases on April 19; 2,109 on April 22.

The episode was an early and critical test of the Joint All-Domain Command and Control, or JADC2 concept. It envisions a system for keeping

commanders abreast of complex and dynamic battlefields that is central to Pentagon visions of future warfare. The Stamford success was the fruit of a sub-system developed by NORTHCOM and contractors Apple, Google, Palantir, and geospatial intelligence company ESRI, to help pandemic responders rapidly report information up the chain of command.

"Our team has a better insight for predictive analysis as more of a comprehensive operating picture has been developed," O'Shaughnessy told reporters on April 22. "JADC2 also helps us know where we should be looking for the next hotspots which is critical for the national approach to fighting COVID-19."

You could be forgiven for assuming that the U.S. military is already pulling data from a variety of sources, pushing it up the chain of command, and then disseminating orders. And it is. But Hollywood depictions of big dashboards in the Pentagon where America's top commanders micromanage military operations all over the world aren't based in reality. Right now, getting info from the places where soldiers, sailors, and airmen are operating up to the highest level of authority is a slow, indirect process.

"We just didn't have the tools available because we were essentially using tools from several decades ago, and using processes from several decades ago to get information from the edge," said Lt. Col. Matt Strohmeyer, an action officer with the Commander's Initiatives Group at NORTHCOM.

"We'll have, let's say, a deployed unit somewhere that's helping out with a medical response, and they will every day get on the phone and they will communicate what's going on, their numbers of ICU beds, or ventilators, or personnel that are sick, and then we'll port that over phone to the next command echelon up," said Strohmeyer. "That next command echelon up will put it into an Excel file, and then they'll email it up to the next command echelon up, and then they'll compile it in a new Excel file, and that process of what is essentially 1980s technology of aggregating data, that will happen probably somewhere between five to 10 times over at different command echelons, where it finally arrives at NORTHCOM headquarters about 24 hours later. And there the data is then aggregated into a static PowerPoint slide that's presented to the commander, and that means that that data coming from the edge is very old and stale, and it's certainly not real-time at all, and it also is very manpower-intensive."

That process wasn't an enormous hurdle when the U.S. military was trying to manage counter-terrorism operations in the Middle East. But they were a real obstacle to rapid response to a pandemic sweeping the nation. NORTHCOM had to push the status quo. First, they outfitted personnel with devices to allow them to immediately report data that they were seeing into a central location, a cloud. While enterprise-level cloud computing is common in Fortune 500 companies, U.S. commanders have been slower to embrace it, in part because the military isn't a single monolithic organism. Any particular unit or office might be working with a specific dataset and a specific cloud vendor that no one else is using.



As NORTHCOM confronted the pandemic, there were a lot of players with their own data sets and, in some cases, their own clouds. That data included reports from the medics in the field; geospatial economic, municipal, demographic and other data from ESRI; FEMA and other government data from Palantir; and more. NORTHCOM went to the Pentagon's Joint Artificial Intelligence Center to house the data from these various partners.

One key aspect: ESRI's effort to create a geographic picture of what was happening where. The privately-owned technology company based in Redlands, California, is having what you might call *a moment* in the midst of the COVID-19 crisis. If you go to the [Johns Hopkins COVID-19 map](#), ESRI is a key component. The company provides geographic information services for cities, states and other government agencies for planning. It has a lot of census data to reveal things like income, spending levels, job types, family types, of different places. The data is either open source or comes from their wide user community (with permission). After disasters, different agencies can request specific software or data support to better show how the disaster has affected them, via the [company's disaster-response program](#).

"The nature of the pandemic is inherently geographic," one company official said. (The official declined to be named because they weren't authorized to speak to the media.) The pandemic, he said, generated more requests for support than "all other disasters put together."

Individual counties and jurisdictions wanted to be able to do their own data collection and reporting on the crisis. The company was suddenly faced with the prospect of helping a wide variety of users handle a massive influx of rapidly changing data from a lot of different sources and in a constellation of different forms.

Federal agencies and even local governments had ESRI tools to organize and map data, but "what was often lacking was an infrastructure for health reporting... Because there isn't a federal, national reporting system for this sort of thing, which is kind of mind-boggling. Johns Hopkins became a central authoritative source for data related to COVID-19," said the company official.

The U.S. military combined that with other publicly available data as well as Defense Department information about where military personnel were, what supplies were available, etc. It created an interface that strikes much more closely to that Hollywood vision of digital command and control and much less like a PowerPoint slide, but one that was available to everyone at once, not just the generals in charge. That's when the predictive insights began to pop out.

"We put it all together," said NORTHCOM's Strohmeier, "and then with the help of MIT, Lincoln Labs, and others, it allowed us to start becoming predictive on where we thought the virus might be two weeks from now, and then overlay that on where might we have capacity shortfalls in the nation."

Bottom line, if you want to know what areas of the country might be hard hit two weeks into the future, the military is a step ahead of you.

JADC2 isn't a finished effort; it's only just begun. In the years ahead, the Air Force, working with the Army, Navy, Marines, Coast Guard, and Space Force will take the lessons from Stamford and try to turn those into a model for networked warfare: a massive web connecting every satellite, sensor, ship, jet, drone, and gun on the battlefield. The hope is that JADC2 will allow commanders, guided by artificial intelligence, to rapidly swap in one weapon or tool for another in the middle of war, presenting enemies with what military strategists call "multiple dilemmas." In essence, if every weapon on the field can be perfectly controlled simultaneously, then the enemy can't prioritize defensive measures; they don't know which planes, guns, ships, to target first.

The COVID-19 response shows that data can move between the Air Force, Navy, and Army in a way that does allow everyone to know what's going on. It's been a dress rehearsal in a way that some military exercises aren't.

"The forces that we have deployed across the nation for COVID support is very much a joint force: Army, Air Force, Navy that is deployed forward into each one of those areas, and so the datasets that we're working with from the beginning are also joint datasets," said Strohmeier.

The military sees JADC2 as essential to deterring Russia and China. In simulated wargames lately, the [U.S. military isn't faring well against those](#) two potential adversaries. Pentagon strategists believe networked warfare will turn the tables.

"Achieving superiority against an adversary is all about making decisions faster than them," Strohmeier said. "The way that we make decisions is by getting the most accurate and aggregated data to that decision maker as quickly as possible so that they can achieve understanding of what's going on, then make a decision."

NORTHCOM's Stamford success only goes so far. There's a big difference between getting a heads-up in time to send a few dozen doctors around the country, and employing that system to direct forces in combat against a technologically advanced adversary.

But "I'm more encouraged the faster I see them move to faster adoption of commercial technology," said the ESRI official, describing the military's JADC2 ambitions. "Now they're making the agility the priority."

In addition to lots of spending, experimentation, and purchasing of new software and other equipment, achieving the networked-warfare vision will also require commanders to learn to



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be more receptive to what predictive analytics algos are telling them. “This is something the commander is really driving towards, ultimately a digital transformation of the NORAD and NORTHCOM Combatant Command, but it’s a digital transformation that isn’t just doing tech differently, doing data differently. It’s a culture change, and that’s one of the biggest challenges that we’ve found is transforming our culture to think differently about that,” said Strohmeier.

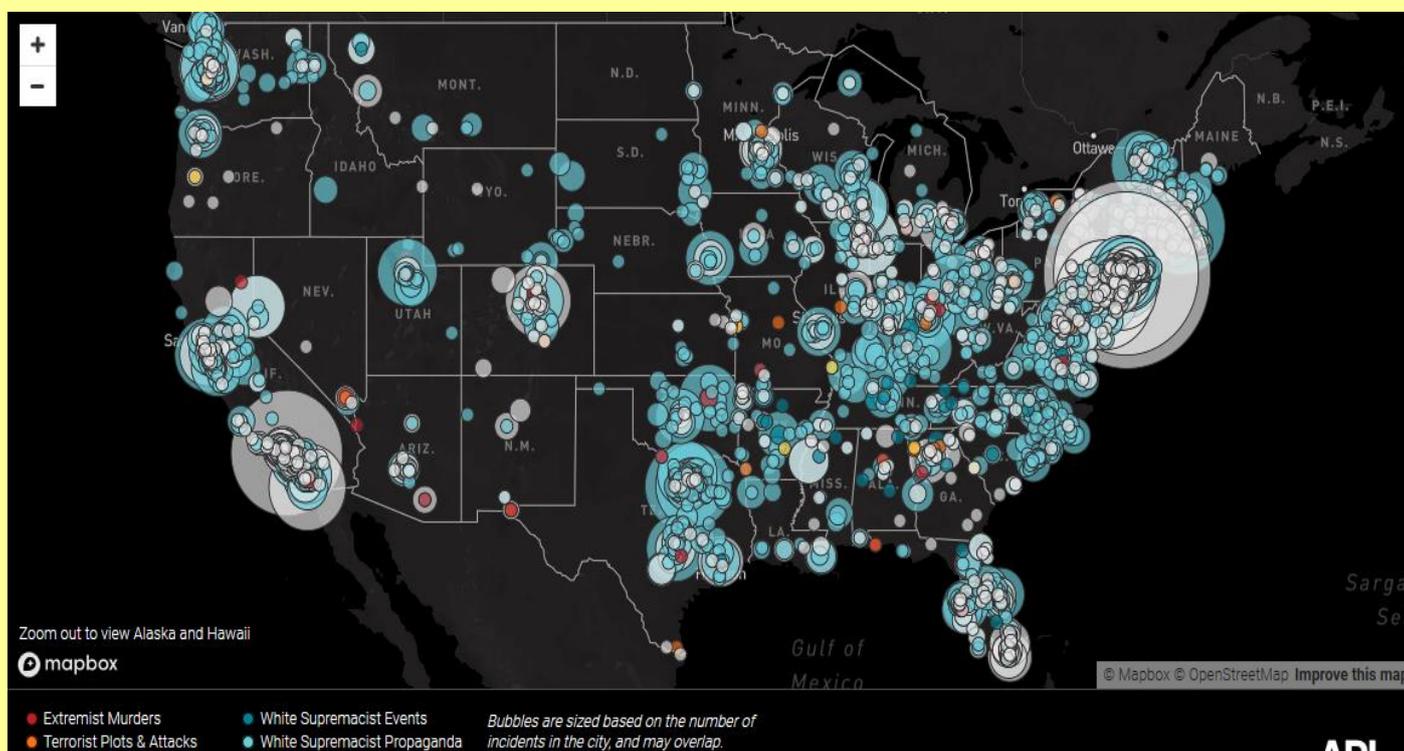
Getting top commanders to second-guess their own presumptions — their “gut” — and go with what the data is telling them is a big ask. But the pandemic has proven that a lot of presumptions won’t work for the future.

Patrick Tucker is technology editor for Defense One. He’s also the author of [The Naked Future: What Happens in a World That Anticipates Your Every Move?](#) (Current, 2014). Previously, Tucker was deputy editor for The Futurist for nine years. Tucker has written about emerging technology in Slate, The Sun, MIT Technology Review, Wilson Quarterly, The American Legion Magazine, BBC News Magazine, Utne Reader, and elsewhere.

U.S. Domestic Islamist Extremism 2019

Source: <https://www.adl.org/education-and-resources/resource-knowledge-base/adl-heat-map>

May 27 – There was a 50 percent increase in arrests and plots linked to domestic Islamist extremism in 2019, according to data released last week by ADL’s Center on Extremism. There were a total of 30 arrests linked to domestic Islamist extremism, nine of



which were for terror plots. Of the nine individuals arrested for plotting attacks, seven were U.S. citizens. While there were no attacks or murders linked to domestic Islamist extremism last year, the findings indicate that Islamist extremism still poses a significant threat to the United States.

Is America Too Libertarian to Deal with the Coronavirus?

Source: <http://www.homelandsecuritynewswire.com/dr20200527-is-america-too-libertarian-to-deal-with-the-coronavirus>

May 27 – America’s public health experts are working hard to map out a plan to combat the [coronavirus](#) in America. And there are indeed many proposals — from [academic centers](#), from [think tanks](#), and from [the government](#). Sean Illing writes in [Vox](#) that while the plans differ, nearly all of them rely on some combination of surveillance, mass testing,



isolation, and [contact tracing](#). Many of them point to countries like Singapore, South Korea, and Germany as examples of how to intelligently respond to the pandemic. But what if the successful strategies in those countries just won't work in America? This question was posed by Keith Humphreys, a Stanford University professor who works on addiction and public health policy, in a [viral Twitter thread](#) last week. Humphreys argued that a lot of his public health colleagues weren't thinking seriously enough about the cultural obstacles that might undercut the country's efforts to test, trace, and isolate Americans. He later penned a [Washington Post column](#) drawing out his arguments in a little more detail.

The epic battle against coronavirus misinformation and conspiracy theories

By Philip Ball and Amy Maxmen

Source: <https://www.nature.com/articles/d41586-020-01452-z>

May 27 – In the first few months of 2020, wild conspiracy theories about Bill Gates and the new coronavirus began sprouting online. Gates, the Microsoft co-founder and billionaire philanthropist who has funded efforts to control the virus with treatments, vaccines and technology, had himself created the virus, argued one theory. He had patented it, said another. He'd use vaccines to control people, declared a third. The false claims quietly proliferated among groups predisposed to spread the message — people opposed to vaccines, globalization or the privacy infringements enabled by technology. Then one went mainstream.

On 19 March, the website Biohackinfo.com falsely claimed that Gates planned to use a coronavirus vaccine as a ploy to monitor people through an injected microchip or quantum-dot spy software. Two days later, traffic started flowing to a YouTube video on the idea. It's been viewed nearly two million times. The idea reached Roger Stone — a former adviser to US President Donald Trump — who in April discussed the theory on a radio show, adding that he'd never trust a coronavirus vaccine that Gates had funded. The interview was covered by the newspaper the *New York Post*, which didn't debunk the notion. Then that article was liked, shared or commented on by nearly one million people on Facebook. "That's better performance than most mainstream media news stories," says Joan Donovan, a sociologist at Harvard University in Cambridge, Massachusetts.

Donovan charts the path of this piece of disinformation like an epidemiologist tracking the transmission of a new virus. As with epidemics, there are 'superspreader' moments. After the *New York Post* story went live, several high-profile figures with nearly one million Facebook followers each posted their own alarming comments, as if the story about Gates devising vaccines to track people were true.

The Gates conspiracy theories are part of an ocean of misinformation on COVID-19 that is spreading online. Every major news event comes drenched in rumours and propaganda. But COVID-19 is "the perfect storm for the diffusion of false rumour and fake news", says data scientist Walter Quattrociocchi at the Ca'Foscari University of Venice, Italy. People are spending more time at home, and



searching online for answers to an uncertain and rapidly changing situation. "The topic is polarizing, scary, captivating. And it's really easy for everyone to get information that is consistent with their system of belief," Quattrociocchi says. The World Health Organization (WHO) has called the situation an infodemic: "An over-abundance of information — some accurate and some not — rendering it difficult to find trustworthy sources of information and reliable guidance."

[An engineer examines a torched 5G phone mast in Belgium. Some were set on fire after a false theory that linked 5G radiation to the coronavirus. Credit: Yorick Jansens/AFP via Getty](#)

opportunity to see how the whole world pays attention to a topic," says Renée diResta at the Stanford Internet Observatory in California. She and many others have been scrambling to track and analyse the disparate falsehoods floating around — both 'misinformation', which is wrong but not deliberately misleading, and 'disinformation', which refers to organized falsehoods that are intended to deceive. In a global health crisis, inaccurate information doesn't only mislead, but could be



a matter of life and death if people start taking unproven drugs, ignoring public-health advice, or refusing a coronavirus vaccine if one becomes available.

By studying the sources and spread of false information about COVID-19, researchers hope to understand where such information comes from, how it grows and — they hope — how to elevate facts over falsehood. It's a battle that can't be won completely, researchers agree — it's not possible to stop people from spreading ill-founded rumours. But in the language of epidemiology, the hope is to come up with effective strategies to 'flatten the curve' of the infodemic, so that bad information can't spread as far and as fast.

No filter

Researchers have been monitoring the flow of information online for years, and have a good sense of how unreliable rumours start and spread. Over the past 15 years, technology and shifting societal norms have removed many of the filters that were once placed on information, says Amil Khan, director of the communications agency Valent Projects in London, who has worked on analysing misinformation for the UK government. Rumour-mongers who might once have been isolated in their local communities can connect with like-minded sceptics anywhere in the world. The social-media platforms they use are run to maximize user engagement, rather than to favour evidence-based information. As these platforms have exploded in popularity over the past decade and a half, so political partisanship and voices that distrust authority have grown too.

To chart the current infodemic, data scientists and communications researchers are now analysing millions of messages on social media. A team led by Emilio Ferrara, a data scientist at the University of Southern California in Los Angeles, has released a data set of more than 120 million tweets on the coronavirus¹. Theoretical physicist Manlio De Domenico at the Bruno Kessler Institute, a research institute for artificial intelligence in Trento, Italy, has set up what he calls a COVID-19 "[infodemic observatory](#)", using automated software to watch 4.7 million tweets on COVID-19 streaming past every day. (The actual figure is higher, but that is as many as Twitter will allow the team to track.) De Domenico and his team evaluate the tweets' emotional content and, where possible, the region they were sent from. They then estimate their reliability by looking at the sources to which a message links. (Like many data scientists, they rely on the work of fact-checking journalists to distinguish reliable news sources or claims from unreliable ones.) Similarly, in March, Quattrociochi and his co-workers reported² a data set of around 1.3 million posts and 7.5 million comments on COVID-19 from several social-media platforms, including Reddit, WhatsApp, Instagram and Gab (known for its right-wing audience), from 1 January to mid-February.

A study in 2018 suggested that false news generally travels faster than reliable news on Twitter³. But that isn't necessarily the case in this pandemic, says Quattrociochi. His team followed some examples of false and true COVID-19 news — as classified by fact-checker sites — and found that reliable posts saw as many reactions as unreliable posts on Twitter⁴. The analysis is preliminary and hasn't yet been peer reviewed.

Ferrara says that in the millions of tweets about the coronavirus in January, misinformation didn't dominate the discussion. Much of the confusion at the start of the pandemic related to fundamental scientific uncertainties about the outbreak. Key features of the virus — its transmissibility, for instance, and its case-fatality rate — could be estimated only with large error margins. Where expert scientists were honest about this, says biologist Carl Bergstrom at the University of Washington in Seattle, it created an "uncertainty vacuum" that allowed superficially reputable sources to jump in without real expertise. These included academics with meagre credentials for pronouncing on epidemiology, he says, or analysts who were good at crunching numbers but lacked a deep understanding of the underlying science.

Politics and scams

As the pandemic shifted to the United States and Europe, false information increased, says Donovan. A sizeable part of the problem has been political. A briefing prepared for the European Parliament in April alleged that Russia and China are "driving parallel information campaigns, conveying the overall message that democratic state actors are failing and that European citizens cannot trust their health systems, whereas their authoritarian systems can save the world." The messages of US President Donald Trump and his administration are sowing their own political chaos. This includes Trump's insistence on referring to the 'Chinese' or 'Wuhan' coronavirus and his advocacy of unproven (and even hazardous) 'cures', and the allegation by US Secretary of State Mike Pompeo that the virus originated in a laboratory, despite the lack of evidence.

There are organized scams, too. More than 68,000 website domains have been registered this year with keywords associated with the coronavirus, says Donovan. She's reviewed ones that sell fake treatments for COVID-19, and others that collect personal information. Google's search-engine algorithms rank information from the WHO and other public-health agencies higher than that from other sources, but rankings vary depending on what terms a

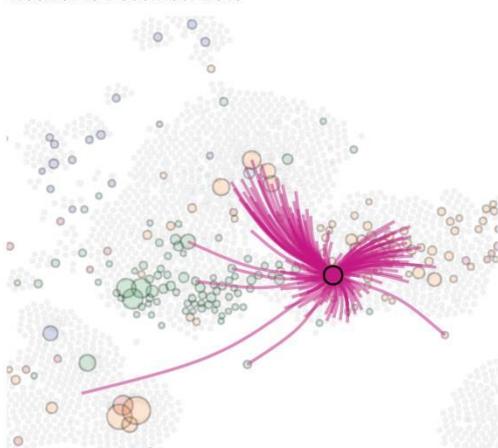


HIGHWAYS OF HATE

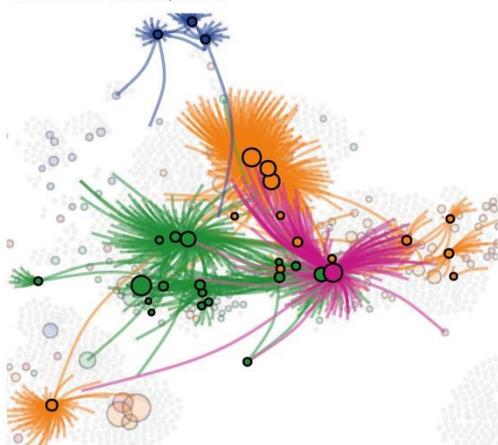
Neil Johnson at George Washington University in Washington DC and his team mapped how malicious content about a pneumonia-like disease, possibly COVID-19, started on the forum 4chan in December. By January, the content had spread to other social-media platforms — Gab, Telegram and Facebook — through links connecting pages on one platform with another.

— 4chan — Telegram — Gab — Facebook

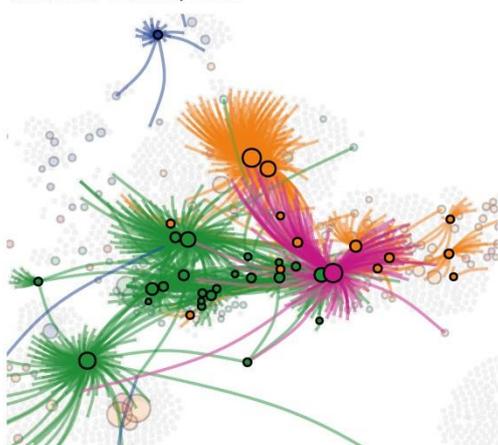
Week of 19 December 2019



Week of 23 January 2020



Week of 20 February 2020



©nature

person enters in a search. Some scam sites have managed to come out ahead by using a combination of keywords optimized and targeted to a particular audience, such as newly unemployed people, Donovan says.

Spreading agendas

Many of the falsehoods online don't have obvious sources or intentions. Rather, they often begin with niche groups mobilizing around their favoured agendas. Neil Johnson, a physicist at George Washington University in Washington DC, has reported⁴ COVID-19 misinformation narratives taking shape among online communities of extremist and far-right 'hate' groups, which occupy largely unregulated platforms including VKontakte, Gab and 4Chan, as well as mainstream ones such as Facebook and Instagram.

The study says that a "hate multiverse" is exploiting the COVID-19 pandemic to spread racism and other malicious agendas, focusing an initially rather diverse and incoherent set of messages into a few dominant narratives, such as blaming Jews and immigrants for starting or spreading the virus, or asserting that it is a weapon being used by the "Deep State" to control population growth (see 'Highways of hate').

Source: Ref. 4

An alarming feature of this network is its capacity to draw in outside users through what Johnson and his team call "wormhole" links. These are shortcuts from a network engaged with quite different issues. The hate multiverse, the researchers say, "acts like a global funnel that can suck individuals from a mainstream cluster on a platform that invests significant resources in moderation, into less moderated platforms like 4Chan or Telegram". As a result, Johnson says, racist views are starting to appear in the anti-vaccine communities, too. "The rise of fear and misinformation around COVID-19 has allowed promoters of malicious matter and hate to engage with mainstream audiences around a common topic of interest, and potentially push them toward hateful views," his team says in the paper.

Donovan has seen odd bedfellows emerge in the trolling of the WHO's director-general, Tedros Adhanom Ghebreyesus. US-based groups that often post white-nationalist content are circulating racist cartoons of him that are similar to those posted by activists in Taiwan and Hong Kong. The latter groups have long criticized the WHO as colluding with the Chinese Communist Party, because the WHO, like all United Nations agencies, considers the regions as part of mainland China. "We're seeing some unusual alliances coming together," Donovan says.

Dangerous spread

As misinformation grows, it sometimes becomes deadly. On Twitter in early March, technology entrepreneurs and investors shared a document prematurely extolling the benefits of chloroquine, an old malaria drug, as an antiviral against COVID-19. The document, which claimed that the drug had produced favourable outcomes in China and South Korea, was widely passed around even before the results of a small, non-randomized French trial of the related drug hydroxychloroquine⁵ were posted [online on 17 March](#). The next day, Fox News aired a segment with one of the authors of the original document. And the following day, Trump called the drugs "very powerful" at a press briefing, despite the lack of evidence. There were small spikes in Google searches for hydroxychloroquine, chloroquine and their key ingredient, quinine, in mid-March — with the largest surge on the day of Trump's



HZS C²BRNE DIARY – June 2020

remarks, Donovan found using Google Trends. “Just like toilet paper, masks and hand sanitizer, if there was a product to be had, it would have sold out,” she says. Indeed, it did in some places, worrying people who need the drugs to treat conditions such as lupus. Hospitals have reported poisonings in people who experienced toxic side effects from pills containing chloroquine, and such a large number of people with COVID-19 have been asking for the drug that it has [derailed clinical trials of other treatments](#).

Fox News has been particularly scrutinized for its part in amplifying dangerous misinformation. In a phone survey of 1,000 randomly chosen Americans in early March⁶, communication researchers found that respondents who tended to get their information from mainstream broadcast and print media had more accurate ideas about the disease’s lethality and how to protect themselves from infection than did those who got their news mostly from conservative media (such as Fox News and Rush Limbaugh’s radio show) or from social media. That held true even after factors such as political affiliation, gender, age and education were controlled for.

Those results [echo another study](#), as yet not peer reviewed, in which economists at the University of Chicago in Illinois tried to analyse the effects of two Fox News presenters on viewers’ opinions during February, as the coronavirus began to spread beyond China. One presenter, Sean Hannity, downplayed the coronavirus’s risk and accused Democrats of using it as a weapon to undermine the president; the other, Tucker Carlson, reported that the disease was serious. The study found that areas of the country where more viewers watched Hannity saw more cases and deaths than did those where more watched Carlson — a divergence that disappeared when Hannity adjusted his position to take the pandemic more seriously.

De Domenico says he is encouraged that, as the crisis has deepened, so has many people’s determination to find more reliable information. “When COVID-19 started to hit each country, we have observed dramatic changes of attitude,” he says. “People started to consume and share more reliable news from trusted sources.” Of course, the goal is to have people listening to the best available advice on risk before they watch people die around them, Donovan says.

Flattening the curve

In March, Brazilian President Jair Bolsonaro began to spread misinformation on social media — posting a video that falsely said hydroxychloroquine was an effective treatment for COVID-19 — but was stopped in his tracks. Twitter, Facebook and YouTube took

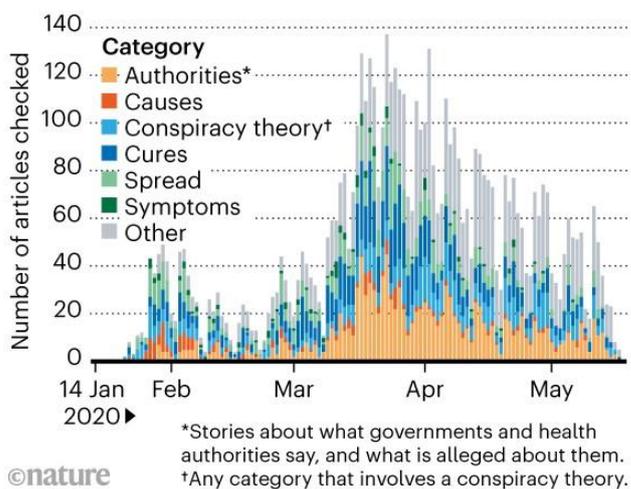
the unprecedented step of deleting posts from a head of state, on the grounds that they could cause harm.

Social-media platforms have stepped up their efforts to flag or remove misinformation and to guide people to reliable sources. In mid-March, Facebook, Google, LinkedIn, Microsoft, Reddit, Twitter and YouTube issued a joint statement saying that they were working together on “combating fraud and misinformation about the virus”. Facebook and Google have banned advertisements for ‘miracle cures’ or overpriced face masks, for example. YouTube is promoting ‘verified’ information videos about the coronavirus.

Social-media platforms often rely on fact-checkers at independent media organizations to flag up misleading content. In January, 88 media organizations around the world joined together to record their fact-checks of COVID-19 claims in a database maintained by the International Fact-checking Network (IFCN), part of the Poynter Institute for Media Studies in St Petersburg, Florida (see ‘A fact-checking frenzy’). The database currently holds more than 6,000 examples, and the IFCN is now [inviting academics to dig into the data](#). (Another site, Google’s fact-check explorer, records more than 2,700 fact-checks about COVID-19.) But some fact-checking organizations, such as Snopes, have admitted to being overwhelmed by the quantity of information they are having to deal

A FACT-CHECKING FRENZY

Fact-checkers have worked overtime correcting COVID-19 falsehoods. One alliance has collated more than 6,000 examples of fact-checks across a broad range of categories since 14 January. Data as of 19 May.



with. “The problem with infodemics is its huge scale: collectively, we are producing much more information than what we can really parse and consume,” says De Domenico. “Even having thousands of professional fact-checkers might not be enough.”

Communication scholar Scott Brennen at the Oxford Internet Institute, UK, and his co-workers have found that social-media companies have done a decent job of removing misleading posts, given the hard task. The team followed up 225 pieces of misinformation about the coronavirus that independent fact-checkers had collated in the IFCN or Google databases as false or misleading. In [a 7 April report](#), the team found that by the end of March, only some 25% of these false claims remained in place without warning labels on YouTube and Facebook, although on Twitter



that proportion was 59% (see go.nature.com/2tvhuj5). And Ferrara says that about 5% of the 11 million Twitter users his team has studied so far in its COVID-19 database have been shut down for violating the platform's policies of use, and that these tended to be unusually active accounts.

But some creators of content have found ways to delay detection by social-media moderators, Donovan notes, in what she calls “[hidden virality](#)”. One way is to post content in private groups on Facebook. Because the platform relies largely on its users to flag up bad information, shares of misleading posts in private communities are flagged less often because everyone in the group tends to agree with one another, she says. Donovan used to study white supremacy online, and says a lot of ‘alt-right’ content wasn’t flagged until it leaked into public Facebook domains. Using CrowdTangle, a social-media-tracking tool owned by Facebook, Donovan found that more than 90% of the million or so interactions referring to the *New York Post* article about the Gates vaccine conspiracy were on private pages.

Another way in which manipulators slip past moderation is by sharing the same post from a new location online, says Donovan. For instance, when people on Facebook began sharing an article that alleged that 21 million people had died of COVID-19 in China, Facebook put a label on the article to indicate that it contained dubious information, and limited its ranking so that it wasn’t prioritized in a search (China has confirmed many fewer deaths: 4,638). Immediately, however, people began posting a copy of the article that had been stored on the Internet Archive, a website that preserves content. This copy was shared 118,000 times before Facebook placed a warning on the link. Another post, on the website Medium, was removed by Medium because it falsely claimed that all biomedical information known about COVID-19 was wrong, and put forward a dubious theory. Before it was taken down, it garnered some shares. But a version on an archived site remains. It has garnered 1.6 million interactions and 310,000 shares on Facebook — numbers that are still climbing.

Quattrociochi says that, faced with regulation of content on platforms such as Twitter and Facebook, some misinformation simply migrates elsewhere: regulation is currently worse, he says, on Gab and WhatsApp. And there is only so much you can do to police social media: “If someone is really committed,” says Ferrara, “once you suspend them, they go back and create another account.”

Donovan agrees, but argues that social-media companies could implement stronger, faster moderation, such as finding when posts that have already been flagged, or deleted, are revived with alternative links. In addition, she says, social-media firms might need to adjust their policies on permitting political discourse when it threatens lives. She says that health misinformation is increasingly being buried in messages that seem strictly political at first glance. A Facebook group urging protests against stay-at-home restrictions — Re-Open Alabama — featured a video (viewed 868,000 times) of a doctor saying that his colleagues have determined that COVID-19 is similar to influenza, and “it shows healthy people don’t need to shelter in place anymore”. Those messages could lead people to ignore public-health guidance and endanger many others, says Donovan. But Facebook has been slow to curb these messages because they seem to be expressing political opinions. “It’s important to demonstrate to platform companies that they aren’t moderating political speech,” Donovan says. “They need to look at what kind of health misinformation backs their claims that restrictions are unjustified.” (Facebook did not reply to a request for comment.)

Donovan is trying to teach others to spot the trail of misinformation: as with a viral outbreak, it’s easier to curb the spread of misinformation if it’s spotted close to its source, when fewer people have been exposed. She has grants of more than US\$1 million from funders, including the Hewlett Foundation in Menlo Park, California, and the Ford Foundation in New York City, to collect case studies of the way misinformation spreads, and to use them to teach journalists, university researchers and policymakers how to analyse data on posts and their share patterns.

Gaining trust

Efforts to raise the profile of good information, and slap a warning label on the bad, can only go so far, says DiResta. “If people think the WHO is anti-American, or Anthony Fauci is corrupt, or that Bill Gates is evil, then elevating an alternative source doesn’t do much — it just makes people think that platform is colluding with that source,” she says. “The problem isn’t a lack of facts, it’s about what sources people trust.”

Brennen agrees. “The people in conspiracy communities think that they are doing what they should: being critical consumers of media,” he says. “They think they are doing their own research, and that what the consensus might advocate is itself misinformation.” That sentiment could grow if public-health authorities don’t inspire confidence when they change their advice from week to week — on facemasks, for example, or on immunity to COVID-19. Some researchers say the authorities could be doing a better job at explaining the evidence, or lack of it, that guided them.

For now, US polling suggests that the public still supports vaccines. But anti-vaccine protesters are making more noise. At rallies protesting against lockdowns in California in May, for instance, some protestors carried signs saying, “No Mandatory Vaccines”. Anti-



vaccination online hubs are leaping on to COVID-19, says Johnson. "It's almost like they've been waiting for this. It crystallizes everything they've been saying."

Post lockdown era: Love European solidarity!

North Europeans (left) vs. South Europeans (right)



As States Reopen, Tensions Flare Between the Rule Followers and Rule Breakers



By Michele Gelfand

Source: <http://www.homelandsecuritynewswire.com/dr20200528-as-states-reopen-tensions-flare-between-the-rule-followers-and-rule-breakers>

May 28 – Since Republicans, on average, are [five times more likely](#) than Democrats to believe it's safe now to resume normal business activity, reopening the economy has often been framed as a partisan issue.

But within households, many families are having their own arguments about how lax or strict they should be about the threat of the virus. Is it OK to have friends over? Can we invite Aunt Sally to our birthday party? Can dad slip away to the golf course? Can mom get a haircut?

These conflicts reflect two very different mindsets: Some are uneasy about opening up and going against official guidance like wearing masks. Better be safe than sorry, the thinking goes. Others balk at being told what to do, and feel anxious or even angry about the constrictions being put in place.

These differences aren't just random personality types; [they reflect our primal social mindsets](#). And unless these differences are better understood, it will be that much more difficult to navigate life under COVID-19.

[As a cultural psychologist](#), I've spent the last 25 years researching [the relationship people have toward rules](#).

Some tend to have what I call a "tight" mindset. They notice rules around them, have a strong desire to avoid mistakes, have a lot of impulse control and love structure and order.



Others have “[loose](#)” predispositions. They can be skeptical about rules, they’re willing to take risks, and they’re comfortable with disorder and ambiguity. Neither of these mindsets are intrinsically good or bad. But they can influence the behavior of individuals – even nations.

An Evolutionary Adaptation

At a macro level, think about the immense cultural differences between Singapore and Brazil. According to our research, the former is a tight country. This means that there are many laws and rules in places, and punishments are liberally meted out if people step out of line. In Singapore, you can be fined for spitting and [bringing chewing gum into the country is forbidden](#).

Brazil, on the other hand, tends to be a loose country and is much more permissive. Loose cultures can seem more disordered, even chaotic, but they also tend to be more tolerant of differences and celebrate creative expression – just look at [images from the country's annual Carnival](#).

At a micro level, think of all the ways these tight-loose tensions play out in households. Are you a helicopter parent or more laid-back? Do your children follow the rules or do they challenge them frequently? Do you leave wet towels on the bed or are they hung neat as a sheet? Do you get “feedback” for the way you haphazardly load the dishwasher, as I do?

These tight-loose differences [can reflect the history of a nation or an individual](#) – whether they’ve experienced war, famine and disease, or higher stress and trauma. In a nutshell, the greater the history of experiencing these threats, the higher likelihood of adopting a tighter mindset. At an evolutionary level, this makes sense: Structure and strong social order can be a bulwark against potential danger.

The sweeping lockdowns related to COVID-19 have accentuated these inclinations. Embracing order and constraint in the face of threat, tight-leaning friends and family members are even more fastidious: They may be disinfecting groceries by hand or wiping down door knobs incessantly. Our looser family members and friends, however, are feeling claustrophobic. A mask feels alien to them, and they may view sweeping public health regulations as overreactions.

It’s no wonder some families [are experiencing](#) high levels of anxiety and friction in their homes. In addition to the stress of a global pandemic, they’re struggling to adapt a new set of social norms that may run counter to their deepest instincts.

The Tight-Loose Dance

This struggle need not be paralyzing, though. Instead, understanding where each side is coming from can help society successfully negotiate these differences.

A basic principle – [backed by a lot of evidence](#) – is that when there is real threat, tightening can serve a purpose. For example, when a community has an increasing number of COVID-19 cases that can potentially overwhelm its health system, it’s critical to collectively abide by rules regarding social distancing, masks and hand-washing. People with loose mindsets, who take encroachments on their personal autonomy very seriously, may find this challenging. But shaming them, judging them or [holding them in contempt](#) isn’t going to be effective. It’s more useful to remind everyone that these constraints are temporary and that the more diligently they’re practiced, the sooner they can be relaxed. Loose-minded citizens can also have a role to play. With their “out of the box” thinking, they can help create new ways to stay connected while distancing – [or invent fun things to do at home](#).

On the flipside, when the threat subsides, people can loosen up with vigilance. Tight-minded citizens struggle with this because the relaxation of rules makes them feel vulnerable. Indeed, [our research shows](#) that it takes longer for tighter groups to loosen than the reverse. There may be some evolutionary basis for this, since it’s a way to mitigate risk after experiencing threats.

The key here is gradual steps. Tighter folks may panic at a crowded mall or beach. But slowly acclimating them to visits with a trusted friend or neighbor could make the process of reopening smoother.

As countries begin the long journey back to a new normal of economic activity, we’ll all be doing the equivalent of a tight-loose dance with our friends, colleagues and fellow grocery store shoppers. Above all, learning to appreciate the basis for our social differences will go a long way toward defusing potential conflicts.

And the more we can be ambidextrous – tightening when there’s threat and loosening when it’s safe – the better off we’ll all be.



Michele Gelfand is Distinguished University Professor, Department of Psychology, University of Maryland.

As restaurants reopen, here's what you should know about air conditioning, air flow and the coronavirus

Source: <https://www.washingtonpost.com/>

May 28 – Diners walking into a restaurant might be able to tell a lot about how the establishment is mitigating the risk of spreading the novel coronavirus. They can see the servers in masks, the touchless systems many are offering for payment, the frequent disinfection by staff of commonly touched surfaces.

But there's one thing they can't see that could play a part: The air around them.

By now, we're used to staying six feet from others, per social-distancing recommendations. For months, public health experts have described the virus as being primarily transmitted through droplets from an infected person's cough or sneeze to nearby people or surfaces.

Lately, research and discussion has focused on airborne transmission over longer distances. Some scientists say covid-19 can spread by traveling in small particles called aerosols.

"That evidence is building right now," says Chad Roy, director of infectious-disease aerobiology at the Tulane National Primate Research Center. "It's not as prominent a pathway [as droplets or infected surfaces], but it's one we need to pay attention to."

How the virus is transmitted might be more important in restaurants than in many other venues, notes L. James Lo, an assistant professor at Drexel University in Philadelphia who studies airflow and how viruses circulate, because people linger there far longer than they do in, say, a grocery store. Exposure to the virus can come from encountering a high dose for a short time or a low dose over a longer period, he says.

"In a restaurant, you're enjoying your dinner and spending more time, which means you are stuck with the same people for a long time."

As restaurants reopen their dining rooms, here are experts' answers to some of the questions would-be diners might have about the air around them.

Should you sit inside or out?

Public health experts are recommending alfresco activities, including dining, over indoor ones. The virus is quickly diluted in fresh air, Roy notes. "It's much easier to socially distance outdoors," which is the most effective preventive measure (along with washing your hands), says Amesh Adalja, a senior scholar at the Johns Hopkins Center for Health Security. "You can space tables farther," he says.

Cities around the world are moving to accommodate more people engaging in open-air activities. Some are closing off streets to cars to allow more room for pedestrians and additional patio seating for restaurants. The Lithuanian capital of Vilnius is allowing bars and restaurants to take over public spaces, essentially turning the city into a massive outdoor cafe across its plazas and squares. And San Francisco's mayor just approved a plan to allow eateries to apply for permits to use sidewalks and parking lanes once dine-in service is allowed.

Completely open-air dining is safest; covered patios are better than indoors, Lo says. "The more obstruction for natural air movement, the less flushed-out the air is going to be," he says.

Can air-conditioning systems spread the virus?

The short answer is that it's possible but unlikely, according to experts.

A recent study of an incident that took place at a restaurant in China, where the virus originated, found nine people were infected with covid-19 by a diner sitting near an air-conditioning vent. A study of the transmission, published in a Centers for Disease Control and Prevention journal, showed how one diner infected diners at adjoining tables, as droplets containing the virus were apparently carried by the air conditioning.

Four people at the person's table later tested positive for covid-19, as well as five people at neighboring tables, some as far as 14 feet away.

Scientists caution that the study documents a single incident and note that the restaurant's air conditioning system was very different from those used by U.S. restaurants.



“The ventilation was one-tenth of what it should be if you use standards that apply to most U.S. restaurants,” says William Bahnfleth, a professor of architectural engineering at Pennsylvania State University and chairman of the epidemic task force convened by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. He pointed to a later [analysis and simulation of the incident](#) indicating poor ventilation was the culprit.

Without fresh air from outside, “the infected diner was putting out infectious material, and there was nowhere for it to go,” he says. There is no known instance of a coronavirus transmission through an HVAC system in the United States, he notes.

So what systems are best?

According to experts, two functions of air-conditioning systems can help prevent the spread of a virus: Ventilation — fresh air coming in to the building from outside — and filtration, or removing small particles from the air.

Standard systems used in most commercial and public buildings, including restaurants, do both and “limit risk of aerosol transmission of covid-19,” Bahnfleth says.

The engineering society, which develops standards used in building codes around the country, is still recommending building owners take steps to further reduce risks. Those include increasing the amount of outside air being brought in, Bahnfleth says.

Under most current codes, a restaurant should replace all of its air with outside air about once every hour, or what’s called an “air exchange rate” of one. The society is recommending upping that to three times an hour, Lo notes.

The problem for diners is that it’s almost impossible to assess the technical specs of a restaurant’s HVAC system to understand the risk. “They shouldn’t have to do that,” Roy says. Instead, he suggests using “a reasonable-person standard.”

“If a place feels stuffy, maybe it’s not a great idea to stay there,” he says.

As they reopen dining rooms, some restaurants have touted their filtration or air “scrubbing” systems along with other measures meant to stop the virus’s spread. But some experts say such claims might be more about marketing than meaningful risk-reduction. “What you’re going to see is restaurants trying to distinguish themselves from each other, and a lot are going to go above and beyond what the science says is necessary,” Adalja says. “They are trying to entice people to come to their place.”

Where should diners sit inside?

The coronavirus might redefine what makes a table the best seat in the house. If you do decide to dine inside a restaurant, Lo suggests nabbing a seat by an open window if there is one; that’s the next-best thing to being outdoors. Bahnfleth, however, cautions that open windows create “unpredictable flow directions” — that is, while fresh air is coming into the room, air from inside has to go out somewhere, and that could be the window you’re sitting by.

Barring that, seek out a table that is near the AC register or vent where air is being pumped in and diffused around the space — that’s where you’ll find the freshest air, Lo advises.

Though it seems counterintuitive to dine at a restaurant and avoid your fellow man, that’s exactly what you should aim for, whether you’re inside or out, experts agree. Sneezing and coughing can launch viral particles beyond the six feet being recommended for distancing, they say. Airborne transmission could mean they travel even farther. Most restaurants that are reopening are doing so at reduced capacity to prevent crowding.

The best seat, then, is the one that puts as much space as possible between you and other diners (at least those you’re not quarantining with). As Lo puts it, “Just try to stay away from other people — farther is likely safer.”

Temperature Screening and Civil Liberties During an Epidemic

Source: <https://www.aclu.org/aclu-white-paper-temperature-screening-and-civil-liberties-during-epidemic>

After COVID-19—is an “alternate society” possible?

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31241-1/fulltext?dgcid=raven_jbs_etoc_email#%20](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31241-1/fulltext?dgcid=raven_jbs_etoc_email#%20)

May 30 – How do we make sense of this pandemic? The first interpretations are now appearing. Slavoj Žižek is a prolific philosopher and cultural theorist. He is the first to produce a volume of reflections—*Pandemic! COVID-19 Shakes the World* (Polity, 2020). Žižek doubts the epidemic will make us wiser: he insists that “we should resist the temptation to treat the ongoing epidemic as something that has a deeper meaning”. Despite these cautions, we still have an important question to answer: “What is wrong with our system that we were caught unprepared by the catastrophe despite



scientists warning us about it for years?” We must accept that “The coronavirus epidemic itself is clearly not just a biological phenomenon which affects humans: to understand its spread, one has to consider human cultural choices...economy and global trade, the thick network of international relations, ideological mechanisms of fear and panic.” Žižek opens his investigation in China—“China thwarts the freedoms of its citizens.” He endorses the view of Li Wenliang, the ophthalmologist who was censored by Wuhan authorities for sharing information about the new SARS-CoV-2 virus and who later died from COVID-19: “There should be more than one voice in a healthy society.” China dealt assertively and successfully with the outbreak in Wuhan. But without “an open space for citizens' critical reactions to circulate”, mutual trust between the people and the state is impossible to sustain. That is China's great challenge. And for us? “I fear barbarism with a human face.”

Žižek turns his attention to the future—“even horrible events can have unpredictable positive consequences”. He sees the possibility of “an alternate society”, one that promotes “global solidarity and cooperation”. Strangely, perhaps, “coronavirus will also compel us to re-invent Communism based on trust in the people and in science”. Not a Soviet-style Communism, not “an idealised solidarity between people”. But a Communism that recognises that “global capitalism is approaching a crisis”. It is a “Communism imposed by the necessities of bare survival”. Radical change is needed, and COVID-19 is a catalyst to bring this change: “Such a universal threat gives birth to global solidarity.” The state will “assume a much more active role”, abandoning “market mechanisms” as the solution to our predicaments. Although not a specialist in global health, Žižek thinks the pandemic, which has precipitated “a state of medical war”, could usher in “some kind of global healthcare network”. (We might call this network universal health coverage.) Beyond health, Žižek sees the possibility for “releasement”—the use of “dead time”, “moments of withdrawal”, “for the revitalisation of our life experience”. Lockdowns have enforced solitude, time to “think about the (non)sense of [our] predicament”.

COVID-19 is a “triple crisis”—medical, economic, and psychological. “The basic coordinates of the everyday lives of millions are disintegrating.” But countries after lockdown “can be transformed, restarted in a new way”. He quotes Bruno Latour, who argues that COVID-19 is a dress rehearsal for the next crisis of climate change: “the pathogen whose terrible virulence has changed the living conditions of all the inhabitants of the planet is not the virus at all, it is humanity!” The hopeful vision Žižek offers is that “through our effort to save humanity from self-destruction...we are creating a new humanity. It is only through this mortal threat that we can envision a unified humanity.” The means to do so is through recognising “our entanglement within larger assemblages: we should become more sensitive to the demands of these publics and the reformulated sense of self-interest calls upon us to respond to their plight”. The “epidemic provides a welcome opportunity for science to assert itself”. Yet Žižek concludes his analysis with a warning: “Those in charge of the state are in a panic because they know not only that they are not in control of the situation, but also that we, their subjects, know this. The impotence of power is now laid bare.” “The most probable outcome of the epidemic is that a new barbarian capitalism will prevail.” This is Žižek's view and you may agree or disagree with him. He has performed an important service. He has initiated a global conversation about what we do with this moment. We must continue and deepen that conversation. It is what we owe to each other.

Is bioethics an honest profession? The jury's still out

By Michael Cook

Source: <https://www.bioedge.org/bioethics/is-bioethics-an-honest-profession-the-jurys-still-out/13451>

May 31 – Back in 1976, a young bioethicist named [Peter Singer wrote](#), “**bioethics is still in its infancy, and its rich diet of foundation grants and government sponsorship has made it a flabby infant rather than a tough adolescent.**” A decade later, a bioethicist named [Samuel Gorovitz](#) asked whether bioethics was an honest profession.

They were not the first nor the last to point out that this relatively new field is on shaky ground, philosophically, and that scientists, sociologists, philosophers and doctors often are deeply sceptical. Steven Pinker, Harvard's controversial polymath, sputtered in 2015 [in an op-ed in the Boston Globe](#) that bioethicists should just “get out of the way” of life-saving research.

The latest broadside in a major journal came from Sarah Franklin, a sociologist at the University of Cambridge, in November last year in [Nature](#). She argued that bioethics was basically irrelevant and could be replaced by sociology.

This has irritated two bioethicists working in England, Silvia Camporesi and Giulia Cavaliere. They have written a rejoinder in the [Journal of Medical Ethics](#). They contend that bioethicists have unique and irreplaceable skills. They have an “epistemic advantage” over other professions because they have been trained to identify errors and inconsistencies; they know how to debunk, clarify and analyse arguments. They are good as “philosophical plumbing”, as British philosopher Mary Midgely once said. Camporesi and Cavaliere conclude:

Ethicists have an epistemic advantage in addressing normative questions concerning science and technology, and their particular skills and knowledge



enable them to make significant contributions to decision making and policy development in these areas. It is in this sense that ethical expertise cannot be improvised: it requires training.

Although, as Gorovitz argues, our capacity to resolve moral problems remains imperfect, 'there remains a difference between thinking about them well and thinking about them badly'.

Michael Cook is editor of BioEdge.

EDITOR'S COMMENT: Ancient Greek poet Cleobulus (one of the Seven Sages of Greece) used to say "Παν μέτρον ἄριστον" (Pan metron ariston = Everything in moderation). Modern medical ethics do not follow this gold standard. Take for example the infamous double-blind placebo-controlled studies representing the best and most reliable form of research. A treatment cannot really be said to be proven effective unless it has been examined in properly designed and sufficiently large studies of this type. In these experiments, one group of subjects receives the "real thing"—the active substance being tested. The other half receives a placebo designed to appear, as much as possible, like the real thing. Individuals in both groups don't know whether they are getting the real treatment or placebo (they are "blind"). Furthermore, the researchers administering placebo and real treatment are also kept in the dark about which group is receiving which treatment (making it a "double-blind" experiment). This last part is important, because it prevents the researchers from unintentionally tipping off the study participants, or unconsciously biasing their evaluation of the results. The purpose of this kind of study is to eliminate the power of suggestion. It is true, although hard to believe, that people given *placebo* (fake) treatment frequently report dramatic and long-lasting improvements in their symptoms. However, if the people in the real treatment group fare significantly better than those in the placebo group, it is a strong indication that the treatment really works. OK; now extrapolate this methodology to severe covid-19 cases: how ethical is that since nobody is speaking about this due to the ongoing pandemic, lack of specialized drugs and a vaccine? What if patients who died in the placebo group were assigned to the real drug group? Should they still be alive? My worries are not new; I had them long time ago when I was practicing allergen immunotherapy – a long lasting treatment whether injectable or sublingual, and everybody were – and still are – depending on this type of treatment efficacy. Perhaps modern artificial intelligence methodologies will find ways to overcome our established way of proving what works and what does not.

In the meantime: An estimated 4.2 million premature **deaths globally** are **linked** to ambient **air pollution**, mainly from heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, and acute respiratory infections in children. **Worldwide** ambient **air pollution** accounts for: 29% of all **deaths** and disease from lung cancer.

The **World Health Organization** estimates that 290,000 to 650,000 people die of **flu-related** causes every year **worldwide**.

☞ June 2020: 400,000 since January 2020 – so far...

How Islamist Extremists and White Supremacists Try to Exploit Civil Unrest

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/how-islamist-extremists-and-white-supremacists-try-to-exploit-civil-unrest/>

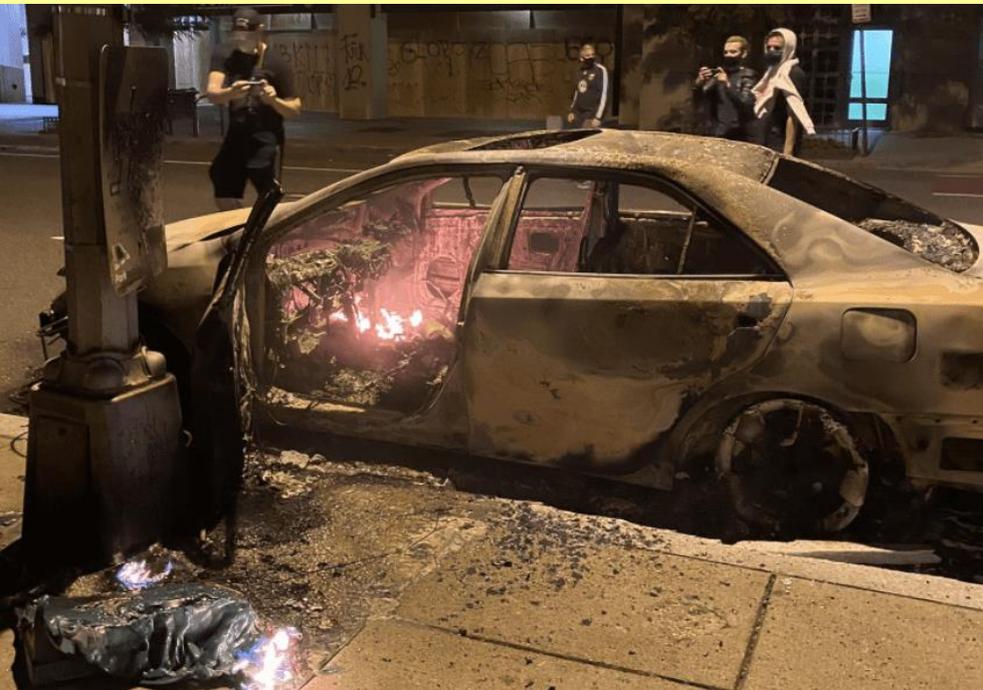
June 02 – Regardless of differences in ideology, Islamist extremists and white supremacists share operational characteristics – particularly when it comes to recruitment and taking advantage of current events in shaping a message that they hope will lure new followers and spur them to take action on behalf of the movement, whether that materializes in physical attacks, battling in the online space or otherwise acting as an influencer to spread that ideology.

Islamist extremist propaganda and white supremacist propaganda reflect similar themes and memes in the ways they recruit and incite, contributing to the internet's ample open-source library of D.I.Y. extremist training and incitement – from posters to videos, from social media to magazines – that bridges group allegiances and ideologies. At times they mimic each other's memes, promote ideological dominion, urge copycats to emulate infamous attacks, threaten the social media companies that try to rein in their propaganda, praise and promote attacks that have recently occurred, circulate machismo-saturated training camp videos, and heavily traffic in anti-Semitism.

One key shared characteristic of recruitment is how Islamist extremists and white supremacists both try to appeal to grievances, hoping that potential recruits who might not otherwise join their movements could be pushed over the edge with targeted psychological messaging. Similarly, both groups seize on current events to promote core anti-government and retribution themes, trying to appeal to would-be recruits as if they're soldiers in a cultural or kinetic war – as one recruitment propaganda poster from the neo-Nazi Feuerkrieg Division put it, "Turn your sadness into rage." Islamist



extremists and white supremacists hope to seize on the energy of current events whether it's white supremacists using debates over Confederate monuments or Islamist terror groups using Western military operations – and both ideological movements trying to [use the coronavirus pandemic](#) to their advantage – to steer some of that fury into their movements to stoke anger and gain new recruits. Both groups will similarly see today's unrest as an opportunity to try to insert their messaging, with Islamist extremists disregarding the fact that the protests are based on goals of ending systemic racism and encouraging police reform and white supremacists disregarding – or particularly enraged by – the fact that many whites are protesting alongside people of color. Extremists exploit, and both groups will use whatever messaging contortions are necessary as they try to grow their ranks on the back of civil instability.



Islamist Extremists

On Aug. 9, 2014, 18-year-old Michael Brown was shot by police in Ferguson, Mo., sparking demonstrations and the chant “hands up, don’t shoot” to protest the killing that culminated in a wrongful death settlement. The summer 2015 issue of al-Qaeda in the Arabian Peninsula’s *Inspire* magazine tried to appeal to protesters in the African-American community in an article vowing to “take practical steps to avoid targeting you in our operations” if people of color would in turn fight the government and try to stop U.S. aid to Israel. In the piece tagged “The Blacks in America,” al-Qaeda featured a photo of

Abraham Lincoln next to the headline, “The Rights of Blacks: Their State and Challenges.” The terror group also used Michael Brown’s high school graduation photo in the article, and talked about the in-custody death of Freddie Gray in Baltimore and the Charleston church massacre.

Al-Qaeda slammed Fox News for their portrayal “that the crime of the officer was nothing but a general mistake that had nothing to do with racism or religion” in the Brown shooting as the channel “has always been supporting the Anglo-Saxon community, no matter the case.” The terror group added that “such attacks against Afro-Americans will continue to rise,” and slammed then-President Obama for framing incidents in terms of gun violence. “O Afro-Americans, it is a pity that you play a part in this oppression against Muslims. You are the ones who elect those who promise to continue waging war with us in our lands. You are the ones who elect those who promise to protect Israel, who aggressively and unjustly occupy our lands,” the article continued. “This is a historic chance for you to review your actions, and to take a stand against these crimes in the face of these fanatics.”

Al-Qaeda said they sympathized with “the oppression and injustices directed towards you” but insisted they were still justified killing blacks in terror attacks: “We advise you to move out of big cities that represent the economy, politics or military strength of America like New York and Washington.” The article then encouraged revolt starting with demonstrations and the “second approach” of “forming small groups that will be responsible for assassinating, targeting these racist politicians.” The terror group said they would “bring to you military consultation” via the magazine, as “one may refer back to the previous issues to find appropriate military ideas.” This was perhaps one of the most overt appeals for the attention of those protesting shootings at the hands of police officers, and presenting it as an article in English-language *Inspire* ensured that it lives in perpetuity on the internet for easy access. Al-Qaeda isn’t the only group to attempt to capitalize on officer-involved shootings, though: the Ferguson events unfolded soon after the declaration of the caliphate, and as ISIS carved out its online operations relying on adherents who to this day push messaging and conduct recruitment on social media they [hijacked hashtags](#) being used by activists tweeting about the shooting. “Hey blacks, ISIS will save you,” said one tweet, while another vowed to “send u soldiers that don’t sleep” if protesters vowed allegiance to ISIS; another message that circulated online “From #IS 2 Ferguson” said that “we heard your call, we are ready to respond.” And a nearly hourlong 2016 Al-Shabaab video tried to convince African-Americans to come join their ranks and flee “racial profiling and police brutality” in the United States.



White Supremacists

While the Islamist extremist threat is based on a pattern of groups remotely latching onto incidents of police shootings, the white supremacist threat is also mired in current events. Law enforcement was already on guard for how white supremacists could take advantage of the instability caused by the coronavirus pandemic, and how they could use the virus to foster racism and recruitment. Agencies were warned in a recent Joint Intelligence Bulletin about the potential for violent reactions to conspiracy theories circulating about the pandemic, including the branding of the deadly virus as a government hoax, and noted that militia extremists have discussed online preparing for a potentially violent response. Minority-operated businesses that remain open and other exposed racial or religious minorities “are likely at particular risk,” the bulletin warned, adding that “as the number of Americans affected by the COVID-19 pandemic grows, the threat posed by [domestic violent extremists] and hate crime actors towards minorities and other targets of their violence will likely increase” and extremists “will likely continue to seek to exploit the pandemic by using violence themselves or encouraging others on social media and messaging applications to use violence.”



Now with the one-two punch of a destabilizing pandemic and civil unrest sparked by the death of a black man at the hands of a white police officer, white supremacists are taking advantage of the crisis to not only woo recruits but to wedge themselves into chaos, often with the goal of contributing to societal collapse. White supremacists and Islamist extremists at times share the belief of accelerationism: that societal collapse will hasten their aims to construct either a white or Islamic civilization out of the ruins.

A Department of Homeland Security [memo](#) to law enforcement noted that on May 27, two days after George Floyd died after a Minneapolis police officer detained him using a knee to the neck, “a white supremacist extremist Telegram channel incited followers to engage in violence and start the ‘boogaloo’ – a term used by some violent extremists to refer to the start of a second Civil War – by shooting in a crowd.” Twitter [removed](#) an account linked to white nationalist group Identity Evropa or the American Identity Movement, known for its recruitment efforts on college campuses, that was posing as antifascist and Black Lives Matter supporters and encouraging violence: “Tonight we say ‘F— The City’ and we move into residential areas... the white hoods... and we take what’s ours.” The *New York Times* [reported](#) Sunday that in at least 20 cities “members of hate groups or far-right organizations filmed themselves, sometimes heavily armed or waving extremist symbols, at demonstrations.” A Facebook post from Richmond, Va., showed two young white men holding a “boogaloo” flag “behind an African-American woman with a hand-lettered sign reading ‘A knee is the new noose!’”

Minnesota’s Department of Safety Commissioner John Harrington said Saturday that there were individuals linked to white supremacist groups among those who had been arrested for looting and vandalism the previous night, and said officials were investigating white nationalist groups encouraging followers online to use the protests to stoke chaos. The threat is acute: DHS’ Homeland Security Advisory Committee noted in its [latest report](#) that six of the 67 terror attacks in the United States in 2018 were lethal, and “all six of these attacks involved elements of far-right ideologies, primarily white supremacy.” The DHS Strategic Framework for Combating Terrorism and Targeted Violence [rolled out](#) in September called white supremacist violent extremism “one of the most potent forces driving domestic terrorism” today.

St. Paul Mayor Melvin Carter said that aside from the protesters peacefully expressing their sadness and anger, “there seems to be another group that are using Mr. Floyd’s death as a cover to create havoc.” That havoc may not just consist of burning cars and looted shops, but groups latching onto the protests as a chance to stir chaos, amplify their messaging and hook new followers – an opportunistic tactic with which both white supremacists and Islamist extremists are familiar.

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. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor



and has contributed to *USA Today*, *The Wall Street Journal*, *New York Observer*, *National Review Online*, *Politico*, *New York Daily News*, *The Jerusalem Post*, *The Hill*, *Washington Times*, *RealClearWorld* and more, and has myriad television and radio credits including *Al-Jazeera* and *SiriusXM*.

How do masks change human behavior? An Italian scientist who has studied cow sociability decided to find out

Source: <https://www.washingtonpost.com/technology/2020/06/05/masks-benefits-study-italy/>

June 05 – Massimo Marchiori, an Italian computer scientist, once used sensors to determine how the widths of [shopping mall walkways](#) shaped buying decisions. Another time he used GPS technology to track the movements of cows to see what behaviors led to the [best milk](#).

So when the novel [coronavirus](#) consumed Italy in February, Marchiori decided it was time for a [new experiment](#) — this time, on social distancing.

The result suggested that masks help fight contagion in ways other than just filtering air — benefits rarely discussed in the fraught political conversation about whether mask-wearing in public spaces should be mandatory.

To measure how people respond to masks, Marchiori created the world's first “social distancing belt”: a \$30 contraption that looked



like a gray handbag but included a data card, rechargeable battery and sensors capable of measuring the proximity of oncoming objects, or, in this case, people.

He fastened the social distancing belt to his waist as he walked through the streets of Venice and nearby areas during the height of the pandemic. With the help of some friends also equipped with social distancing belts, Marchiori measured more than 12,000 encounters with other people on sidewalks and in stores, all with the goal of determining how they reacted to people wearing masks.

“Everyone talks about social distancing,” Marchiori said, “but no

one had actually measured actual social distancing.”

His findings suggest that wearing masks has a profound effect on how we perceive others, and in particular how close we are willing to get to strangers.

Unmasked — even during the height of a raging pandemic — the sensors deployed by Marchiori found that fellow pedestrians actually drew closer to him as he passed them on a sidewalk, typically within a foot.

But when he donned a mask, people drifted back — nearly twice as far as when he wasn't wearing a mask — suggesting the mere sight of protective gear activated the underlying knowledge among fellow pedestrians that keeping their distance helped keep them safe.

In other words, masks appeared to make an extremely social species less social — and less vulnerable

“It's our humanity that is actually bringing us toward the virus,” said Marchiori, a professor at the University of Padua. “You have to take away a bit of humanity, to become a bit antisocial, to protect humanity.”

The finding — which, like most of the geyser of new studies about the coronavirus and related subjects, has not yet been formally reviewed by scientific peers — was published last week on [arxiv.org](#), a publicly available source of emerging research. It is one of the first studies to apply hard data to a key question of our time: What happens when societies unaccustomed to covering their faces are ordered to do so by public health authorities?



Roughly three-quarters of humanity has been under some kind of government masking orders in recent months, according to Jeremy Howard, a University of San Francisco data scientist who has been publicly advocating for mask usage as a key element in bringing the pandemic to heel. Research he and others have done suggests that masks — even ones that are handmade — significantly lower the likelihood of transmission of the coronavirus among people moving about their communities.

An [analysis published Monday](#) in the Lancet, based on a review on 172 previous studies from around the world, found that “face mask use could result in a large reduction in risk of infection.” [The paper](#), funded by the World Health Organization, is the latest evidence that initial guidance from U.S. health authorities discouraging mask use was a misstep.

Howard was among a group of scientists who publicly advocated for a reversal of that position, adopting the [Twitter hashtag #Masks4All](#) and a profile picture of himself in dark mask and sunglasses.

“Mask wearing seems to be the number one most effective tool in slowing the epidemic,” Howard said.

A missing element, though, has been data on how individuals react when ordered to wear masks, especially in societies not accustomed to doing so during public health emergencies.

A group of Yale researchers, in a [study released last month](#), and also not yet peer reviewed, analyzed location data from [millions of smartphones](#) to measure how masking orders affect how often people left their homes, how long they stayed away and where they went on their trips. The researchers found that as government officials ordered communities to don masks when entering public spaces, people began leaving their homes more and staying away longer — an unintended consequence that, the researchers argued, could undermine efforts to contain the coronavirus.

The paper, titled [“Do Face Masks Create a False Sense of Security? A COVID-19 Dilemma.”](#) found that in states with masking orders, Americans were spending as much as 30 minutes more time away from their homes, and that visits grew to some seemingly nonessential places, such as building supply stores and restaurants. (The data did not distinguish between visits for sit-down meals versus takeout.)

Author Eli Fenichel, a Yale University professor of natural resource economics who has studied the relationship between location data and the spread of disease, said there is danger if people believe masks are simply a safe alternative to staying home.

“You’re implicitly telling people it’s ok to go out if you have a mask,” said Fenichel. He said a better message would be: “If you absolutely must go out, wear a mask.”

The potential for confusion has been thrown into sharp relief over the past two weeks as demonstrators have massed in dozens of U.S. cities to protest the police killing of an unarmed Minneapolis man, George Floyd. Masks provided some protection, but epidemiologists have warned that the concentration of people risked spreading new infections.

Wearing masks — or not — also has taken on partisan dynamics as President Trump has refused to be photographed with one on even as he’s ordered his staff to wear masks at The White House.

Marchiori’s findings suggest the benefits of mask wearing, aside from filtering out pathogens, may lie in the social signals they convey. He found an even stronger repellent effect when he wore goggles, or if the mask he donned was obviously poorly constructed — signaling perhaps a combination of infectiousness and ineptitude.

Epidemiologists say the biggest risk of transmitting the coronavirus comes from prolonged close contact between infected people and healthy ones, especially if that contact happens indoors.

That means brief encounters on sidewalks — of the sort Marchiori initially tested — are not likely a major source of new infections. But his subsequent research shows a similar effect in cramped indoor spaces, such as food stores, where infection risks are higher and social distancing requires more vigilance.

The research grew out of Marchiori’s long-standing determination to convert data he could personally collect into analytical insights to answer questions that interest him.

One of his previous research topics was analyzing how soccer positioning, as dictated by common strategies, affected the outcomes of games. Marchiori and his co-authors, who studied countless hours of game video to plot movements, found that positioning made little difference to who won or lost. The most important factor was the how well players worked with each other, what he called the collective “speed of thought” within a team.

“What really matters seems instead to be the right balancing of passings among the various areas, producing an overall more efficient brain-like structure,” Marchiori and his co-authors wrote. “These counterintuitive results might also explain the failure by common statistics like ball possession, shoots, corners and so on, to actually grasp the ultimate secret of soccer for how to actually win a game.”

His facility with low-cost sensors and tracking devices also allowed Marchiori to measure and analyze other behaviors. By narrowing walkways in [shopping malls](#), he found that proximity — similar to what’s found in traditional bazaars where shoppers crowd winding,



narrow passages, close to merchants' stalls — induces more purchases. He also found that when [people walk faster](#) in urban areas, the overall health metrics are likely to be better.

And then, there was the cow study, titled, "[Happy Cows, Happy Milk: smart cows and quality factors.](#)" presented at a scientific conference in August.

Marchiori's initial thesis was that more active cows — the ones that walked farther in open fields — would be healthier and produce better milk. But the GPS data showed that cows that frequently came close to other cows — the ones that appeared most sociable — produced the best milk, as measured by lab tests of quality and human taste tests.

The social natures of mammals, including human, has ended up being a recurring theme of Marchiori's work. We are drawn to one another. We do things more efficiently — shop, pass soccer balls — when we work together.

"It's a social world," Marchiori said.

But in a pandemic where proximity is a key factor in transmission, Marchiori found, these same factors can be dangerous. Wearing masks makes them less so.

Hostile states trying to steal coronavirus research, says UK agency

Source: <https://www.theguardian.com/world/2020/may/03/hostile-states-trying-to-steal-coronavirus-research-says-uk-agency>

May 03 – Hostile states are attempting to hack British universities and scientific facilities to steal research related to Covid-19, including vaccine development, cybersecurity experts have warned.

The National Cyber Security Centre (NCSC) said the proportion of such targeted cyber-attacks had increased, branding the criminal activity "reprehensible".

It is understood that nations including Iran and Russia are behind the hacking attempts, while experts have said China is also a likely perpetrator.

There are thought to be dozens of universities and institutions with biomedical capacity working on Covid-19 research, ranging from new diagnostic and antibody tests to experimental treatment.

However, it is understood there have been no successful attacks on universities or research institutions to date.

A spokesperson for the NCSC said: "Any attack against efforts to combat the coronavirus crisis is utterly reprehensible. We have seen an increased proportion of cyber-attacks related to coronavirus and our experts work around the clock to help organisations targeted.

"However, the overall level of cyber-attacks from both criminals and states against the UK has remained stable during the pandemic."

The University of Oxford, which is making world-leading efforts on vaccine development and recently started human trials, said it was working with the NCSC to protect its research.

AstraZeneca, the Cambridge-based pharmaceutical group, is [teaming up with the university](#) to manufacture and distribute the vaccine if the clinical trials show it is effective.

A university spokesperson said: "Oxford University is working closely with the NCSC to ensure our Covid-19 research has the best possible cybersecurity and protection."

James Sullivan, a former cyber-analyst for the National Crime Agency and head of cyber research at the Royal United Services Institute, the international defence and security thinktank, said it was not surprising that hostile states were targeting Covid-19 research.

"The pandemic will lead to a general increase in hostile state cyber-activity," he said. "It is a new opportunity for intelligence gathering and disruption. We've seen this with disinformation campaigns, cyber-espionage; there's a risk of these all exacerbating political tension and it's no surprise this is happening in an area such as the development of a vaccine."

He added: "As we've seen with cyber-attacks, whether it's a hostile nation state or an organised criminal, there's no real boundaries to the types of data they try to steal, so why would this be any different if the development of a vaccine is a very competitive area? We're seeing those geopolitical tensions played out in this space."

Sullivan said the attacks highlighted the problems with cybersecurity in the healthcare sector. In 2017, the NHS fell victim to the global WannaCry ransomware attack, with tens of thousands of devices affected.

Earlier this month the health secretary, Matt Hancock, signed off [a directive](#) giving GCHQ, the intelligence service, access and oversight to the NHS IT network.

Meanwhile, a dossier prepared by governments for the so-called Five Eyes nations, an intelligence alliance between Australia, Canada, New Zealand, the UK and the US, alleges that China deliberately suppressed or destroyed evidence of the coronavirus outbreak.



The move cost tens of thousands of lives, according to the document [obtained by the Australian Daily Telegraph](#), which lays the foundation for a case of negligence being mounted against China.

It states that to the “endangerment of other countries” the Chinese government covered-up the virus by silencing or “disappearing” doctors who spoke out, destroying evidence of it in laboratories and refusing to provide live samples to international scientists who were working on a vaccine.

This Is How a Medical Study Gets Published in a Scientific Journal, And Why Most Don't

Source: <https://www.sciencealert.com/this-is-how-a-medical-study-gets-vetted-and-published-in-the-most-rigorous-scientific-journals>

June 08 – Published studies are the backbone of medical understanding, both for healthcare professionals and the general public. And medical journals are the gatekeepers of that research, ensuring accuracy and integrity.

As the [coronavirus](#) continues to wreak havoc around the globe, interest in medical studies offering any clarity or guidance are read with great interest. But faulty studies have led to confusion, conspiracy theories, and even death.

How medical journals vet studies

A good study is constructed and tested using the scientific method: A problem is found, data is gathered, and a hypothesis is put forward.

Then that hypothesis is tested under strict controls and the results, whether they confirm the hypothesis or not, are recorded and a conclusion is developed.

The barrier to entry for reputable medical journals is pretty high: [The Journal of the American Medical Association \(JAMA\)](#) accepts just 4 percent of the more than 5,300 research papers it receives annually.

"Two-thirds of papers are rejected without external peer-review and one-third of the papers go out for external peer-review," Howard Bauchner, *JAMA's* editor-in-chief, told Business Insider.

Peer-reviewed studies are analysed by experts in the field, who look at the validity of the results, as well as the originality and importance of the research.

Well-established journals like *JAMA*, *The New England Journal of Medicine (NEJM)*, and *The Lancet* are peer-reviewed. Bauchner said many medical professionals want to review for *JAMA*, but their expertise must match the study closely.

After a paper has been peer-reviewed, it will be edited, fact-checked, and reviewed by an associate editor, deputy editor, and senior editor.

According to the *JAMA* website, the average time for an article to go from being submitted to being accepted is 30 days. It's then another 25 days from acceptance to online publication.

The hallmarks of a reputable medical journal

Medical journals should be judged by "the quality of peer-review that they conduct, the quality of the manuscript editing that they do, and the fact-checking with respect to numbers," Bauchner said.

"So that the numbers in the manuscript are the same as the numbers in the abstract."

Language describing results should be accurate, he added, including "whether or not results should represent causal or non-casual relationships."

A reliable medical journal will be indexed in the [National Library of Medicine](#), according to physician William Li, whose research has been published in the *NEJM* and *The Lancet*.

It should also have an editorial board composed of experts in the field the journal covers, Li said. The ability to distribute a study both in-print and electronically is also crucial.

A large and active social media presence is "an increasingly important hallmark for a high-quality journal," Bauchner added. *JAMA* tweets multiple times a day to its 367,000 Twitter followers.

It doesn't always matter who funds a study

There's often a lot of scrutiny around funding sources for medical studies, especially if they come from a pharmaceutical company or other industry groups.

But, Bauchner said, if the study is based on original research and uses randomised [clinical trials](#), it's fairly easy for editors to verify the results.



HZS C²BRNE DIARY – June 2020

"When studies are not clinical trials, when they're observational in nature, then readers need to be more cognisant of the funding source," Baucher said. "As do peer-reviewers and editors. That funding source may be relevant." That's true of industry funding, as well as academic sources and think tanks, he added. *JAMA* documents in detail any potential conflict of interest in funding, Bauchner said.

How bad studies get published

According to Nobel-winning pharmacologist Louis Ignarro, problems occur when "submitted studies are assigned by the scientific or medical journal to potential reviewers who are not true experts in the field."

"This makes for bad review and possible publication of a bad paper," Ignarro told Business Insider.

A bad study, he said, may have inadequate controls, unqualified subjects, or unblinded testing – meaning participants and researchers are aware of the specific test conditions.

"Hastily written conclusions not based entirely on the scientific and medical results" can also result in faulty findings, Ignarro said, as can poor statistical evaluation of the data.

The problem with preprint papers

A preprint is a full draft of a research paper that's shared publicly before being peer-reviewed or published. They often appear on online platforms like [arXiv](#) (pronounced "archive"), [medRxiv](#), and [bioRxiv](#).

The practice allows researchers to share findings with colleagues and establish claims. But it can lead to unverified information landing in the hands of journalists, laymen, and conspiracy theorists,

PREPRINT SURGE

The major preprint servers have posted thousands of studies related to the coronavirus since the outbreak began.



Preprints containing the words COVID-19 or SARS-CoV-2. Data as of 7 May.

©nature

At the end of January, a preprint on bioRxiv pointed to an "uncanny similarity" between proteins in [HIV](#) and the novel coronavirus, [The New York Times reported](#).

Some critics felt the study was feeding conspiracy theories about the coronavirus being engineered in a lab, [STAT](#) reported. Others complained of rushed methodology and mistaking coincidence for a valid connection.

"Had this manuscript undergone legitimate peer review, these flaws would have led to a swift rejection and it

wouldn't be contributing to the conspiracy theories and fear surrounding this outbreak," Michael Shiloh, an infectious disease expert at the University of Texas Southwestern Medical Centre [tweeted](#), according to STAT.

In a follow-up tweet, Shiloh worried about "the potential for abuse when content is rapidly disseminated and taken as 'fact' when it clearly isn't."

Reputable journals do release preprints: A disclaimer on *Lancet's* website explicitly [states](#) that "preprints are not peer-reviewed and should not be used for clinical decision making or reporting of research to a lay audience" without indicating it's just preliminary research.

A bad study can have serious consequences

The [pandemic](#) has resulted in "a flood of research reports," Li said, "some that are important and well-designed and others that are poorly designed with sketchy conclusions."

With all the global anxiety, an unreliable coronavirus study could have catastrophic consequences.



In March, an optimistic French study in the [International Journal of Antimicrobial Agents](#) suggested [chloroquine](#) could help against [COVID-19](#). The test group was very small, and six patients dropped out early on.

But the results were touted by President Trump and others, and several people poisoned themselves by [self-medicating with chloroquine phosphate](#), a chemical used to clean aquariums.

The Centre for Evidence-Based Medicine has reported that studies on [hydroxychloroquine and chloroquine effectiveness](#) had immense discrepancies between the protocols laid out and the methodologies followed.

[In April](#), the FDA stated that hydroxychloroquine has "not been shown to be safe and effective for treating or preventing COVID-19." A month later, a study in the Lancet linked the drug [to higher mortality rates](#) in COVID-19 patients.

Reputable journals are methodical in their approach specifically to avoid publishing poor research. *NEJM* receives between 100 and 150 coronavirus-related submissions a day, according to communications director Jennifer Zeis.

Since its coverage began, though, the journal has published only about 130 articles on the [virus](#).

"We have an experienced team of manuscript editors, illustrators, proofreaders, and production staff, who work to ensure that every article meets exacting standards," Zeis said.

To Bend the Knee or Not to Bend the Knee

By Shireen Qudosi

Source: <https://clarionproject.org/to-bend-the-knee-or-not-bend-the-knee/>

June 10 – The American public is in a free-fall debate on whether or not to bend the knee as a show of support against racism. It's a question I have myself wondered over the last two weeks, each time through a different perspective.

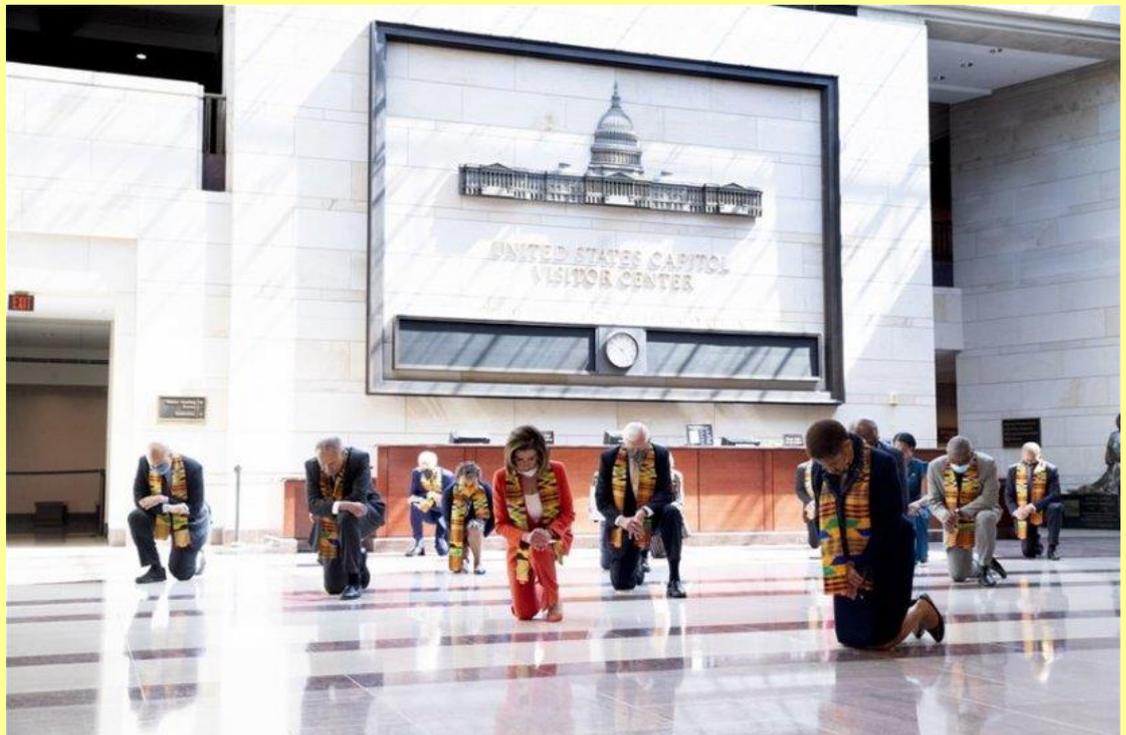
In one conversation, I wonder if we would have ever gotten to this crisis point as a nation if we took seriously the pain and perspectives when, in [2016](#), footballer Colin Kaepernick quietly ignited the "take a knee" act of resistance against ongoing racism. If we invited a conversation

then, could we have diffused the nuke by addressing that, while race is a [biological fiction](#), that fiction has created numerous problems we need to sort out?

I observed the innocence with which many protesters recently took a knee, including an [elderly man](#) who, in his silver years, still felt like he belonged to this world enough to partake in it.

In trying to understand what he might be experiencing in that moment, I reflected on the idea of "[submission](#)" in Islam. A purely voluntary submission is not defeat; it's humility. But was *his* submission voluntary or was it social pressure? Was it social pressure or was it [behaviorly shaped](#) by witnessing so many other people bending the knee?

This is how I navigate the world. I put pieces of it under the microscope of perspective. I rotate the dial through different experiences — magnifying, focusing and then de-focusing the pictures. Then I decide, better informed by putting myself into those different experiences and then (when necessary) separating myself from them.



HZS C²BRNE DIARY – June 2020

I know that bending the knee doesn't end racism, but if someone feels better about doing it, that is their choice and they have the right to it.

I also know that some of my colleagues in the preventing violent extremism sector don't feel comfortable talking about extremism at this time and want to leave the [spotlight focused on the protesters](#). I respect that, but I don't agree with it.

As professionals in countering and preventing violent extremism, we have a duty not only to understand the extremist groups on the fringes of society but also to study and call out behavior of the mainstream when it begins to resemble that of the extremists:

**Radicalism is the belief that there is only one way to live.
Extremism is forcing others to live by that way.**

If someone wants to take the knee, they can. Forcing other people to bend the knee, through physical or psychological violence or coercion, falls into the realm of extremism.

Hysteria, especially generated by organized rage mobs and their intimidation tactics, threats of escalated violence if groups or individuals do not fall on their knees in submission, demands to [imitate surrender](#), and other forms of [public degradation and abuse](#) in order to elevate one idea above others, is extremism.

Bending the knee under the social pressure of a mob will not address the bedrock brutality of the constructs and practices of generations of horrendous history and the way bigotry and hatred continue to manifest today.

As professionals in the field of preventing violent extremism, we have seen how [identity politics](#) began paving the way for radical rhetoric, and this rhetoric began justifying acts of extremism. As a South Asian woman and a Muslim reformer, I know too well what social pressure looks like, what the mob looks like, what having your voice silenced and distorted feels like. I can't possibly expect my experience to be widely understood by others, but I don't need it to.

World renowned author of the *Game of Thrones* series, George R. R. Martin, did that. He gave us [Daenerys Targaryen](#), which HBO turned into a winning TV series. That series pulled in 19.3

million viewers, who watched the story of an oppressed woman who, through good intentions and idealism, became a tyrant who literally set the world on fire. She leaned into her rage. She shifted from becoming the abused to the abuser. In short, she demanded people bend the knee to her.

We can learn the hard way what history teaches us — that one oppression never wipes out another. Or, we can let a TV show teach us the same powerful lesson. Either way, old paradigms of brutality and force will not birth a new world.

Only new paradigms of real listening and empathy can do that.

Next Step? Will Protesters Take Down Washington Monument?

Source: <https://clarionproject.org/will-protesters-take-down-washington-monument/>

June 10 – The question of taking down monuments became a hot topic in 2017, but it's is on the menu again during the 2020 riots with [global interest](#), and have included the removal of a Texas ranger statue, [state-specific statues](#), an attempt to destroy a statue of Christopher Columbus and even the [defacing of a statue](#) in London of Winston Churchill (who, even though he led Britain in their fight against the Nazis, has been deemed racist by the protesters).

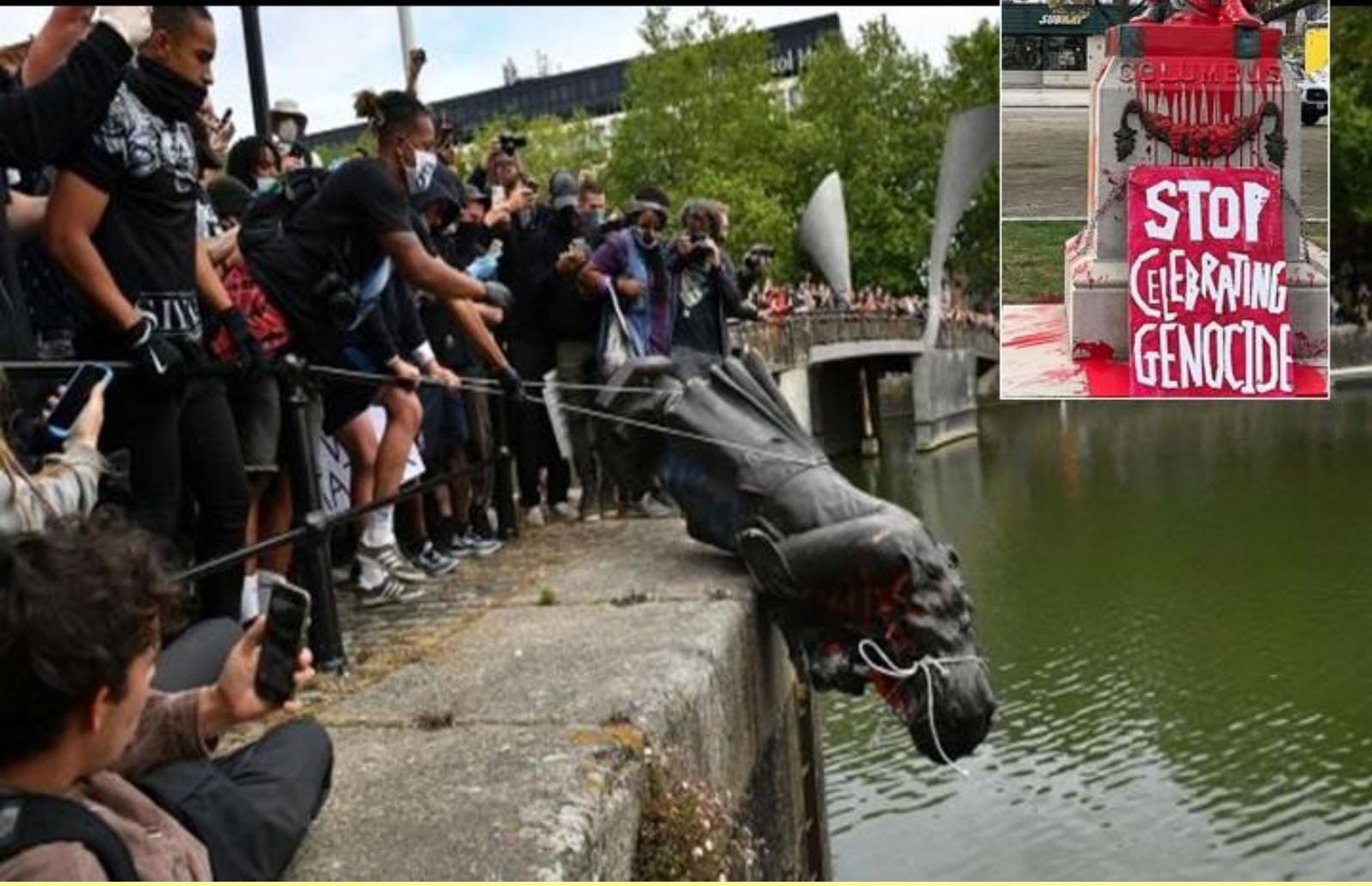
There's little to stop the attention of rioters to [bigger targets](#), especially if protesters lock onto the issue of slave practices of our founding fathers, as BBC covered in [2017](#).

Earlier this week, the outer plaque the Lincoln Memorial was graffitied, after which rows of guards were promptly place at the steps of the Lincoln Memorial. It's not unreasonable to think that America's greatest monuments are under threat from domestic extremists.





**Is anti-racism
the right diagnosis?**



Who's Educating the Protesters?

Source: <https://clarionproject.org/who-is-educating-the-protesters/>

The Wild West of Face Masks

A real story

By Ilja M. Bonsen (Managing Director, IB Consultancy)

NCT Magazine; April 2020 issue

Source: <http://nct-magazine.com/nct-magazine-april-2020/the-wild-west-of-face-masks/>

In March 2020, IB Consultancy entered the world of Corona Face Mask trading in an effort to support our first responders with proper protection against the Corona virus. In this article, we will share some of the stories and most importantly, lessons learned from our month in the KN95 business. Through our extensive network, IB Consultancy came in contact with a company that could deliver KN95 masks to The Netherlands. Although the price seemed a bit steep at USD3,00 per mask we put the deal forward to the procurement people at the Joint Hospital Procurement Alliance in The Netherlands led by Erasmus Medical Center in Rotterdam. In the early morning of March 18th, we used a video call to inspect the stock of KN95 masks. One of the local representatives of our agent visited a number of factories and allowed us to guide him through the inspection using a WeChat Video call. Based on this inspection, the seller would be paid 4,5 million USD for the masks.

To prepare for the video inspection, we spoke with multiple experts and decided on the following list of quality criteria:

1. Check if the mask fits the face of the person checking,
2. See if there are any loose threads on the mask,
3. Hold the mask against the light and see if the filter material is spread evenly,
4. Ask to stretch the mask to check for consistency and holes, and see how easy it breaks,
5. Drop some droplets of water on the mask and check how fast it moves through the material,
6. Check for any QAQC (Quality Assurance Quality Control) reports from the manufacturer, the last lot test report and any other documentation.

►► Read the rest of this article at source's URL.

How it feels to predict a pandemic: Interview with David Quammen, author of Spillover

By Dan Drollette Jr

Source: <https://thebulletin.org/2020/06/how-it-feels-to-predict-a-pandemic-interview-with-david-quammen-author-of-spillover/#>



Portrait of David Quammen in the backcountry of Yellowstone National Park. Image courtesy of Ronan Donovan

June 11 – In 2012, author David Quammen wrote a book, *Spillover: Animal Infections and the Next Human Pandemic*, that was the result of five years of research on scientists who were looking into the possibility of another Ebola-type disease emerging. The consensus: There would indeed be a new disease, likely from the coronavirus family, coming out of a bat, and it would likely emerge in or around a wet market in China. But what was not predictable was how unprepared we would be. In this interview, the *Bulletin's* Dan Drollette Jr talks with the author, who lives in Bozeman, Montana, about what drew him to this topic, the nature of new

viruses, why more are expected to emerge, and what makes some viruses more likely to infect humans than others. Quammen also talks a little about his next book (still untitled, but about the coronavirus). He cautions against being overly optimistic about the development



of a vaccine, saying the coronavirus that causes COVID-19 will likely be around in some form for generations: “This virus is never going to be gone.”

Dan Drollette Jr: Sounds like you’re busy lately.

Quammen: Yes. Although I’ve been housebound lately, like many people. I don’t know when I can travel to research a new book for the publisher, on coronavirus. But I’ll be knocking on doors in Wuhan, China, as soon as they let me in.

Drollette: Are you nervous about traveling to the epidemic’s epicenter?

Quammen: Not really. I’m respectful of the risks of this virus. But that’s nothing new—when researching *Spillover*, I climbed into bat caves in southern China.

And I’ve followed dangerous emerging viruses long enough that while I’m cognizant of the dangers, I know it’s just a matter of calculating risk: It’s not an emotionally charged topic.

The way I see it, I’ve been home in Bozeman, and haven’t left the house for two months. So I’ve had the luxury of reducing my risk to 0.0 for the last two months. Soon I’ll start doing higher-risk things.

Drollette: There does seem to be a degree of alarm and paranoia about viruses. Why is that?

Quammen: Viruses are spooky to people. Unlike bacteria, you can’t see them, even with a [standard] microscope. We didn’t even know viruses actually existed until the 1930s, although the word was bandied about. The whole 1918 [influenza](#) pandemic was caused by a virus—a hypothetical agent no one could see, isolate, or identify. How spooky was that? Because there were lots of secondary infections from bacteria, and we didn’t have [antibiotics](#) then.

So 1918 must have been a peculiar, frightening event: This invisible thing comes to town, kills off members of your family, and then leaves. It’s like the angel of death in the Book of Exodus.

Drollette: So you think a lot of the fear is because it’s invisible, mysterious...

Quammen: Yes. And there is a debate as to whether viruses are even alive—an interesting thought.

Coincidentally, I’m reading up on that angle now, for a *National Geographic* piece on the evolutionary history of viruses.

It may be that all these oddities combine to make people particularly scared. Plus, in recent decades, there have been some very alarmist, in my opinion, treatments of emerging viruses, like [The Hot Zone](#). Ebola in particular—the virus that book deals with—has been given the full-on, Grand Guignol-type of dramatic sensationalism.

Ebola is one of a very dangerous group of closely related viruses; I think five are now classified within that Ebola genus. People heard, “This virus causes bodies to melt down and bleed out.” And then a few cases got into the United States, and people got scared.

Drollette: I wanted to circle back to something: You said there’s a theory that viruses might not even be alive?

Quammen: The idea is that a virus is just a chunk of genetic code packaged in a protein capsule—essentially just a blueprint that takes over your cells and reprograms them to replicate itself, then multiplies and spreads to your other cells, and then maybe spreads from you to somebody else.

An interesting twist on this concept is the “virocell,” advanced by a fellow named [Jean-Michel Claverie](#) and another scientist named [Patrick Forterre](#). They say: “Don’t look at these virus particles as the virus. Think of them as just the gametes.” In other words, a virus particle is nothing more than the equivalent of a sperm cell from a human being—it’s not a full-on human being. The real virus living identity comes about when it’s in one of your cells and has successfully hijacked the cell to make copies of itself—*that’s* the living virus, or virocell.

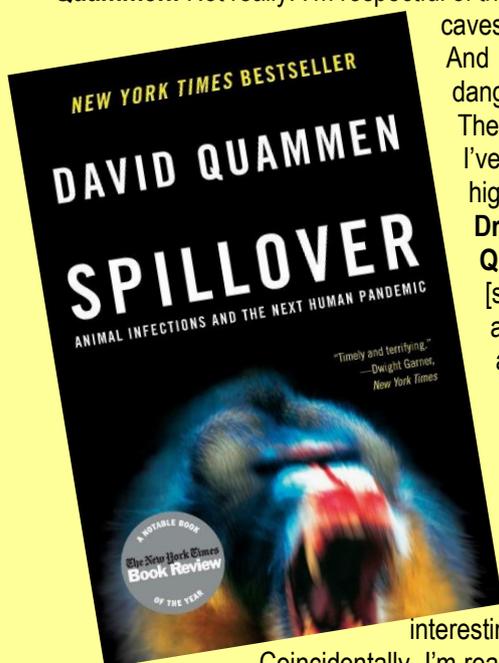
The product of that process are these particles that carry the infective genome to other cells. Think of those as the gametes. And then when they get into another cell, then you have a sort of fertilized egg cell—what biologists call a zygote.

Drollette: Do you have a background in biology?

Quammen: I’ve been a science writer for about 35 years, which has been sort of on-the-job training.

But I actually started out as a novelist, doing my graduate work on William Faulkner—and gradually turned into a nonfiction writer with an interest in science.

Drollette: How did you get interested in ecology and evolutionary biology?



Quammen: When I moved to Montana back in '73, I thought, "I'm done with ivy-covered universities" and wanted to make a living as a writer. I was interested in the natural world and started taking some non-degree courses in zoology at the University of Montana. But that was zoology.

And then in 1982, my first wife began a master's degree in ecology and evolutionary biology at the University of Arizona. So I went with her to Tucson. And she would come home from class and start talking about this guy named [Robert MacArthur](#), who was like the James Dean of theoretical ecology—extraordinary youthful promise, and premature death.

That interested me. And then by coincidence I discovered that he and E.O. Wilson had written a book called [The Theory of Island Biogeography](#).

I was working as a columnist for *Outside Magazine* at the time, and while researching a column on it, I thought: "I wonder if anybody has written anything for popular magazines about evolution and extinction on islands?"

And it felt like discovering Mammoth Cave. I went in through this little hole and came out into this big magnificent chamber with these amazing paintings on the walls. And that was my encounter with island biogeography. And that became the book *The Song of the Dodo*, which took me eight years to do.



I then moved into the more micro level, with *Spillover*.

Drollette: Speaking of evolution, my understanding is that the overwhelming majority of viruses never evolve to skip from one host species to another. So, how did some make that jump?

[David Quammen](#), while accompanying a wolf collaring and tracking operation in Yellowstone National Park for a National Geographic article. Image courtesy of [Ronan Donovan](#)

Quammen: Some viruses just happen to be what is called "pre-adapted" to make that leap from animals to humans.

In the case of coronaviruses, you have a naturally occurring bat virus that happens

to have on its exterior these knobs called spike proteins. Each spike acts like a grappling hook, allowing it to grab hold of a target cell and maybe get in.

As it turns out, the cells this spike protein is best at grabbing onto are in a species called the horseshoe bat. These particular bats have what are called ACE-2 receptors on the outsides of their cells. Because of these particular receptors, they're very prone to being attacked by these particular viruses.

And it just happened that we humans have these ACE-2 receptors in our own cells, in our respiratory tracts. So, by coincidence, this naturally occurring virus of bats was quite qualified from the get-go to attack human cells.

That's why the virus was able to spread to humans. It had that capacity before it ever hit the first human, apparently. And therefore this thing was pre-adapted to become a human virus—probably.

Drollette: For the virus, making that leap across species—zoonosis—must have been like Columbus discovering the Americas: Suddenly, there's a whole new world open to conquest.

Quammen: Yes, although I would compare it more to the first group of a dozen finches blown offshore from the mainland of South America to the Galapagos Islands. This little subpopulation of finches is blown westward by a storm that carries them 500 miles out to sea, and they land on these volcanic islands that don't contain any predators or any competitors. So they've got it all to themselves. And they can flourish there and maybe diversify into a number of different kinds of finches. It's ecological colonization followed by evolutionary adaptations. And that's what happens with viruses.

Drollette: Did anyone expect this?

Quammen: Yes. For 15 years, scientists have said: "Watch out for coronaviruses; they could be very dangerous." And for five years, Chinese scientist Zhengli Shi at Wuhan Institute of Virology has been warning us to watch out for the coronaviruses found in Chinese bats;



SARS is a coronavirus, and it came out of Chinese bats in 2003. That was very dangerous to humans, but it didn't transmit as readily as this one does. But Shi and her group saw a virus very similar to it in bats in a cave in Yunnan Province and published a paper in 2017 saying, "Watch out for these particular coronaviruses in these horseshoe bats. They necessitate the highest preparedness." That was three years ago.

Drollette: Did the virus go directly from bats to humans? Or from bats to pangolins or civets to humans?

Quammen: It could have infected one or more intermediary species. There's some important new work coming from a group of Chinese and Western scientists, who noticed how close this disease is to some pangolin coronaviruses. It's also close to some other bat coronaviruses, not just the ones that [Zhengli Shi](#) found, but new ones. It's a jigsaw puzzle of a virus.

Drollette: Which leads to my next question: A lot of blame is laid on Chinese wet markets. What exactly is a wet market?

Quammen: A couple of days ago, a Chinese friend said: "What you guys call wet markets are the same places my father used to take me to buy fresh vegetables." And that's important to remember.

But a wet market like the [Huanan Wholesale Seafood market](#) in Wuhan, which is associated with the beginning of all this, is where you buy fresh vegetables. And you can buy seafood there—alive and dead—as well as chickens, ducks, and frogs.

So a wet market is a fresh food market that sometimes includes wild animals.

And those wild animals have two possible sources. One is the captive breeding of wild species under controlled hygienic circumstances, and the other is capturing animals from the wild, bringing them in live in cages.

Drollette: Bushmeat?

Quammen: Yes, although the term bushmeat has a certain stigma to it. Generally, when Africans do this, we call it bushmeat; when Chinese people do it, we call it wet markets. And when we do it here in Montana, we just call it game—and there's no stigma.

Drollette: There's no difference between a Chinese wet market and a suburban farmer's market?

Quammen: If there's a difference, it's this: Think of a nice farmer's market in upstate New York with cheeses, candles, fresh vegetables, organic chickens, turkeys, and whatnot.

Then add to it some some raccoons and skunks, in cages.

And maybe the cage with the skunks is stacked on top of a cage with organic chickens, so that skunk urine rains down on the chickens. Now, would you want to buy those chickens?

Drollette: Are we stigmatizing Asians for having these kinds of conditions in their markets?

Quammen: To some degree, yes. But capturing wild animals and bringing them, alive, to markets where all these other forms of food are sold is extremely dangerous. So the world is right to say: "Look, China, you are a sovereign nation, we're not going to stigmatize you culturally. But for the love of God, get a handle on that trade because it's dangerous."

Drollette: Some people claim that buying and selling wild animals in a market like this is an ancient Chinese tradition.

Quammen: A Chinese friend of mine, Wufei Yu, wrote an op-ed for the *New York Times*, "[Revenge of the Pangolins](#)," saying that this is not hallowed tradition. In fact, he found that ancient Chinese texts said: "Don't eat pangolins, you could get sick. Pangolins are not food, don't eat them."

So, eating pangolin is not a revered ancient tradition in China. It's more part of a newfound, middle-class vogue for conspicuous consumption. As in "I've got a business dinner, so I'm going to take my clients out to a restaurant where I'll impress them by serving monkey brains or pangolin."

Drollette: That ties in to your own [Times op-ed](#): "We invade tropical forests and other wild landscapes, which harbor so many species of animals and plants. And within those creatures, so many viruses. We cut the trees, we kill the animals or cage them and send them to markets. We disrupt ecosystems and we shake viruses loose from their natural hosts. When that happens, they need a new host. Often, we are it."

Quammen: That sums it up. There are more zoonoses because we're disrupting the environment.

But it's important to acknowledge that we humans have always killed and eaten wild animals for the last 200,000 years. Therefore we have always presumably come into contact with the many viruses carried by wild animals. So that's an old thing.

What's new is that there's 7.8 billion of us on this planet—four times the number of humans at the time of the 1918 influenza. And we have quadrupled the speed we travel around the planet; we have quadrupled the size of some of our cities. So there are a lot more of us large-bodied vertebrate animals, living in dense aggregations, moving fluidly from one place to another.

We're the world's greatest target for a virus—a great ecosystem for them to colonize. So when a virus does get into a human and finds it can replicate and transmit to the next human, that virus has opened the door to vast opportunity. And what's new is the scale.

Consequently, in the last 60 years, there's been this drumbeat of what are called spillovers, where new viruses get into humans and cause trouble: Machupo, or Bolivian hemorrhagic fever, in 1959. Marburg, 1967, coming out of monkeys that were sent to Marburg, Germany



for research purposes. Ebola first emerging in 1976, MERS in 2012, Zika in 2015, and this. So it's happening more, with greater consequences, and greater potential to spread worldwide.

Drollette: Does climate change factor in? Are we seeing warm-weather diseases now appearing in former temperate zones?

Quammen: To some degree. Dengue, yellow fever, and malaria are moving north because the mosquitoes that carry them are moving north. That's the most obvious effect of climate change.

And forest fragmentation plays a part. We have more Lyme Disease in New England now because instead of having an area completely covered with deciduous forest, it's broken up into hedgerows, lawns, and little patches of forest carrying lots of white-footed mice—which carry the ticks that cause Lyme Disease. There's a lot more of these infested mice because there are not as many predators such as owls, hawks, foxes, or weasels to keep the population down. So the mouse population increases, and your kid is more likely to get Lyme Disease when he goes out to play in the yard.

Drollette: If these trends continued, do you think we'll see more zoonoses?

Quammen: Yes. And a greater chance that each spillover will turn into an outbreak, each outbreak into an epidemic, and each epidemic into a pandemic. But there are things that we can do to stop that.

Drollette: What should we have done to contain this coronavirus outbreak?

Quammen: Everything about this outbreak was predictable, to me and to the scientists I was listening to, 10 years ago. New virus coming out of an animal, yes, predictable.

Animal was a bat, yes, predictable.

Virus is a coronavirus, yes, predictable.

Happens in or around a wet market in China, yes, predictable.

What was not predictable was how completely unprepared we would be.

A virus starts getting into people and spreading from airport to airport—but we have no diagnostic kits that work. We have no platform vaccine that can be modified to become a vaccine for this coronavirus. We have no public health emergency capacity. We have no integrated national plan in this country. We have nothing except the lying president who stands up there worrying about his poll numbers every day, with a noble man named Tony Fauci forced to stand next to him. Who's been in that job for 30 years, and he's the greatest tightrope walker since the Wallendas.

All of that has been very surprising to me, how utterly unprepared we have been. Trump says, "Well, we're going to close our borders to Chinese people flying in. No more Chinese people are going to be able to fly in." Great. Great. That's going to solve this problem. Not.

And then he does nothing after that. I don't want to make this purely political, Trump is just a symptom. But for various reasons, the United States has been cataclysmically unprepared.

Drollette: When do you think this pandemic will be over?

Quammen: On NPR this morning, somebody made the casual statement that, "In six months or a year maybe this virus will be gone." This virus is not going to be gone. This virus is never going to be gone.

We have friends who have children and grandchildren, and their great-grandchildren will be vaccinated against this virus.

Drollette: So, you don't trust optimistic projections about a coronavirus vaccine?

Quammen: The medical doctor [Paul Offit is a skeptic on the instant vaccine thing](#). He's been telling everyone to slow down on expectations for a vaccine, and stop celebrating Moderna or Gilead or whoever has got the prototype vaccine. He says there's a ridiculous amount of hoopla for a tiny sample size at a very preliminary stage. Vaccine [development takes a long time, and a lot of luck](#). And then vaccine manufacturing at scale takes another truckload of time...

It's important to remember that responsibility for this includes everybody; it's not just the fault of some Chinese people who eat pangolins or bats. Nor is it the fault of African people who eat bushmeat that sometimes includes primates. This is the responsibility of all 7.8 billion of us, because we are all consumers of food, resources, and energy. Each of the choices that we make about what we're going to eat, wear, or buy draws on these wild ecosystems.

So does how much we choose to travel, and how many children we have—if we choose to have children at all. All these decisions put pressure on the natural world to varying degrees and cause viruses to come in contact with humans. Even using a cell phone has an environmental cost; we are consuming the minerals—such as coltan—that make the capacitors inside these things work.

Coltan is mined in just a few places around the world, such as the eastern part of the Democratic Republic of Congo, not far from their biggest national parks and nature reserves. We consumers require miners to go in there and get that coltan for us; and what are they going to eat but bushmeat.

So by owning a cell phone, you're asking a miner to go into places where coltan is mined, and there's a good chance that one of those places is in the eastern Democratic Republic of



Congo, and the guy mining that coltan for you is probably eating bats, monkeys, elephants, or lowland gorillas. So, by being a consumer, you share responsibility for this whole problem.

Dan Drollette is the deputy editor of the Bulletin of the Atomic Scientists. He is a science writer/editor and foreign correspondent who has filed stories from every continent except Antarctica. His stories have appeared in Scientific American, International Wildlife, MIT's Technology Review, Natural History, Cosmos, Science, New Scientist, and the BBC Online, among others. He was a TEDx speaker to Frankfurt am Main, Germany, and held a Fulbright Postgraduate Traveling Fellowship to Australia—where he lived for a total of four years. For three years, he edited CERN's on-line weekly magazine, in Geneva, Switzerland, where his office was 100 yards from the injection point of the Large Hadron Collider. Drollette is the author of "Gold Rush in the Jungle: The Race to Discover and Defend the Rarest Animals of Vietnam's "Lost World," published in April 2013, by Crown. He holds a BJ (Bachelor of Journalism) from the University of Missouri, and a master's in science writing from New York University's Science, Health and Environmental Reporting Program.

Designating the Russian Imperial Movement, a Terrorist Organization: A Drop in the Bucket of Needed U.S. Counter-Extremism Responses

Source: <http://www.homelandsecuritynewswire.com/dr20200612-designating-the-russian-imperial-movement-a-terrorist-organization-a-drop-in-the-bucket-of-needed-u-s-counterextremis>

June 12 – On 6 April 2020, the U.S. State Department [designated](#) the Russian Imperial Movement (RIM) as a terrorist organization and placed its leaders on its list of Specially Designated Global Terrorists. Mariya Omelicheva writes for [PONARS Eurasia](#) that this unprecedented move—the first time in history the State Department has deployed tools reserved for jihadist groups against a white supremacist organization—comes at a time of rising right-wing extremism and violence in the [United States](#) and around the globe as well as the internationalization of white supremacist movements.



Qatar continues to top MENA region in Global Peace Index

Source: <https://www.iloveqatar.net/news/general/qatar-continues-top-mena-region-global-peace-index-2020>



June 11 – The State of Qatar ranked 1st in the Middle East and North Africa (MENA) region and 27th globally in Global Peace Index for 2020, which is issued by the Institute for Economics and Peace in Sydney, Australia, maintaining its distinction in the Global Index Ranking.

Out of the 163 countries included in the Index, the State of Qatar's position this year improved by 3 ranks from last year, as it occupied advanced positions in a number of fields at the global level through achieving high evaluation rates that exceeded many developed countries during the same period.

The State of Qatar ranked 1st in the Arab world and 16th globally in the Societal Safety and Security index, making Qatar one of the twenty safest countries in the world. The Index also ranked Qatar 161st globally (reverse index), making

it among the Gulf, Arab, and international economic countries least affected by violence.

This classification reflects Qatar's global position in the field of security, which was in line with Qatar National Vision 2030 and the Ministry of Interior's strategy to enhance security and safety at the country level.

Regarding other levels in the Index, the State of Qatar achieved advanced ranks through getting high evaluation rates in some of the most prominent indices including low rates of homicides and violence, the extent of crime in society and the stability of political conditions,



HZS C²BRNE DIARY – June 2020

a society free from terrorism and its effect and the absence of the threat of internal and external conflicts.

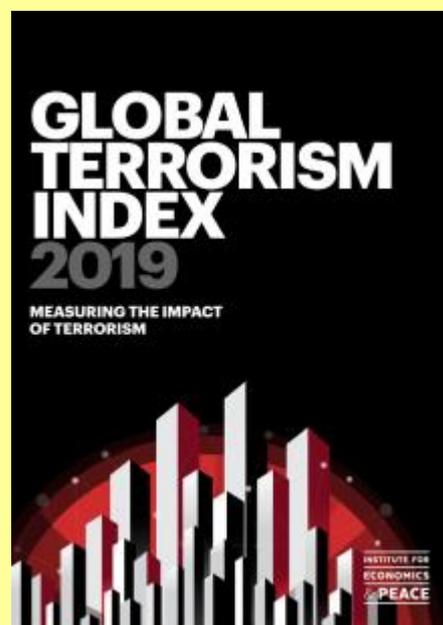
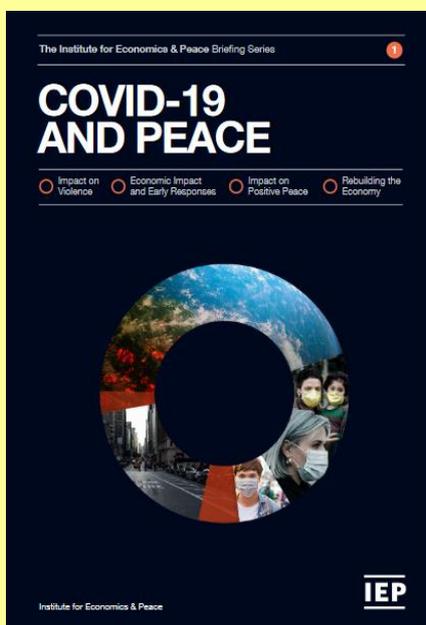
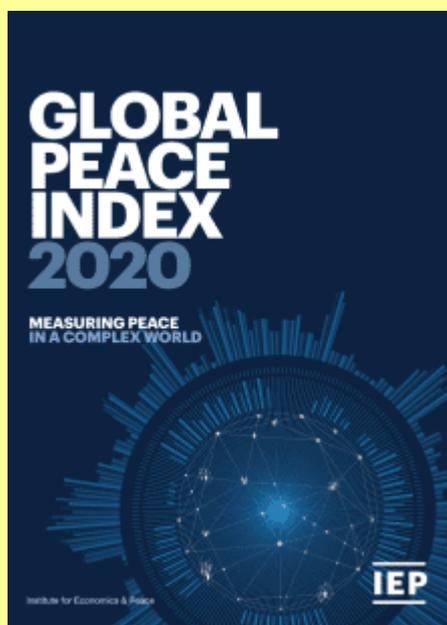
The Global Peace Index is based on three main criteria: the level of Societal Safety and Security, the extent of Ongoing Domestic and International Conflict, and the degree of Militarization, in addition to a set of criteria related to different fields, including the internal and external affairs of states.

The Global Peace Index is an attempt to measure the relative peacefulness of countries and regions. It is produced by the Institute for Economic and Peace in consultation with an international team of experts from institutes and research centers and in cooperation with the Department of Peace and Conflict Studies at the University of Sydney in Australia.

The countries are ranked in the Index on a scale of 1-5 degrees so that the most stable countries are those who achieve 1, while the least stable receive 5.

It is important to note that the State of Qatar has continued to top the Global Peace Index among the MENA countries during the past couple of years, along with its high performance in many indicators during the past year, the most important of which was obtaining the 1st position globally in terms of security and safety among 118 countries according to the annual report of 2019 crime index issued by Numbeo' and the 2nd in the Arab world and the 29th globally in the competitiveness index out of 141 countries. It also ranked 1st in the Arab world and the 7th globally out of 118 countries in the Global Finance Safety Index and the 2nd in the Arab World and the 10th globally in the Global Competitiveness Report 2019.

►► Downloads: <http://visionofhumanity.org/reports/>



The Terror Heritage of Vehicle Attacks on Protests

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/infrastructure-security/the-terror-heritage-of-vehicle-attacks-on-protests/>

June 13 – “Vehicles are like knives, as they are extremely easy to acquire,” stated a 2016 issue of ISIS’ English-language *Rumiyah* magazine. “But unlike knives, which if found in one’s possession can be a cause for suspicion, vehicles arouse absolutely no doubts due to their widespread use throughout the world.”

In an online trove of terror tutorials geared toward would-be operatives who don’t want the hassle of buying a gun but want to inflict as much carnage as possible on a soft target, ISIS has consistently pushed terrorists toward the convenience and accessibility – if you don’t own a car or truck, you can rent or steal – of a vehicle attack.

While pushing the low-skill, simple, accessible weapon tactic against foes, ISIS has also encouraged attacks on protesters – including the 2018 “yellow vest” demonstrations against government policies in France – as ideal soft targets amid “any outdoor attraction that draws large crowds.” Cars are one of the “safest and easiest” weapons as well as “most successful



in harvesting large numbers,” the terror group continued, stressing how this crime of opportunity decreases the risk of terrorists being detected in the planning phase, depending on the vehicle acquisition or target reconnaissance process. It can be just a matter of when one encounters a group of potential victims in line with a pre-established motive: Abdul Razak Ali Artan plowed his car into a crowd at Ohio State University in November 2016 when students and faculty happened to be gathered on the sidewalk because of a building alarm.

And in an era where tactics and tutorials increasingly inspire across assailants across ideological lines, vehicle ramming isn't just the domain of the terrorists who plowed a truck down a beachfront in Nice, France, or into holiday shoppers at a Christmas market in Berlin.

In August 2017, white supremacist James Fields Jr. drove his car into a crowd of peaceful protesters on the outskirts of the Unite the Right rally in Charlottesville, Va., killing demonstrator Heather Heyer. Two months earlier, Darren Osborne, who voiced disdain toward Muslims, drove into pedestrians near the Finsbury Park Mosque in London, killing one.

Incorporating motive, easily acquired means, and opportunity – it's difficult for massive urban protests or pop-up protests in small towns, as the nation has seen for nearly three weeks, to be hardened from attacks, particularly when everyday traffic still needs to circulate in the vicinity – the protests sparked by the killing of George Floyd have been targeted by multiple vehicle attacks.

- ❖ **Harry H. Rogers, 36**, has been charged with attempted malicious wounding, felony vandalism, and assault and battery for allegedly hopping a median in his Chevy truck and driving into a crowd of protesters in Henrico County north of Richmond, Va. Police said Rogers told officers he was “the highest ranking member of the KKK in Virginia” and they found KKK materials in his truck along with firearms and a “grand dragon” robe at his home.
- ❖ **Frank Cavalluzzi, 54**, was arraigned on charges of second-degree attempted murder, attempted assault, reckless endangerment and other offenses for allegedly threatening protesters by wearing a glove with four blades attached and then driving his SUV onto the sidewalk at a small group of protesters in Queens.
- ❖ **Michael Tran, 31**, faces 10 charges including assault with a deadly weapon for allegedly accelerating into a group of protesters in Bakersfield, Calif., injuring a 15-year-old girl.
- ❖ **Benjamin Hung, 28**, was arrested May 31 on suspicion of assault with a deadly weapon after Pasadena, Calif., police said his pickup flying a Betsy Ross American flag, a pro-police “Thin Blue Line” American flag and a Gadsden flag “gunned” toward protesters.
- ❖ **Bianca Orozco, 26**, was charged with two counts of assault with a deadly weapon causing great bodily injury and two counts of hit-and-run after video captured her SUV driving into a crowd of San Jose, Calif., protesters, reversing and striking two people, then racing away as a Santa Clara County sheriff's deputy on scene fired a shot at her vehicle.
- ❖ **John Antoine Holliman, 36**, is charged with two counts of felonious assault and third-degree fleeing and eluding for allegedly trying to hit two Detroit police officers patrolling a protest on bicycle before leading cops on a 100-mph pursuit.
- ❖ Denver police are investigating a hit-and-run shown in a viral video in which a black SUV struck a protester. Two nights later, three police officers and one civilian were struck in another hit-and-run.

As these cases work their way through the judicial system, other incidents with vehicles plunging into crowds have occurred with drivers still at large or police concluding that the driver didn't intend to hurt protesters. And while the decision to intentionally steer into crowds marching against racial injustice could be a heat-of-passion, in-the-moment decision by the assaulting driver, animus against the targets as well as promotion of the tactic have been whipped up long before Black Lives Matter took to the streets.

At Ohio State, after all, the desire to conduct an attack against his perceived enemies and in the name of his ideology had been brewing in Artan's head long before he decided to veer into the crowd on the sidewalk. A week before the attack, he took a road trip to Washington, D.C., and bought a knife; back home in Columbus, he bought another knife the day before the attack. And all the while, ISIS had been egging its followers to emulate the devastating July 2016 Bastille Day truck attack.

Similarly, white nationalists seized on the Charlottesville attack to not only heap praise on Fields for the attack or claim he was acting in self-defense but to encourage future attacks. On the /pol/ 4chan message board, users branded the attacker with nicknames such as “James ‘The Jews went too far so I got my car’ Fields” and “James ‘Mow Down the Kikes, Even the Tykes’ Fields.”

Some of the meme-posting encouraging striking protesters has come from law enforcement, such as West Linn (Ore.) Police Department Officer Tom Newberry losing his job in February 2017 after a seven-month investigation into his Facebook posts that included saying of Black Lives Matter, “When encountering such mobs remember, there are 3 pedals on your floor. Push the right one all the way down.” Days after the Charlottesville attack, Sgt. Troy Baker, head of the Santa Fe Police union, retired in the middle of an internal investigation over his Facebook shares that included a depiction of a vehicle attack with the words, “All Lives Splatter. Nobody cares about your protest. Moral of the story.. stay off the road!!”





China Dog Meat Trade 2020

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The Department of Homeland Security's Security Awareness for Soft Targets and Crowded Places action guide on vehicle ramming acknowledges that these attacks often have "few or no observable indicators" that would enable authorities to intervene. Al-Qaeda in the Arabian Peninsula's infamous English-language *Inspire* magazine advised would-be vehicle rammers in a 2010 article promoting the tactic that "if you can get through to 'pedestrian only' locations that exist in some downtown (city center) areas, that would be fabulous."

Vehicle ramming attacks don't require a declaration of loyalty to a specific hate group, but the attack mindset may nevertheless be there spurring the driver to take the action he or she does, whether the driver claims he or she was trying to hurt or scare demonstrators: hatred for the protesters or the cause they represent to the extent that the driver either doesn't care or intends that people may be injured or killed at his or her hands, the decision that the car will be used as a weapon, and the decision to seize or seek out the opportunity to steer that vehicle toward human lives.

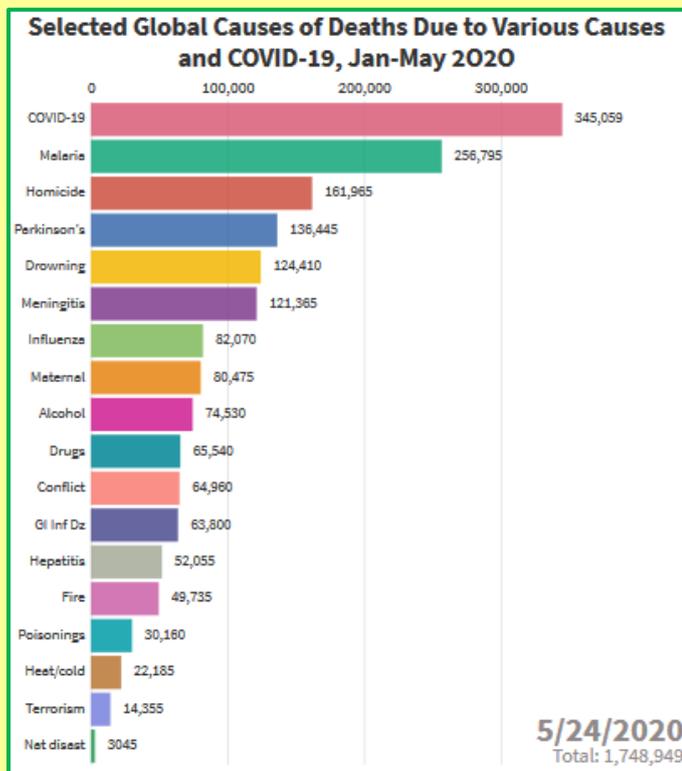
They're copycatting a terror technique that has gained momentum as having the "necessary attributes required for causing a blood bath," according to ISIS promotion of the "affordable weapon" of vehicle attacks.

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. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera and SiriusXM.

Terrorism, drugs, malaria: How does COVID-19 compare to other global killers?

Source: <https://thenewdaily.com.au/news/world/2020/06/11/coronavirus-killers-malaria/>

June 15 – The coronavirus pandemic has wreaked havoc around the world, claiming more than 400,000 lives and destroying global economies.



But how does it compare to other mass killers like terrorism or the flu?

About 15 per cent of all human deaths around the world are caused by infectious and parasitic diseases, according to the World Health Organisation.

In recent years, malaria – a parasitic disease spread through mosquito bites – has been one of the deadliest.

In 2018, an estimated 228 million people were infected with the disease, and roughly 405,000 died as a result, World Health Organisation data shows.

Most of those victims were children under five years old (67 per cent) that were living in African countries (94 per cent).

Enter 2020.

What started as a mystery "pneumonia-like" illness in the Chinese city of Wuhan has now infected more than seven million people and killed upward of 419,000.

And in [countries like Brazil](#) and Russia, where infection rates are rapidly climbing, the death toll is set to increase further yet.

To compare how the coronavirus death toll stacks up against other global killers, data visualisation

company Flourish has created a bar chart using information from the



Global Burden of Disease study, Worldometers populations and Johns Hopkins COVID repository.
For anyone underestimating the global death toll from the COVID-19 pandemic, watch the interactive chart above.

25 Years Later, Budyonnovsk Hostage Crisis Seen as Horrific Harbinger of Terror

By Tony Wesolowsky and Yevgenia Kotlyar

Source: <http://www.homelandsecuritynewswire.com/dr20200617-25-years-later-budyonnovsk-hostage-crisis-seen-as-horrific-harbinger-of-terror>

Nadezhda Alyokhina was hauling a refrigerator home with a friend when the first of a string of deadly hostage dramas began to unfold in the south of Russia 25 years ago.



Chechen militants led by Shamil Basayev on 14 June 1995, took about 1,500 people hostage and seized a hospital in Budyonnovsk, in Russia's southern Stavropol region.

As she was driving the city streets, Alyokhina said she witnessed firsthand as the militants rounded up hostages across the city.

"A woman...was running down the street, a man with an automatic weapon behind her. I thought it was her husband chasing her," Alyokhina told *Current Time*, a Russian-language network led by RFE/RL in cooperation with VOA.

"He then pointed in the direction of our car. These guys were armed to the

teeth, and fired on whatever they wanted to. They saw a house they didn't like, broke down the front gate, and shot out the windows. It didn't matter who they shot at — kids, men, women, it was all the same," Alyokhina recounted from the family furniture store in Budyonnovsk, adding she was convinced she would die that day.

When it ended five days later, a total of 129 people would be dead owing to the militant assault and a botched Russian commando raid. As for Basayev and his fighters, they were given free passage out of the city after agreeing to release their hostages.

Human Rights Watch in 1996 called the assault in Budyonnovsk "perhaps the [most heinous humanitarian law violation](#) known to have been committed by Chechen forces."

The hostage drama would [not be an isolated incident](#) — it was to be followed by the Beslan, Nord-Ost, and Kislyar-Pervomaysk hostage crises — nor would the reaction of Russian forces, who would come to rely on an array of tactics to deal with hostage crises, usually with much innocent blood spilled.

In December 1994, the Russian Army marched into Chechnya, a restive region in Russia's North Caucasus where separatists yearned for independence from Moscow. Basayev organized the defense of Grozny, the regional capital that would eventually be reduced to rubble as a result of Russian bombing.

Basayev began his campaign against Russian rule over Chechnya in 1991, when he participated in the hijacking of a Russian passenger aircraft flying from the southern town of Mineralnye Vody to Turkey and onward to Grozny.

Also, in 1991, he signed up with the unofficial Confederation of Peoples of the Caucasus, and in 1992 led a battalion of volunteers from the North Caucasus who fought on the side of separatist region Abkhazia in its 1992-93 war against Georgia.



Seeking Revenge

In May 1995, some eleven members of Basayev's family, including a wife and two children, were killed in a Russian bombing raid on his home village of Vedeno.



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Apparently in retaliation for their deaths, Basayev and a group of some 130 fighters set out to drive north into the Russian heartland to stage a major reprisal.

On 14 June 1995, they made it as far as Budyonnovsk, where they were halted by traffic police.

The militants led by Basayev seized several administrative buildings in the city, taking about 1,500 people hostage in the process. They eventually took refuge in the main city hospital, where Basayev demanded an immediate cessation of hostilities in Chechnya and the start of peace negotiations.

After two attempts by Russian forces to free the hostages failed, resulting in the deaths of some 100 people, Basayev negotiated their release and his own safe conduct back to Chechnya live on Russian television with Russian Prime Minister Viktor Chernomyrdin, who was later excoriated for allowing the Chechens to escape while Basayev was lionized by many Chechens for that feat.

In August 1996, Basayev played a key role in the successful attack on Grozny that led to the signing of a cease-fire and the Khasavyurt accord that ended the war.

In 1997, Basayev ran unsuccessfully for president of Chechnya, although he later held various government posts, including prime minister. In late 1999, however, he and fellow field commander Khatab launched ill-fated incursions into neighboring Dagestan that [helped lead to a new war](#).

Basayev, Russia's most wanted man, was [killed by Russian special forces](#) in neighboring Ingushetia in 2006.

“Blood Everywhere”

For those like Alyokhina who were taken hostage in Budyonnovsk in June 1995, his legacy is not remembered kindly.

Now in her 50s, Alyokhina said that as the militants marched the hostages down Pushkin Street toward the hospital, she felt resigned that they were to be killed, given the carnage she had witnessed.

“I can never forget that feeling that I was being marched away to die. I still have that feeling today. We had seen how they had killed people,” Alyokhina said, adding she was one of several women used as human shields by the Chechen gunmen during the five-day ordeal.

Nikolai Karmazov saw up close the scale of the violence, working as a doctor in the besieged hospital in the trauma unit.

“There was blood everywhere, and no place to get help,” Karmazov told Current Time. “I had to work at gunpoint. They almost shot me twice because I didn't treat the militants first, but those who needed help most: those with gunshot wounds, with blood coming out from tourniquets,” Karmazov explained, added the situation calmed a bit after a Basayev deputy intervened.

The siege at the hospital came to an end on 20 June when the Chechen militants rode in a slow convoy of buses out of Budyonnovsk — including more than 100 people acting as human shields — in keeping with the deal negotiated between Basayev and Chernomyrdin.

Among the voluntary hostages was human rights activist Valery Borshchev. He arrived in Budyonnovsk as part of a team of negotiators.

“We got on buses. A hostage would sit by the window, so if they shoot, they would kill him, and the militant would be sitting next to him,” Borshchev recalled. “Some people then came on the bus and handed out papers for us to sign, which said: ‘I so-and-so voluntarily join Basayev's gang. I take full responsibility for my decision,’” Borshchev explained, adding that he kept the paper, refusing to sign it, like many others.

Russia's heavy-handed handling of the Budyonnovsk crisis would be repeated in other hostage showdowns with Chechen militants.

“The Russians have got huge pride, huge arrogance, but their military is not very effective. It's full of conscripts,” Paul Beaver, an intelligence and defense analyst, [told RFE/RL in 2004](#).

Russia's hunt for the Chechen fighters involved in the Budyonnovsk hospital raid continued over the years. In the most recent convictions, two Chechen men were sentenced to prison in December 2017.

The North Caucasus Regional Military Court in the city of Rostov-on-Don found Ramzan Belyalov and Magomed Mazdayev [guilty of hostage taking](#) and organizing a terrorist attack and sentenced them to 15 and 13 years in prison, respectively. Both pleaded not guilty.

Besides Basayev, six other participants in the attack had been killed, 26 sentenced to prison terms and 23 are still being sought, according to Russia's Investigative Committee in 2015.

Tony Wesolowsky is a senior correspondent for RFE/RL.

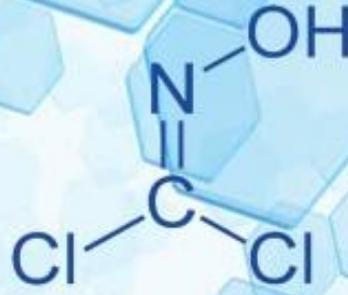
Yevgenia Kotlyar is a correspondent for Current Time, the Russian-language network led by RFE/RL in cooperation with VOA.



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CHEM NEWS



What it is, if not exposure to mustard, heat, or boiling liquid?

Answer at the end of this chapter!



Israel Believes Assad's Syria Is Restarting Its Chemical Weapons Programs

By Sebastien Roblin

Source: <https://news.yahoo.com/israel-believes-assads-syria-restarting-163000437.html>

June 02 – Virtually all the state actors in the region find it more expedient to remain locked in perpetual small-scale warfare than to take on the political risks of negotiating in good faith with their adversaries—a move which could delegitimize them with their own allies.

A terrifying pandemic may have the world in its grip, but it's business as usual in the war-torn Middle East as Tehran and Damascus continue transferring weapons to proxies and Israel continues bombing them.

The latest strike took place on March 31, 2020 when Israeli jets crossed over into Lebanese airspace near Tyre ([video here](#)) and reportedly launched eight missiles that streaked towards central Syria.

Video footage shows bursts of [light anti-aircraft fire](#) rippling across the sky—possibly the rapid-firing 30-millimeter cannons of [Pantir-S short-range air defense vehicles](#).

The Syrian government's SANA news agency reported air defenses had repelled the entire attack—but later conceded that some damage had been inflicted at an unspecified military facility. [Video footage](#) shows one missile hitting a ground target. Other source claims two or three got through.

The Syrian Observatory of Human Rights [reported](#) the target was al-Shayrat airbase, adding “Reliable sources have informed SOHR that a cargo plane had shuttled between Al-Shayrat and T4 [AKA Tiyas] airports before Israeli strikes.”

The open-source analysis group Aurora Intel later [tweeted satellite photos](#) appearing to depict damage to the airfield, commenting: “Looks like 3 targets...Looks like a SEAD [Suppression of Enemy Air Defense] mission + Cargo targeting on the runway.”

The following day *Breaking Defense* [ran an article](#) by Israeli defense journalist Arie Egozi with commentary from an anonymous, “very senior” Israeli officials connecting strikes on March 5 and March 31 to efforts by Syria to rebuild its chemical weapons capabilities, and vowing that Israel would “...continue such attacks as more intelligence is gathered.”

If true, such production would contravene Syria's accession to the Chemical Weapons Convention.

The Israeli Defense Force has carried out [hundreds of airstrikes](#) in Syria since civil war broke out there in 2011, targeting missile and artillery batteries, weapons deliveries, factories and command and control buildings used by Syria, Iran and Hezbollah (a Lebanon-based Shia militant group that has long been jointly sponsored by Damascus and Tehran).

Israel specifically seeks to prevent transfers of advanced rockets and [missiles](#) which could threaten targets in Israel and impede IDF airstrikes. It also objects to the growing presence of the Iranian Revolutionary Guard Corps in Syria on the border with Israel.

Syrian airbases are frequent targets because they are common transfer points for weapons from Iran and Russia. In many cases, Israeli strikes destroyed cargo on the tarmac shortly after it was unloaded.





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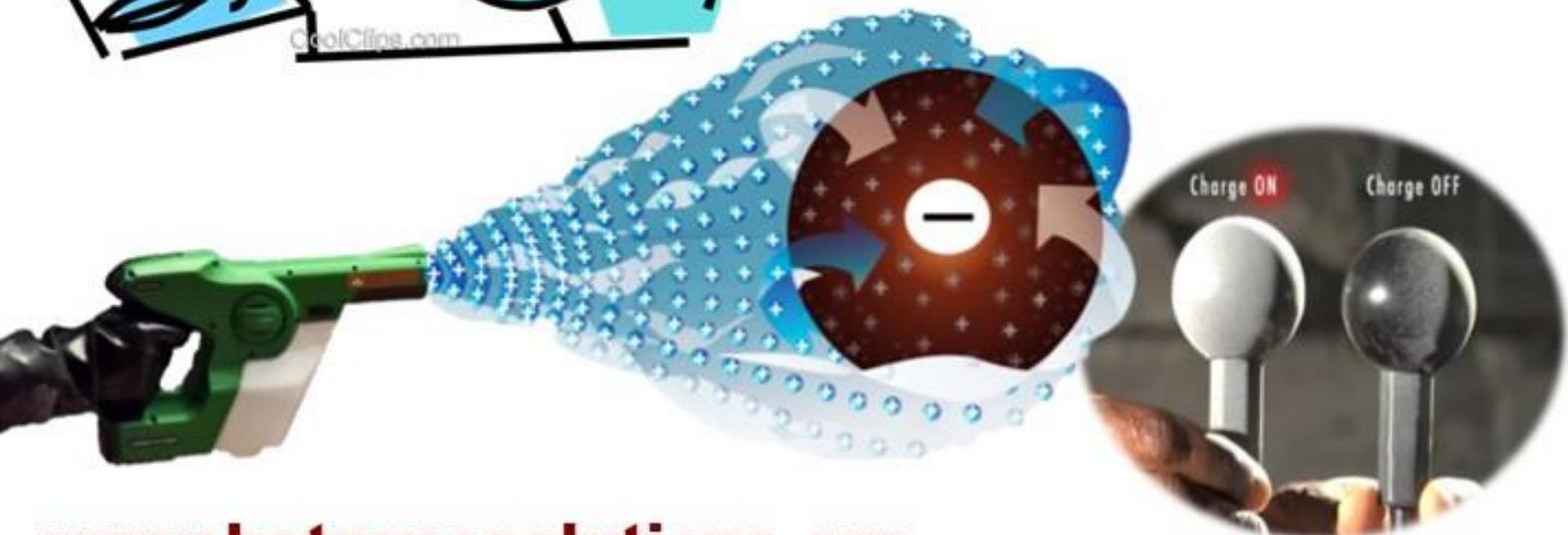


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The earlier Israeli strike on March 5 hit four sites: al-Shayrat and al-Dabaa airbases in Homs province, and two targets on the Golan Heights. Reportedly, the attack killed a Syrian government soldier and injured three others at Shayrat.

Three days later, [article on Ynet News](#) noted in passing: “An attack attributed to Israel last week near the city of Homs was reported to have targeted a chemical warfare facility and considered by foreign sources to be a warning to the Assad regime that Israel is aware of these efforts.”

While it's plausible Syria might seek to discretely rebuild its chemical weapons capability, it's important to note that officials have not yet furnished any publicly available evidence.

Despite the [destruction of 1,300 tons of Syrian chemical weapons](#) in 2013-2014, experts have long believed Damascus retained small quantities of deadly nerve agents and/or the capacity to manufacture more on a small scale. Syrian forces also [never ceased using chlorine bombs](#), the production of which cannot be regulated due to chlorine being a common industrial chemical.

This was confirmed on April 4, 2017, when a [Syrian Su-22 jet](#) based at Shayrat dropped bombs full of the nerve agent [sarin](#) on the rebel-held town of Khan Sheikhoun killing 80. The origin of the attack was [confirmed](#) by an investigation by the Organization for the Prevention of Chemical Weapons.

While Damascus's record of using chemical weapons in the Syrian Civil War despite formally disavowing them has been [repeatedly established](#), the anonymous claims by Israeli officials are not proof in and of themselves.

Military aviation writer Tom Cooper, author of several books on the conflict in Syria, he was skeptical that Israel had bombed a Syrian chemical weapons facility:

“Have heard such rumors, but find them only ridiculous. The Israelis haven't bombed even one of Assadist chemical weapon site, ever. They're bombing whatever IRGC bases they find (which isn't much), instead.”

For now, though, the statements appear to be a threatening letter of intent warning of consequences if Syria proceeds down the path Israeli officials claim it is pursuing.

In fact, the message may be directed even more at Putin, who has worked out a peculiar working relationship with both Israel and Syria: he supplies Syria with weapons, but seemingly does not [allow the more advanced S-300 air defense missiles](#) to be used against Israeli jets routinely bombing targets in Syria.

Nonetheless, Israel is frustrated by Moscow's apparent disinterest in pressuring Syria to observe the chemical weapons ban.

Unfortunately, virtually all the state actors in the region find it more expedient to remain locked in perpetual small-scale warfare than to take on the political risks of negotiating in good faith with their adversaries—a move which could delegitimize them with their own allies.

For example, Syria's reception or production of weapons ostensibly for fighting Israel may create a “political good”—being seen to support the objectives of Assad's allies Hezbollah and Iran—even if they fail to have much military impact on Israel. When Israel destroys those weapons, it eliminates the material capability, but not the symbolic good, guaranteeing further attempted weapons transfers.

As a result, ongoing hostilities between Syria and Israel appear to be indefinitely sustainable.

Sébastien Roblin writes on the technical, historical and political aspects of international security and conflict for publications including [The National Interest](#), [NBC News](#), [Forbes.com](#) and [War is Boring](#). He holds a Master's degree from Georgetown University and served with the Peace Corps in China.

START developing tools to identify potential CBRN threats

Source: <https://homelandprepnews.com/stories/50277-start-developing-tools-to-identify-potential-cbrn-threats/>

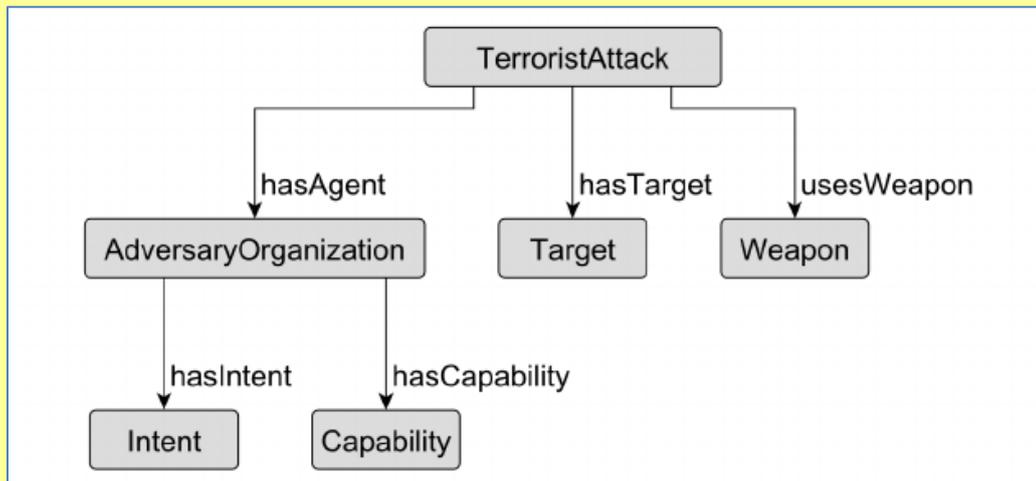
June 05 – The National Consortium for the Study of Terrorism and Responses to Terrorism (START) is creating a process to identify potential chemical, biological, radiological, or nuclear (CBRN) threats from non-state actors.

The project, called Advancing U.S. CWMD/CWMT Capabilities in Support of the SIGMA+ Program through Development of Anticipatory Human Social Systems Models and Adversary Weapon Selection Decision Processes, supports the Defense Advanced Research Projects Agency's SIGMA+ Program.

“This project expands upon previous work in which we sought to understand the behaviors of violent non-state actors in terms of their motivation to conduct a CBRN attack,” START Assistant Research Scientist Thomas Guarrieri said. “Now, we're trying to automate a



process by which we can quickly identify threats from adversaries who might conduct CBRN attacks, given what we know about the motivations of CBRN adversaries.”



The project consists of three parts — an Adversary Weapon Selection Dataset (AWS), an Adversary Automated Template Generation (AATG) tool, and a Geospatial Risk Mapping Tool.

The AWS will combine information about non-state actors who have pursued CBRN weapons from other START datasets. That will be merged with data on violent actors who have not pursued CBRN but conducted attacks

using conventional modalities.

“What we’re looking for are differences between those groups. With that knowledge, we can use the AWS as a foundation to build out the AATG tool, which can detect threats in an attack cycle that indicate a non-state actor might conduct a CBRN attack,” Guarrieri said.

The AATG tool will automate the processes of threat identification from the information provided by the AWS. The team built a repository of potential actions and decisions an adversary can make and help to determine the next likely adversary action.

“The goal of the AATG tool is to simulate adversary behavior and generate realistic adversary scenarios using probabilistic behavior modeling,” START Junior Researcher Tyler Clark said. “The AATG tool has several uses, including creating templates of adversary activity that can help law enforcement recognize adversary activity and interdict before the adversary conducts an attack.”

The Geospatial Risk Mapping Tool will be created with the assistance of START’s Geospatial Research Unit (GRU).

“We’re adapting criminologist Kim Rossmo’s geographic profiling of serial criminals to identify likely locations where a nefarious actor would construct a CBRN weapon,” START Senior Researcher Marcus Boyd said. “We’re also incorporating variables gleaned from our knowledge of adversary behavior and spatial preferences. This will help refine the search area for mobile detection of CBRN build locations.”



Chemicals Database Now Available to Law Enforcement

Source: <https://i-hls.com/archives/101819>

June 05 – An illicit chemistry database is now available to law enforcement personnel in the US even if they are on a crime scene. The Chemical Agents Reactions Database (CARD) was developed by expert chemists from the Department of Homeland Security (DHS) Science and Technology Directorate (S&T)

Chemical Security Analysis Center (CSAC).

CARD, a chemical synthesis and chemical informatics centric data system (e.g. boiling point, melting point, toxicity, or spectroscopic information) containing both unclassified and classified data, is accessible from a classified website maintained on a server hosted by the Department of Defense. The website is available to appropriately cleared personnel from DHS, Department of Justice (e.g. FBI), other United States Government interagency offices, and state and local agencies. It provides information on how chemicals of interest could be produced, according to newswise.com.

It was created to improve the work of DHS agencies — to have an electronically-centered information system for everyone to be able to use the same information simultaneously.

Once developed, the system was offered to anyone with security clearance.



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CARD currently contains approximately 1,000 chemicals of interest and 5,000 reagent chemicals used in the chemical reactions that produce illicit chemicals.

Also, CARD can be used the other way around. If police find an illicit drug or a warfare agent, they can search in the website to see what chemicals can be used to make it. For example, if police capture a suspect with a vial of sarin gas (a nerve agent that can kill in minutes after inhalation), they can use CARD to determine which chemicals are used to make it. Police can then search the suspect's illicit lab for those chemicals and obtain further evidence of wrongdoing.

CARD also shows the molecular structure of chemicals, the ways they are produced and used, and their physical, chemical, and toxicological properties.

Emerging Technologies and the Future of CBRN Terrorism

By Gregory D. Koblentz

Source: https://cpb-us-e1.wpmucdn.com/blogs.gwu.edu/dist/1/2181/files/2020/06/Koblentz_TWQ_43-2.pdf



Among emerging technologies, five warrants special consideration for their potential to increase the risk of non-state actors acquiring and using CBRN weapons: drones, the Dark Web, malware, synthetic biology, and 3D printing. There are already signs of drones, the Dark Web, and malware being misused in ways that increase the risk of CBRN terrorism, while synthetic biology and 3D printing pose longer-term risks.

.....

These five emerging technologies share seven characteristics that present significant challenges to preventing their misuse: (1) dual-use; (2) disruptive; (3) digital; (4) diffused; (5) decentralized; (6) deskilled; and (7) do-it-yourself.

▶▶ Read the full paper at source's URL.

Read also: <https://www.alkhaleejtoday.co/international/5006080/The-Houthis-have-built-their-own-drone-industry-in-Yemen.html>

Gregory D. Koblentz is an Associate Professor and Director of the Biodefense Graduate Program at the Schar School of Policy and Government at George Mason University. He is also a member of the Scientists Working Group on Biological and Chemical Security at the Center for Arms Control and Non-Proliferation.

This article is derived from a paper presented to the UN Security Council on August 23, 2016 during its open debate on UN Security Council Resolution 1540 and the non-proliferation of weapons of mass destruction.

Tear Gas – From the Battlefields of World War I to the Streets of Today

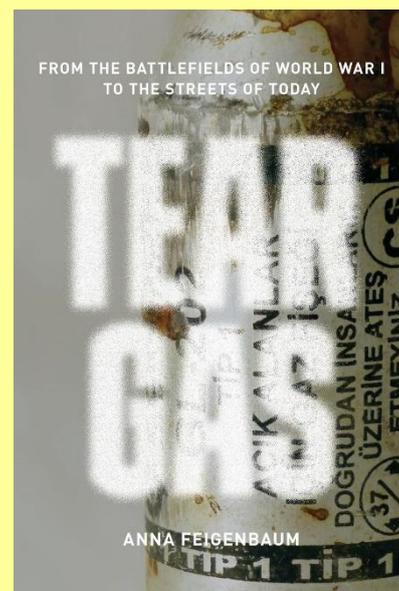
By Anna Feigenbaum (author)

Source: <https://www.versobooks.com/books/2109-tear-gas>

The story of how a chemical weapon went from the battlefield to the streets

More than a hundred years ago, French troops fired the first tear gas grenades at the German enemy. Designed to force people out from cover, tear gas causes tearing and gagging, burning the eyes and skin. Its use has ended in miscarriages, permanent injuries, and death. While all but a few countries have agreed that it is illegal to manufacture, stockpile, or use chemical weapons of war, tear gas continues to proliferate in civilian settings. Today, it is a best-selling form of "less lethal" police force. From Ferguson to the Occupied Territories of Palestine, images of protesters assaulted with "made in the USA" tear gas canisters have been seen around the world. The United States is the largest manufacturer, and Brazil and South Korea are rapidly growing markets, while Britain has found an international audience for its riot control expertise.

An engrossing century-spanning global narrative, *Tear Gas* is the first history of this poorly understood weapon. Anna Feigenbaum travels from military labs and chemical weapons



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expos to union assemblies and protest camps, drawing on declassified reports and eyewitness testimonies to show how policing with poison came to be.

▶▶ Paperback with [free ebook](#) – have a look @ <https://www.versobooks.com/blogs/3483-tear-gas-from-the-battlefield-to-the-streets>

Anna Feigenbaum is co-author of the book Protest Camps, and her work has appeared in Vice, The Atlantic, Al Jazeera America, The Guardian, Salon, Financial Times, Open Democracy, New Internationalist, and Waging Nonviolence. She is a Senior Lecturer in the Faculty of Media and Communication at Bournemouth University.



OSHA-Accepted Fit Test Protocols

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Source: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.134AppA>

New Solution to Neutralize Chemical Threat

Source: <https://i-hls.com/archives/102153>



June 19 – A new method for containing and deactivating neurotoxic chemicals like VX and sarin has been developed with the funding of the UK Ministry of Defense. These internationally-banned liquids are aerosolized purposely to inflict damage on large geographical areas and are considered to be weapons of mass destruction (WMD's).

These weapons, known as nerve agents or neurotoxins, are highly potent and fast-acting. Small doses can cause rapid paralysis and death, as the chemicals disrupt the connection between the body's nerves and muscles.

In a project funded by the Defense Science and Technology Laboratory (DSTL) of the UK Ministry of Defense, a team of researchers from the University of Kent (UK) and the University of New Brunswick (Canada) investigated new methods of bulk decontamination of chemical weapons, according to phys.org.

The result of the research was a sponge developed to swell and absorb dangerous neurotoxins and make them safer to handle, which also contains the MOF chemical catalyst, created to accelerate the chemical's breakdown, diminishing the neurotoxins into safer components.

To research this safely, researchers used substances to simulate the presence of neurotoxins without risking exposure to dangerous chemicals. Following this, DSTL tested the prototype material with the real nerve agent to confirm the effect.

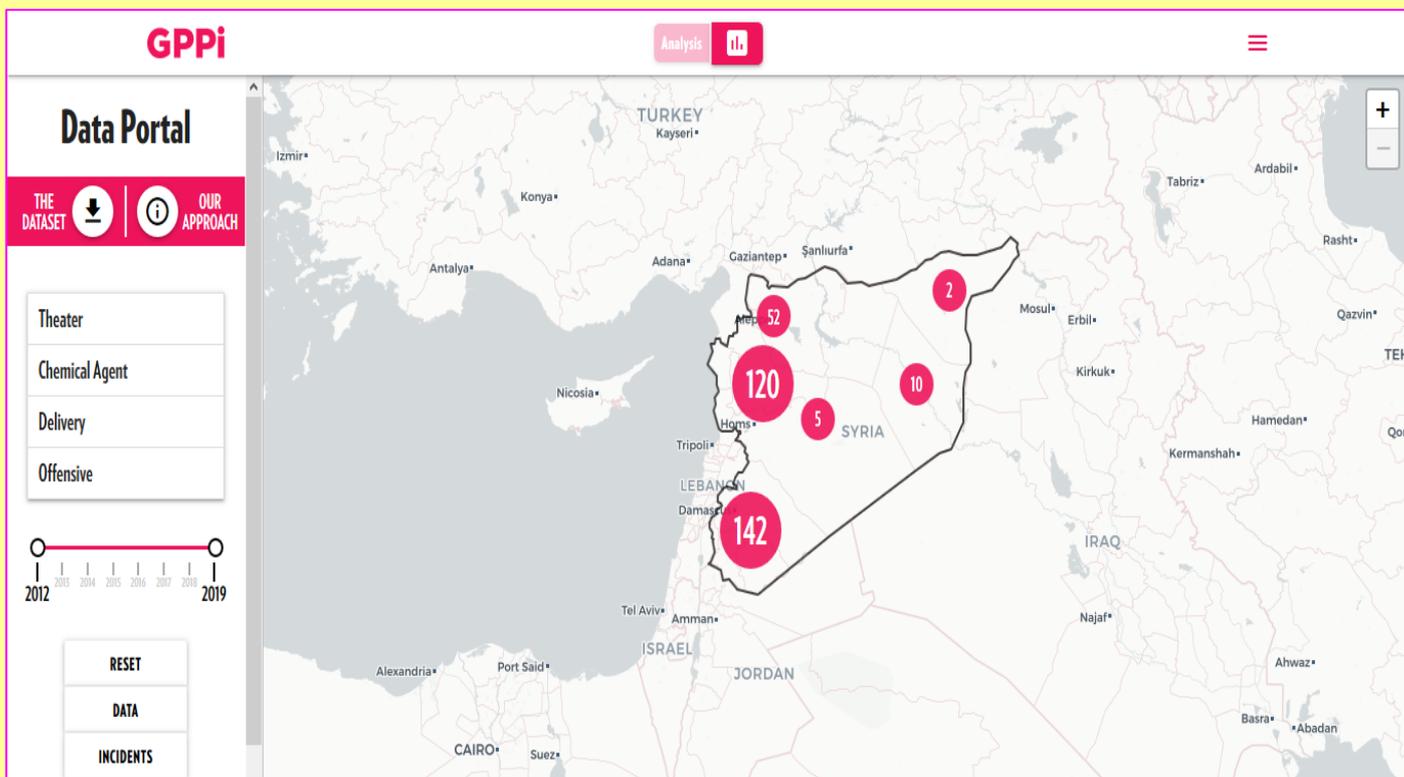


Less than five kilograms of the MOF-containing polymer sponge can absorb, immobilize, and safely destroy a 55-gallon drum of these toxic chemicals.

The paper has been published in ACS Applied Materials and Interfaces.

SYRIA CWAs – Have a look at this interactive website and data set!

Source: <https://chemicalweapons.gppi.net/data-portal/>



A new dataset and interactive mapping tool, due to be released on Tuesday, gives the most comprehensive analysis of chemical weapons use in Syria to date.

Researchers from the Global Public Policy Institute in Berlin along with Syrian and international partners compiled 345 credibly substantiated or confirmed attacks across the country since 2011, building on what the institute described as years of painstaking research.

Approximately 98% of the attacks were carried out by the Assad regime, usually dropped from the air, and [Islamic State](#) are responsible for the rest, GPPI found. Around 90% of the documented attacks were carried out after the infamous “red line” chlorine attack on the Damascus suburb of Ghouta in 2013.

According to the GPPI research, Assad’s heavy use of improvised chlorine bombs, in particular, is a crucial part of the regime’s military strategy: after conventional bombing drives civilians into underground tunnels and basements, chlorine gas, which is heavier than air, sinks into these last refuges, finally forcing people to flee their homes and towns.

“Our research shows what Syrians on the ground have known for years: that chemical weapons have become a completely normalised component of the Syrian regime arsenal used for years in full view of the international community with near impunity,” said Tobias Schneider, a GPPI research fellow who worked on the new resource.

“Syria is commonly described as the ‘best documented war in history’. While that’s true, it is hard to go beyond the individual incident to process and make sense of the vast body of data that the war has produced over the years. We hope this research will inform prosecutions for years to come. But this data has been available for years and could have been used to better inform policymaking that could have averted the worst of these horrors.”



What it is, if not exposure to mustard, heat, or boiling liquid?

Heracleum mantegazzianum, commonly known as giant hogweed, is a monocarpic perennial herbaceous flowering plant in the carrot family Apiaceae. *H. mantegazzianum* is also known as cartwheel-flower, giant cow parsley, giant cow parsnip, or hogbane. In New Zealand, it is also sometimes called wild parsnip (not to be confused with *Pastinaca sativa*) or wild rhubarb.

Giant hogweed is native to the western Caucasus region of Eurasia. Giant hogweed is widespread throughout western and northern Europe, especially along many terrains, such as coastal areas and riverbanks. It was introduced to Britain as an ornamental plant in the 19th century, and has also spread to other areas in Western Europe, the United States, and Canada. Its close relatives,

Sosnowsky's hogweed and Persian hogweed, have similarly spread to other parts of Europe.

The sap of giant hogweed is phototoxic and causes phytophotodermatitis in humans, resulting in blisters and scars.

These serious reactions are due to the furanocoumarin derivatives in the leaves, roots, stems, flowers, and seeds of the plant. Consequently, it is considered to be a noxious weed in many jurisdictions. A phototoxic reaction can begin as soon as **15 minutes after contact with the sap**. Photosensitivity peaks between 30 minutes and two hours after contact but can last for several days.



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Plague doctors: Separating medical myths from facts

By Winston Black

Source: <https://www.livescience.com/plague-doctors.html>

May 20 – You've seen them before: mysterious figures, clad from head to toe in oiled leather, wearing goggles and beaked masks. The plague doctor costume looks like a cross between a steampunk crow and the Grim Reaper, and has come to represent both the terrors of the [Black Death](#) and the foreignness of medieval medicine.



Plague Doctors, with infamous beak masks, are a commonly associated with the Black Death. However, these costumes were far less common and emerged much later, in the 17th century. (Image: © Future)

However, the beak mask costume first appeared much later than the middle ages, some three centuries after the Black Death first struck in the 1340s. There may have been a few doctors in the 17th and 18th centuries who wore the outfit, including the iconic beak mask, but most medieval and early modern physicians who studied and treated [plague](#) patients did not.

Why did plague doctors wear beak masks?

According to Michel Tibayrenc's book "Encyclopedia of Infectious Diseases" (John Wiley & Sons, 2007), the first mention of the famous plague doctor

costume is found in a mid-17th century work written by Charles de Lorme, a royal physician in the service of King Louis XIII of France. De Lorme wrote that during a 1619 plague outbreak in Paris, he developed an outfit made entirely of Moroccan goat leather, including boots, breeches, a long coat, hat and gloves. Wearing this protective equipment suggests that doctors had grown more concerned about catching plague directly from their patients, rather than from the air itself.

Paulus Fürst's satirical engraving called "Doctor Schnabel von Rom", or "Doctor Beaky from Rome" (Image credit: Wellcome Collection. Attribution 4.0 International (CC BY 4.0))

The main feature of the outfit was a tight-fitting mask, complete with crystal eyepieces. This extended into a long beak, which was about half a foot (15 centimeters) long and filled with perfume or aromatic herbs. The beak was the most iconic feature of the outfit, and was thought to be essential for the doctor to prevent the inhalation of "pestilential miasma," or disease-ridden air coming directly from the patient.

After De Lorme's written description of the plague costume, our best visual evidence comes from the year 1656, when an especially devastating plague killed hundreds of thousands of people in Rome and Naples. The German engraver Gerhart Altzenbach published a popular image of a plague doctor in full garb, with text describing how the outfit protected the wearer against death.





An even more iconic image of a plague doctor is Paulus Fürst's satirical 1656 engraving called "Doctor Schnabel von Rom," or "Doctor Beaky from Rome." Copied from Altzenbach's illustration, Fürst alternately describes how the doctor does nothing but terrify people and take money from the dead and dying.

An 18th-century German oil painting of the "Danse Macabre". Nine women of different social rank dance with the dead (Image credit: wellcomecollection.org, 4.0 International (CC BY 4.0))

Fürst also added some extra elements to the plague doctor outfit which appear in versions to this day, such as the claw-like gloves and the pointing stick topped by a bat-winged hourglass. These elements are satirical and not a historical reality, but they have nonetheless shaped much of how the stereotypical plague doctor is pictured today.

The engravings of Altzenbach and Fürst may also have inspired the inclusion of the plague doctor, or "Medico della Peste" in Italian, as a standard character in theatres since the 17th century.

The plague doctor getup, and especially the beaked mask, has become one of the most popular costumes in the "Carnevale," or Carnival of Venice in Italy. In fact, some historians have argued that the beaked plague doctor was nothing but a fictional and comedic character at first, and that the theatrical version inspired genuine doctors to use the costume during the outbreaks of

1656 and 1720.

Without more informative written reports and images from this period, which can help us understand under what circumstances the outfit was used, it is impossible to tell which came first: the plague doctor's protective outfit, or the carnival costume.

Who were the plague doctors?

Physicians of the later medieval and early modern periods aren't represented by a single outfit. Ideas about the cause and spread of plague changed over several centuries, as did the clothing worn by plague doctors and the methods they used to treat the disease. Plague prevention and care came from college-trained physicians, surgeons, barbers, apothecaries, midwives, herbalists and priests.

The plague in Leiden in 1574: a doctor examines a urine flask surrounded by the ill, the dying and the dead. (Image credit: Wellcome Collection. Attribution 4.0 International (CC BY 4.0))

These doctors were working long before germ theory and [antibiotics](#) and were unable to cure plagues. However, they deserve more credit than they usually receive, because they recognized the spread and symptoms of plague and gave people hope in an age of constant medical crisis.



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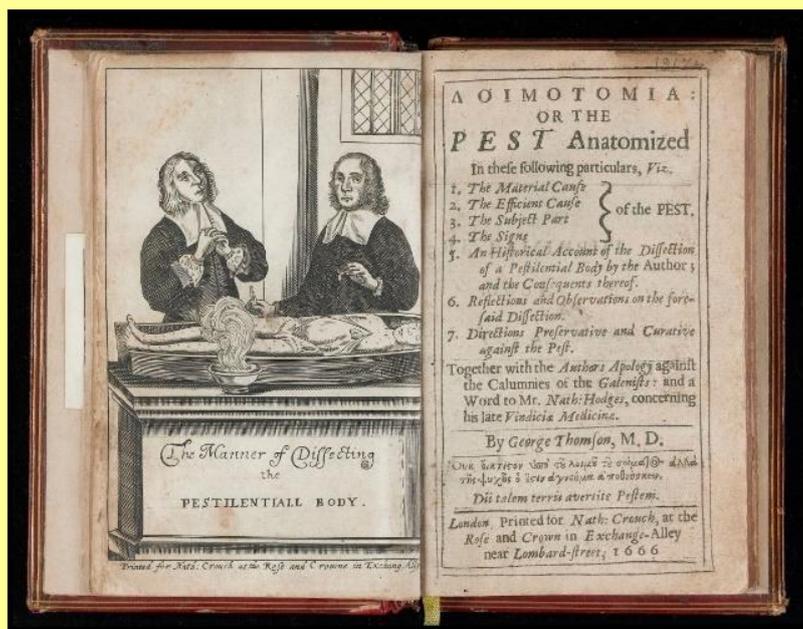
According to Susan L. Einbinder's book "After the Black Death" (University of Pennsylvania Press, 2018), many plague doctors wrote short books, known as plague treatises, to advise their peers and the literate public on plague prevention. Spanish physician Jacme d'Agramont published one of the first treatises in April 1348. According to Einbinder, another early plague doctor called Prof. Gentile da Foligno from Bologna, Italy, died of the plague in 1348, after writing several casebooks on the subject.

A 20th century watercolor of an 18th century physician wearing a plague preventive costume. (Image credit: Wellcome Collection (CC BY 4.0))

After the outbreak of the Black Death, doctors and scientists immediately tried to fit the disease into their existing understanding of medicine. In both Europe and the Middle East this meant defining the plague in terms of the theory of four bodily humors (blood, phlegm, yellow bile, black bile), first developed by the ancient physicians [Hippocrates](#) and Galen and further explained by Arabic and Latin physicians in the middle ages.

Using ancient and medieval medical theories, plague doctors argued that the Black Death was a pestilential fever that corrupted the humors, causing horrific plague buboes, or lymph nodes swollen with blood and pus. Plague doctors recognized that buboes tended to form in the groin, armpits and neck, and saw them as evidence of the body expelling humors from the nearest major organs: the [liver](#), heart and [brain](#), respectively.

According to these doctors, plague could be prevented by strengthening the humors or keeping them in balance through a detailed medical plan or regimen, including changes in diet, taking drugs that caused "beneficial" vomiting and urination, and prophylactic bloodletting. All of these procedures were intended to expel corrupted humors from the body and to keep black bile, known as melancholia, from dominating the body. This bile was considered at the time to be the most dangerous of the humors.



Two pages from 17th century doctor George Thomson's book "Loimotomia, or the Pest anatomized". Two men, supposedly Thomson holding the knife, dissecting a body covered with plague marks. Incense is burning in a bowl to camouflage the stench of the body. The book was published around the time of the Great Plague of London, 1666. (Image credit: Wellcome Collection (CC BY 4.0))

One of the most popular theories was described at length by the faculty of medicine at the University of Paris. In 1348, the king of France asked the professors for their advice as the plague approached the royal capital. The professors combined medicine with

[astrology](#), which was generally considered a serious science at that time, to explain the cause and spread of the plague.

The air of the Earth, they said, was overheated and corrupted by a 1345 conjunction of the planets Mars, Saturn and Jupiter (all of which were considered hot, violent or corrupt in its astrological influence) in the zodiac sign of Aquarius (a wet sign). This unnaturally hot and moist air blew across Asia toward Europe, causing plague wherever it passed. When medieval doctors referred to a pestilence, they often did not mean the disease itself, but the poisoned air that engendered the disease in human bodies.

To protect people from the pestilential air, doctors encouraged the wearing or holding of sweet or bitter substances, such as violets, wormwood, vinegar or (if you were wealthy) a chunk of ambergris, which was a strongly scented secretion of a sperm whale's intestinal lining. Doctors also suggested burning pitch, incense, or bitter-smelling woods to purge and purify the air. From the late middle ages, doctors also recommended firing cannons to combat miasma with the gunpowder smoke.

Although the beak mask costume has since become a theatrical and macabre symbol of a primitive time in medical history, in truth it represents how for centuries physicians, scientists



and health officials have thought about the spread and prevention of plague. The costume represents changing ideas about the causes and transmission of disease, about the relationship between doctors and patients, and about the role of the state in protecting public health.

Winston Black is a historian of medicine and religion in medieval Europe, and has taught at numerous universities in the United States and Canada. His research focuses on medieval pharmacy (drugs, herbs, and spices) and the interactions between medicine and theology in the High Middle Ages. His publications include "Medicine and Healing in the Premodern West: A History in Documents," (Broadview Press, 2019), "The Middle Ages: Facts and Fictions" (ABC-CLIO, 2019) and "A History of the Middle Ages, 300-1500, Second Edition (2016)" (Rowman & Littlefield Publishers, 2016).

COVID-19 case studies: Anatomy of three "super-spreader" clusters

Source: <https://newatlas.com/health-wellbeing/covid19-case-studies-coronavirus-superspreader-clusters-cdc-report/>



May 19 – As the world grapples with ways to safely come out of social lockdowns without triggering new viral outbreaks, the Centers of Disease Control and Prevention (CDC) continues to publish compellingly detailed case studies investigating COVID-19 clusters. These case studies offer granular insights into what are often referred to as super-spreader events.

Around one in five people are traditionally thought to be [super-spreaders](#). These are people who seem to transmit a given infectious disease significantly more widely than most.

There are a variety of hypotheses trying to explain super-spreading events, from environmental factors putting someone in a place where it is easy to spread the virus widely (someone in food service, for example), to the possibility some people seem to actively shed very high volumes of virus particles while barely exhibiting any symptoms.

The novel coronavirus, named SARS-CoV-2, is now known to be highly infectious and although major lockdowns or stay-at-home orders can limit person-to-person transmission, the world obviously cannot remain in social quarantine for years waiting for a vaccine to be developed. As towns and cities across the globe begin to reopen, a huge question remains unanswered.

What spaces and services can safely reopen without triggering new outbreaks?



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One way to grapple with this question is through examining several of the CDC's detailed investigations into clusters of cases over the past couple of months. This trio of detailed super-spreading events offers insights into how easily single gatherings can trigger deadly chains of transmission.

Choir practice, extended family gatherings, and small church events all present significant challenges for authorities trying to reopen their communities. And understanding how these super-spreading events kick off in the first place may be the best path to preventing them in the future, helping us get back to some kind of normalcy.

One choir practice, 53 cases, two deaths

On Tuesday March the 10th, in Skagit County, Washington, [a group of choir members met](#) for their weekly rehearsal. At that point in time news of the novel coronavirus had already been spreading, and after some consideration, it was decided the rehearsal would continue as scheduled, albeit with some cursory protections.

From around 6 pm members of the choir began to arrive. They were offered hand sanitizer on entry, and physical contact was limited, with no handshakes or hugs reportedly taking place across the two-and-a-half-hour event. All up, 61 singers took part in the rehearsal. Over 120 chairs were set up in a large multipurpose space, and since only half of the choir was present, there were many empty spaces between singers. In between two 40-minute group rehearsals, the singers split into two smaller groups for a 50-minute practice.

A 15-minute break took place before the final session. Cookies and oranges were freely available from a table at the back of the main space, but many members refrained from eating the snacks.

"Most attendees left the practice immediately after it concluded. No one reported physical contact between attendees," the CDC report states.

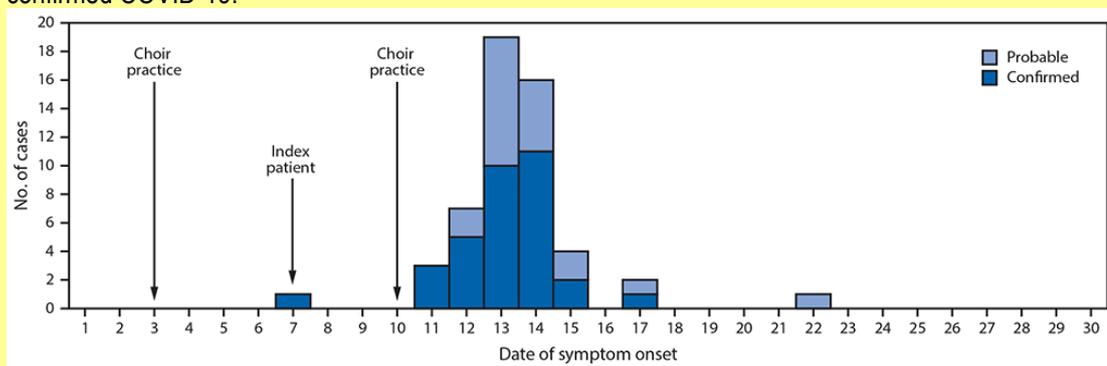
[A CDC infographic illustrating advice for people trying to avoid catching the disease – CDC](#)

Within two weeks, 87 percent of those at the March 10 rehearsal were confirmed to have contracted COVID-19. Two of the 53 infected subjects died.

Although a small number of attendees began displaying COVID-19 symptoms within two days of the March 10 practice, suggesting they may have been infected earlier, the CDC investigators suspect the vast majority of cases could be tracked back to this single

super-spreading event.

Alongside the potential of several subjects infecting others during their pre-symptomatic period, the report found one individual did attend the rehearsal with active cold-like symptoms. They had been exhibiting symptoms for three days, and subsequent testing confirmed COVID-19.



[Confirmed and probable COVID-19 cases linked to choir practice by date of symptom onset. While the onset of some cases suggest infection prior to March 10, the majority of cases can be linked to the single practice – CDC](#)

Exactly how each individual contracted the virus over the course of this two-and-a-half-hour choir rehearsal is still unknown. While the virus is still primarily thought to be transmitted by direct touch, not all cases in this particular event can be explained that way. The CDC report does recognize actions such as stacking chairs and sharing snacks may account for some



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of the infections, but the big mystery in this scenario surrounds the act of singing, and how that may have potentiated the super-spreading event.

“The act of singing, itself, might have contributed to transmission through emission of aerosols, which is affected by loudness of vocalization,” [the CDC report states](#). “Certain persons, known as super-emitters, who release more aerosol particles during speech than do their peers, might have contributed to this and previously reported COVID-19 super-spreading events.”

In an interview with the [Los Angeles Times](#), UCLA infectious disease expert Jamie Lloyd-Smith hypothesized the act of singing could reasonably disperse viral particles much more widely than general breathing and talking.

“One could imagine that really trying to project your voice would also project more droplets and aerosols,” said Lloyd-Smith.

The extended family gatherings

[In late February](#) a Chicago man experiencing mild respiratory symptoms was linked to 16 confirmed COVID-19 cases, resulting in three deaths. The infections were thought to have occurred over a three-day period spanning several family gatherings, including a funeral and a birthday party.

The cluster began when the man shared a takeout meal with two family members of the deceased, the night before the funeral. Over the course of three hours the trio talked and ate out of shared serving dishes.

[The CDC investigation's chain of transmission, illustrating how a single case can trigger a cluster of cases – CDC](#)

The next day at the funeral the infected man shared a communal “potluck-style” meal and hugged a number of family members. Three days later the man, still mildly symptomatic, attended a family birthday party. The event took place in a family member’s home and was attended by 10 people, including the primary COVID-19 subject. For the next three hours the group celebrated in the house, sharing food and occasionally embracing. A week later seven of the party attendees had developed COVID-19.

“Within three weeks after mild respiratory symptoms were noted in the index patient, 15

other persons were likely infected with SARS-CoV-2, including three who died,” [the CDC report states](#). “Patient A1.1, the index patient, was apparently able to transmit infection to 10 other persons, despite having no household contacts and experiencing only mild symptoms for which medical care was not sought.”

The CDC report suggests this particular cluster strikingly highlights the important of social distancing within family units. Although extended family gatherings may feel somewhat safer



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than broader non-family encounters in public spaces, this case report illustrates how swiftly the virus can spread from small gatherings of people from multiple households.

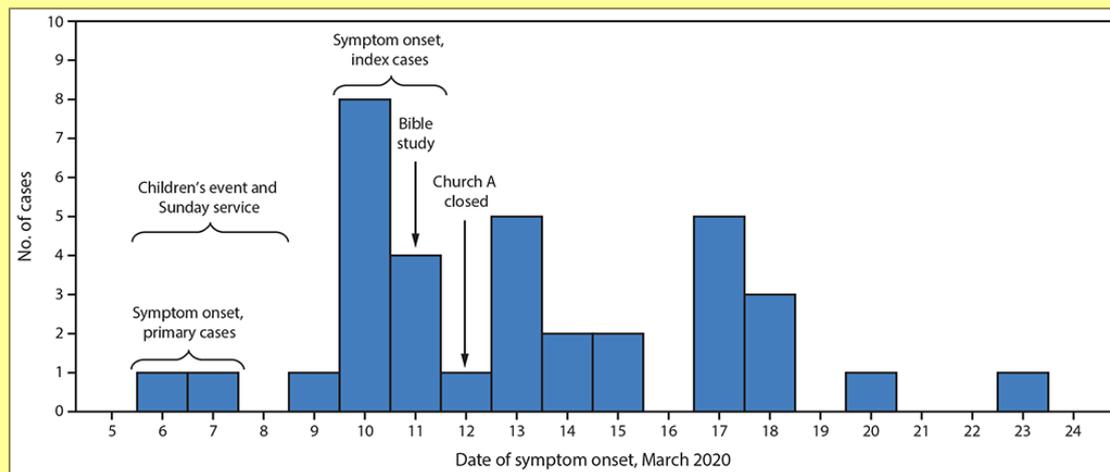
The church chain

Between March 6 and March 8, a church in rural Arkansas hosted a multi-day children's event. Over the course of the three days adults and children participated in games involving close contact, and a buffet-style shared meal.

On March 11 the church's pastor and his wife began to develop a mild cough and fever. The next day, upon hearing about similar respiratory symptoms appearing in the congregation, the pastor immediately closed his church. Testing revealed the pair had indeed contracted COVID-19, and investigations tracked the exposure back to the church events a few days prior.

The investigation homed in on the source as two subjects who attended the church events between March 6 and 8 while they were mildly symptomatic. From the multi-day children's event, to an additional bible study class at the church on March 11, there were 35

subsequent COVID-19 cases directly linked to the gatherings.



Spread of the virus from the first two primary cases, symptomatic at the early church events – CDC

Out of the 92 attendees linked to church events over that five-day period, 38 percent were confirmed with COVID-

19 and three ultimately died. The CDC report suggests an additional 26 cases of community transmission could be linked back to this chain, all stemming from two symptomatic individuals attending a few church events.

“Despite canceling in-person church activities and closing the church as soon as it was recognized that several members of the congregation had become ill, widespread transmission within church A and within the surrounding community occurred,” the [CDC report states](#). “The primary patients had no known COVID-19 exposures in the 14 days preceding their symptom onset dates, suggesting that local transmission was occurring before case detection.”

Irwin Redlener, director of Columbia University's National Center for Disaster Preparedness, says this case study illustrates the concerning way the virus can spread so easily via religious gathering spaces. Speaking to the [The Daily Beast](#), Redlener suggests this particular case may be less an example of a more contagious “super-spreader” and more an indication of how church gatherings in particular can trigger clusters of infection.

“People can go to church and become infected and then spread it into their larger communities, and with an infection like SARS-CoV-2, this could really promote a major secondary or tertiary wave of infection in the larger community,” [said Redlener](#). “It's not just limited to the people who attend these services.”

These three case studies offer clues as to what kinds of social interactions may need the most vigilance moving forward. There are volumes of similar case studies appearing, offering insights into how clusters can stem from nightclubs, bars, schools, and cinemas. Mike Ryan, executive director of the World Health Organization's emergency health program, [recently said](#) it is unlikely this virus is going away anytime soon. Ryan noted, even with a vaccine, it is possible this virus could become endemic. So, the sooner we can adapt our social environments to limit its transmission, the sooner we can get back to some kind of normalcy.

80 Million Children at Risk as Pandemic Disrupts Global Vaccination Efforts

Source: <https://www.sciencealert.com/who-and-unicef-says-disrupted-vaccines-due-to-covid-19-could-threaten-80-million-kids>

May 25 – The coronavirus pandemic is putting tens of millions of children's lives at risk by disrupting routine immunisation programmes, the World Health Organization (WHO) and UNICEF said Friday.



The United Nations agencies joined forces with Gavi, the Vaccine Alliance, to warn that the pandemic has severely disrupted vaccination programmes in dozens of countries, paving the way for a [deadly resurgence of preventable diseases](#).

"COVID-19 threatens to undermine life-saving immunisation services around the world," WHO director-general Tedros Adhanom Ghebreyesus told a virtual joint press conference.

"These risks putting tens of millions of children - in rich and poor countries - at risk of killer diseases like diphtheria, measles and pneumonia."

He said that while the world was seeking a safe and effective vaccine for the new coronavirus, vaccines that were already available to prevent other diseases still needed to be delivered.

"Initial analysis suggests the provision of routine immunisation services is substantially hindered in at least 68 countries and is likely to affect approximately 80 million children under the age of one living in these countries," Tedros said.

Meanwhile experts said it was vital to maintain the structure of routine vaccination programmes in poorer countries, because those networks would be the same ones used to distribute an [eventual COVID-19 vaccine](#).

Innovative solutions

UNICEF, the UN children's agency, said measles vaccination campaigns had been suspended in 27 countries and polio campaigns in 38 states.

UNICEF executive director Henrietta Fore said countries have had to suspend campaigns due to the need to maintain physical distancing, while some health centres have been overwhelmed by coronavirus response efforts.

Meanwhile health workers have been redeployed to treat COVID-19 patients, and some parents have been unable to get their children to vaccination sites due to movement restrictions.

She said countries needed to step up efforts to track unvaccinated children, and find innovative solutions, as Laos has done by immunizing children in supermarkets.

Gavi chief Seth Berkley said countries had to do everything they could to keep vaccinating.

"If we neglect the supply chains and immunization infrastructure that keep these programs running, we also risk harming our ability to roll out the COVID-19 vaccines that represent our best chance of defeating this pandemic, when they are ready," he said.

He appealed for countries to dig deep at a June 4 global vaccine donors' summit, hosted in London.

The novel coronavirus has killed at least 332,000 people since the outbreak first emerged in China last December, according to a tally from official sources compiled by AFP.

At least 5.1 million cases have been registered in 196 countries and territories.

"As the world passes 5 million recorded cases of COVID-19, we recognize the importance of building national unity and global solidarity to learn from each other and suppress the virus everywhere," Tedros said.

Coronavirus: Patients no longer infectious after 11 days, Singapore study finds

Source: <https://www.thenational.ae/uae/science/coronavirus-patients-no-longer-infectious-after-11-days-singapore-study-finds-1.1023832>

May 24 – **Covid-19 patients are no longer infectious after 11 days of getting sick**, even though they still test positive, according to a new study by infectious disease experts.

A positive test "does not equate to infectiousness or viable virus," a joint [research paper](#) by Singapore's National Centre for Infectious Diseases and the [Academy of Medicine, Singapore](#) said.

The virus "could not be isolated or cultured after day 11 of illness."

The paper was based on a study of 73 patients in the city-state.

"Scientifically, I'm very confident that there is enough evidence that the person is no longer infectious after 11 days," Prof Leo Yee Sin, executive director of the NCID, told *Straits Times*.

The latest findings may have implications for the patient discharge policy in Singapore and elsewhere. As in other countries, including the UAE, patients in hospital are only discharged when they test negative at least twice.

Singapore's Ministry of Health will look at whether the latest evidence can be incorporated into its patient management plan.

To date, 13,882, or about 45 per cent of the 31,068 Covid-19 patients in Singapore have been discharged

from hospitals and community facilities. It [reported](#) 642 new Covid-19 cases on Saturday.

Should officials allow patients to be discharged based on time, more than 80 per cent could go home after 11 days of illness.



The remainder may need more care if they have a severe form of the illness, but they could not pass on the virus to anyone and would not need to be isolated in the same way.

The paper also makes reference to a small study of nine patients in Germany that found 'viral shedding' from the lungs or throat was very high in the first week but none by day eight.

Dr Asok Kurup, an infectious disease expert at the Academy of Medicine, said much more is known about the virus today than in the weeks after the outbreak began.

"Studies are still going on and we will get more data, but we will see the same thing as there is a great deal of science in this. So there is no need to wait," he said.

The government has been actively screening pre-school staff as it prepares to reopen pre-schools from June 2. On Friday, two pre-school employees tested positive for the novel coronavirus, bringing the total number of confirmed cases among pre-school staff to seven, according to the Ministry of Health.

The psychology of inoculation: how many will take a coronavirus vaccine?

Source: <https://www.theglobeandmail.com/canada/article-the-psychology-of-inoculation-how-many-will-take-a-coronavirus/>

May 21 – In the spring of 2009, with H1N1 influenza circulating in the community, Danielle Ofri, a doctor at New York's Bellevue Hospital, was swamped with panicked patients clamoring for a vaccine. Some called once a week to see if one was available.

But six months later, when the vaccine finally arrived, many of those same patients refused to get it. It wasn't safe, they told her – "I'm not putting that in my body." Having exhausted their fears about the actual virus, the vaccine had been replaced as the bigger threat.

Now, working at a hospital battered by COVID-19, Dr. Ofri fears the same pattern: that by the time a vaccine for the novel coronavirus that causes the disease finally arrives – if it does – a segment of the population may turn down, as she puts it, our best chance to save lives and end the pandemic.

Others may require a nudge to take it, which experts suggest makes it important to start early with communicating sound science about vaccines.

"It is important to be pro-active, instead of leaving an empty space for vaccine critics to fill the information void," said Eve Dubé, a medical anthropologist at Laval University, who recently received a grant from the Canadian Institutes of Health Research to monitor social media for concerns and conspiracy theories being raised about the pandemic, including a possible vaccine.

"Once the trust in vaccination is weakened," Dr. Dubé said, "we are vulnerable to crisis."

As the very diseases that vaccines have successfully prevented disappear from public view, anxiety and conspiracy theories around vaccines have only grown. Last year, the World Health Organization identified "vaccine hesitancy" as one of the 10 threats to global health.

The narrative around a COVID-19 vaccine may contribute to safety concerns, given the global race to approve and manufacture possible candidates. **In a March survey of nearly 7,000 people, 15 per cent of Canadians and 20 per cent of Americans said they wouldn't get a COVID-19 vaccine if it were available,** said Steven Taylor, a psychologist at The University of British Columbia, and one of the study's co-leads. In both the United States and Canada, criticism and protests of lockdown measures have included anti-vaccine messaging.

Researchers such as Dr. Dubé and Dr. Taylor argue that rational, science-based messaging about the vaccine needs to begin early, especially at a time when the public is saturated with health information about the pandemic, both accurate and misleading.

A vaccine for COVID-19 is still a year away, even according to optimistic estimates. One sign of progress came this week with an announcement by the American company Moderna that eight subjects participating in an early trial had developed antibodies to COVID-19, and the vaccine was moving ahead to next-stage testing. But each new report of vaccine trials also creates a flurry of headlines and social media traffic – and past incidents show that bad science can suddenly shift public opinion, in some cases irrevocably.

Dr. Dubé cites the **example of Ireland and Denmark, which saw vaccination rates for HPV (human papillomavirus) fall to below 50 per cent from about 80 per cent after negative news about the vaccine spread in the media.** The most famous modern case of bad vaccine science spreading fear in the public happened in 1998, when a now-debunked paper linked the MMR vaccine (measles, mumps and rubella) to autism. The paper, published in the leading medical journal *The Lancet*, was retracted years later, but the false findings and their effects persist.



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Misinformation about one kind of vaccine can also spread to others. In the case of COVID-19, Dr. Taylor said, any traction on anti-vaccination rhetoric may prove particularly worrisome if a possible second wave of the coronavirus arrives in the middle of influenza season, when getting a flu shot may be especially important.

While most Canadians are vaccine positive and child immunizations have held relatively steady in Canada, Dr. Dubé said that studies estimate that one-third of parents fall into the category of vaccine hesitant, which means they may refuse certain vaccines or delay their children receiving them. A 2016 Canadian [study](#) found doctors and nurses reported spending an increasing amount of time answering questions and concerns from parents.

The reasons why people refuse or delay vaccines varies, from suspicions of Big Pharma, to heightened anxiety about safety and a belief in natural immunity, said Dr. Taylor, who wrote last year's book *The Psychology of Pandemics: Preparing for the Next Global Outbreak of Infectious Disease*.

Another common reason for avoiding vaccines is [a fear of needles](#) – the delivery system for any COVID-19 vaccine. A 2019 [meta-analysis](#) of 35 studies published in the *Journal of Advanced Nursing* concluded that 16 per cent of adult patients, 27 per cent of hospital employees and 18 per cent of staff in long-term care facilities avoided the flu shot because of “needle fear.”

Colliding with the range of concerns about vaccines, Dr. Taylor said that mandatory vaccination tends to only cement resistance because the policy is seen as infringing on personal freedom. The vaccine hesitant group, however, can often be convinced with the right kind of messaging, particularly when the source of their concern is addressed with clear scientific answers.

Story continues below advertisement

One complicating factor around COVID-19 has been the message that most healthy people who contract the virus will recover easily and may not even have symptoms. In that case, Dr. Taylor said, many people may respond to a more altruistic message – that they are getting a vaccine not to protect themselves, but to save the lives of vulnerable populations, such as the elderly and those with chronic conditions.

It may be that the deaths and illness caused by COVID-19 have been so devastating, and the economic impact so shattering, that people will line up for the vaccine.

But Dr. Taylor suggested public health officials need to “plan ahead,” to prevent misinformation from gaining ground. “It would be foolish to wait until the problem arose,” he said – a lesson, he noted, that COVID-19 has already delivered.

USA Plan: Militarized Control of Population. The “National Covid-19 Testing Action Plan”

By Manlio Dinucci

Source: <https://www.globalresearch.ca/usa-plan-militarized-control-population/5713839>

The Rockefeller Foundation has presented the “National Covid-19 Testing Action Plan”, indicating the “pragmatic steps to reopen our workplaces and our communities”. However, it is not simply a matter of health measures as it appears from the title.

May 24 – The Plan – that some of the most prestigious universities have contributed to (Harvard, Yale, Johns Hopkins and others) – prefigures a real hierarchical and militarized social model.

At the top, the “**Pandemic Testing Board (PTB)**, akin to the War Production Board that the United States created in World War II”. The Pandemic Testing Board would “consist of leaders from business, government and academia” (government representatives would not in the first row, but finance and economic representatives being listed in order of importance).



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This Supreme Council would have the power to decide productions and services with an authority similar to that conferred to the President of the United States in wartime by the Defense Production Act.

The plan calls for 3 million US citizens to be Covid-19 tested weekly, and the number should be raised to 30 million per week within six months. The goal is to achieve the ability to Covid-19 test 30 million people a day, which is to be realized within a year.

For each test, “a fair market reimbursement (e.g. \$100) for all Covid-19 assays” is expected. Thus, billions of dollars a month of public money will be needed.

The Rockefeller Foundation and its financial partners will help create a network for the provision of credit guarantees and the signing of contracts with suppliers, that is large companies that manufacture drugs and medical equipment.

According to the Plan, the “Pandemic Control Council” is also authorized to create a “Pandemic Response Corps”: a special force (not surprisingly called “Corps” like the Marine Corps) with a staff of 100 to 300 thousand components.

They would be recruited among Peace Corps and Americorps volunteers (officially created by the US government to “help developing countries”) and among National Guard military personnel. The members of the “Pandemic Response Corps” would receive an average gross wage of \$40,000 per year, a State expenditure of \$4-12 billion a year is expected for it.

The “pandemic response body” would above all have the task of controlling the population with military-like techniques, through digital tracking and

identification systems, in work and study places, in residential areas, in public places and when travelling. Systems of this type – the Rockefeller Foundation recalls – are made by Apple, Google and Facebook.

According to the Plan, information on individuals relating to their state of health and their activities would remain confidential “whenever possible”. However, they would all be centralized in a digital platform co-managed by the Federal State and private companies. According to data provided by the “Pandemic Control Council”, it would be decided from time to time which area should be subject to lockdown and for how long.

This, in summary, is the plan the Rockefeller Foundation wants to implement in the United States and beyond. If it were even partially implemented, there would be further concentration of economic and political power in the hands of an even narrower elite sector to the detriment of a growing majority that would be deprived of fundamental democratic rights.

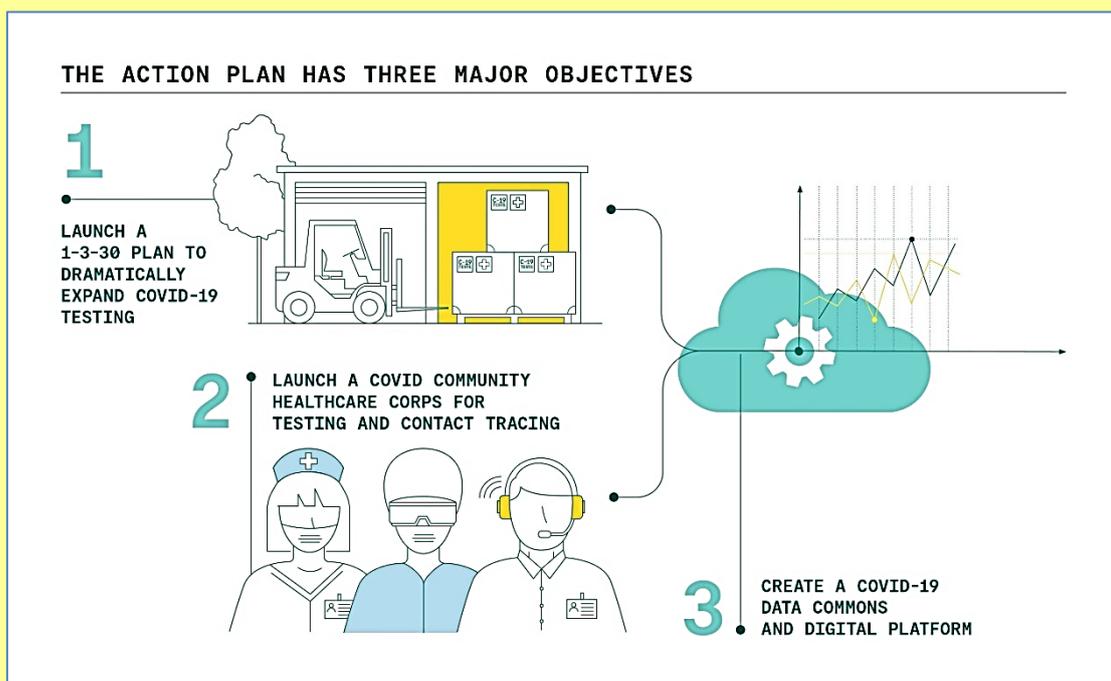
The operation is carried out in the name of “Covid-19 control”, whose mortality rate has so far been less than 0.03% of the US population according to official data. In the Rockefeller Foundation Plan the virus is used as a real weapon, more dangerous than Covid-19 itself.

Manlio Dinucci is a Research Associate of the Centre for Research on Globalization.

A Healthy Dose of Realism: Stopping COVID-19 Doesn't Start with the WHO

Source: <http://www.homelandsecuritynewswire.com/dr20200525-a-healthy-dose-of-realism-stopping-covid19-doesn-t-start-with-the-who>

May 25 – There's a proven approach to combating the global threat of the novel coronavirus, Frank L. Smith III writes in [War on the Rocks](#). It was used to eradicate smallpox during the Cold War. Rather than relying on the World Health Organization (WHO), success depends



on a “great-power concert.” Today, this means concerted action by the United States and China. He adds:

Concerted action is difficult given long-standing tensions between these great powers. In addition to their trade war and military rivalry, the United States and China have traded ugly allegations about COVID-19, including racist rhetoric and [conspiracy theories](#). Working together is [particularly contentious during the U.S. presidential campaign](#). It could involve uncomfortable compromises, such as sidestepping the WHO or turning a blind eye to China’s disastrous cover-up of COVID-19.

Despite these difficulties, concerted action serves the national interests of both China and the United States. It’s also one of the only ways to marshal a global response to this pandemic. In contrast, the WHO lacks the material power required to have much independent effect, even if its funding wasn’t [threatened by the Trump administration](#).

The campaign against smallpox is instructive in this regard. Conventional wisdom credits the WHO for eradicating smallpox, and yet, contrary to popular belief, WHO leadership opposed this campaign. The eradication of smallpox started and succeeded thanks to the Soviet Union and United States. This political history provides insight into how to combat COVID-19 during the current era of great-power competition.

How Long Does Covid-19 Coronavirus Last On Different Surfaces?

By Bruce Y. Lee

Source: <https://www.forbes.com/sites/brucelee/2020/05/24/how-long-does-covid-19-coronavirus-last-on-different-surfaces/#4d38906c5948>

May 24 – Did the Centers for Disease Control and Prevention (CDC) actually “change their minds” this week about the potential risk of Covid-19 coronavirus being spread by contaminated surfaces? Not really. Not even on the surface. Plus, two scientific studies have shown how long the virus can remain detectable on various surfaces, but more on these later.

Nevertheless, messages have surfaced on social media such as [“the CDC doesn’t even know what it’s doing. Should be completely defunded like @WHO”](#) and [“These goons are still using the @CDCgov when they can’t even make up their minds”](#) as well as the following:

Umm, completely de-fund the CDC? Isn’t that like saying “let’s get rid of this water supply thing” when there is not enough water in the middle of a fire?

Take a closer look at what the CDC has been saying specifically. Compare a [previous version](#) of a CDC web page (cited by the *Fox News* article accompanying the tweet above) with [the current version](#). The exact wording may have evolved a bit. Nonetheless, in both versions, the CDC stated, “It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes.”

Yes, both versions did include the following: “this is not thought to be the main way the virus spreads.” However, this statement does not say that contaminated surfaces cannot spread the virus. This statement does not imply that you should not worry about contaminated surfaces. In fact, the latest version added the following kicker, “but we are still learning more about how this virus spreads.”

Just because something is not the “main way” doesn’t mean that it doesn’t happen or that you shouldn’t be concerned about it. It’s just an issue of what may be more frequent. For example, using a toilet in a stall may not be the “main way” that you take dumps, unless, of course, you have built such a stall in your house or apartment for some reason. However, this does not mean that you shouldn’t be prepared to use a toilet in a stall. Not knowing what to do in a stall could lead to a messy situation.

Similarly, the CDC statements can simply mean that a majority of the Covid-19 coronavirus transmissions that have occurred so far have likely been via direct person-to-person contact. In most cases, direct person-to-person contact means that an infectious person coughs, sneezes, pants, sings, chants, curses, or otherwise breathes out virus-laden respiratory droplets, which then are inhaled by someone else. It is more a reflection of how contagious an infected person may be when you get too close to him or her. [As I have written previously for Forbes](#), simply talking could expel fluid droplets that could hang in the air for over eight minutes. **You may expel even more droplets whenever you use the “th” sound like when you say “shake that thang.”** Imagine what could happen if these fluid droplets were carrying the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Again, all of this does not mean that transmission cannot occur via contaminated surfaces. In fact, as mentioned earlier, two scientific studies have shown that the virus can stay on surfaces for quite a while. In both studies, researchers applied the virus to various surfaces and then measured how the virus may degrade over time and how long the virus remained detectable. [In the first study published in a research letter published in the *New England Journal of Medicine*](#), a team from the National Institute of Allergy and Infectious Diseases (NIAID), the CDC, Princeton University, and the University of California, Los Angeles conducted the study. Vincent J. Munster, Ph.D. from NIAID was the corresponding



author for the publication so in theory you could call this the Munster study. In the experiments, the measured half-life of the SARS-CoV-2 was approximately 1.1 to 1.2 hours on copper, 5.6 hours on stainless steel, and 6.8 hours on plastic. The half-life is the time that it takes for half of initial amount of virus to no longer be detectable.

Then there was [the study published as a research letter in *The Lancet Microbe*](#) and conducted by a team from the School of Public Health at The University of Hong Kong (Alex W.H. Chin, Julie T.S. Chu, Mahen R.A. Perera, Kenrie P.Y. Hui, Hui-Ling Yen, Michael C.W. Chan, Malik Peiris, and Leo L.M. Poon). Their experiments found the virus to be detectable on:

- Paper for up to 30 minutes.
- Tissue paper for up to 30 minutes.
- Wood for up to a day.
- Cloth for up to a day.
- Glass for up to two days.
- Bank notes for up to two days
- Stainless steel for up to four days
- Plastic for up to four days
- The inner layer of a mask for up to four days
- The outer layer of a mask for up to seven days

This would be good news if your living quarters and all of your possessions happen to be made out of tissue paper. It could be bad news if you wear stainless steel underwear. In general, viruses tend to survive longer on surfaces that are hard and impermeable than those with lots of pores.

Note how long the virus may remain on and inside a face mask. This is why you should treat a face mask like a reversed pair of underwear. Be very careful when handling it. Avoid touching your face with the outside of the mask.

Certainly, these studies have their limitations. Just because a virus is detectable does not necessarily mean that there's enough virus around to cause an infection. Viruses can be like holes in your underwear: a few may be OK, but once you get past a certain level, it becomes a problem. So it's still not clear how long an infectious dose of the virus may remain on each of these surfaces.

Also these studies showed what happened under specific sets of laboratory conditions. As they say in commercials for hair dyes, your actual results may vary. Plus, different environmental conditions such as the surrounding temperature, air motion, and sunlight exposure could affect the survival of the virus. Thus, the numbers provided are only approximations and not exact time limits. In other words, don't set a timer to determine when exactly you can start smearing money on your face and making moaning sounds. (By the way, smearing money on your face is rarely a good idea.)

Nevertheless, the results from these experiments do show that the virus can remain on surfaces for not an insignificant amount of time, which is a roundabout way of saying that the virus can stay on surfaces long enough to be a source of transmission. In fact, these experiments suggested that the SARS-CoV2 can remain on surfaces significantly longer than can other respiratory viruses like the influenza virus.

It is a well-established fact that various respiratory viruses can be transmitted via contact with surfaces. If you somehow don't trust the CDC, just look at websites from other countries like the Canadian government. [The Canadian Center for Occupational Health and Safety website](#) states that "influenza viruses can also be transmitted by indirect contact by touching a contaminated object or surface and then touching your own mouth, eyes or nose before washing your hands." It also indicates that flu viruses on such surfaces can remain "infective for two hours and maybe up to eight hours."

Transmission via surfaces is known as fomite transmission. The "fo" part of this word is pronounced "fo" as in "fo' sure" or "fi fi fo fum." The "mite" sounds like "might" as in "you might not want to wear a cape in public." A fomite is any surface or inanimate object that can passively carry an infectious microbe such as door knobs, remote controls, towels, dishes, or your significant other while you end up having to wash the dishes.

So, scientific guidance about surfaces has not really changed. You should still be concerned about surfaces that may be contaminated with the virus. You should still try to disinfect potential fomites. Nothing in the CDC statements about surfaces suggests that businesses were closed for "no reason whatsoever." When a business is fully open, it can be challenging not only to keep surfaces virus-free but also limit direct person-to-person contact. After all, just look at how "well" people are social distancing with the recent re-opening of locations:

The CDC still recommends "[cleaning and disinfecting high-touch surfaces daily in household common areas](#)." It still recommends using disinfecting wipes on frequently touched objects such as [shopping carts, handles, and buttons](#). It still recommends that businesses like [grocery stores and other food retail locations](#) regularly clean and disinfect high touch areas. It's still a good idea to wipe down an object that has been touched by others. So, when it



comes to surfaces that may have been contaminated with the virus, keep on keeping on, that is cleaning and disinfecting such surfaces, washing your hands after touching them, and being careful. Also, make sure that the locations that you visit are taking these precautions too. Don't go to places that just on the surface look safe.

Is There More than One Strain of the New Coronavirus?

Source: <http://www.homelandsecuritynewswire.com/dr20200525-is-there-more-than-one-strain-of-the-new-coronavirus>

May 25 – Since the emergence of the new coronavirus, called SARS-CoV-2, several researchers have proposed that there is more than one strain, and that mutations have led to changes in how infectious and deadly it is. However, opinions are divided. Written by Yella Hewings-Martin writes in [Medical News Today](#) that genetic mutations are a natural, everyday phenomenon. They can occur every time genetic material is copied. Since the emergence of SARS-CoV-2, several research studies have highlighted variations in the virus's genetic sequence. This has prompted discussion about whether or not there are several strains, if this has an impact on how easily the virus can infect a host, and whether or not this affects how many more people are likely to die.

Blood from SARS Survivor Yields an Antibody that Neutralizes New Coronavirus

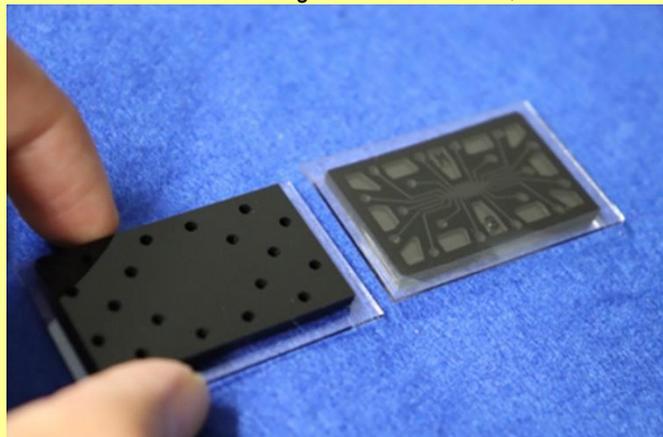
Source: <http://www.homelandsecuritynewswire.com/dr20200525-blood-from-sars-survivor-yields-an-antibody-that-neutralizes-new-coronavirus>

May 25 – An antibody that scientists first identified in a blood sample from a person who recovered from severe acute respiratory syndrome (SARS) strongly inhibits the virus that causes COVID-19. The scientists who discovered the antibody are racing to bring it to clinical trials. James Kingsland writes in [Medical News Today](#) that there are currently no proven treatments for COVID-19, the respiratory illness that the SARS-CoV-2 coronavirus causes, and [nobody can say with any certainty](#) when a safe, effective vaccine will be ready. News of the development of a monoclonal antibody that neutralizes the virus and could, in theory, be ready to treat patients in clinical trials within [5–6 months](#) is, therefore, very welcome.

New technology can detect anti-virus antibody in 20 minutes

Source: <https://www.global.hokudai.ac.jp/blog/new-technology-can-detect-anti-virus-antibody-in-20-minutes/>

May 22 – Researchers have succeeded in detecting anti-avian influenza virus antibody in blood serum within 20 minutes, using a portable analyzer they have developed to conduct rapid on-site bio tests. If a suitable reagent is developed, this technology could be used to detect antibodies against SARS-CoV-2, the causative virus of COVID-19.



The microfluidic device to which ~20 μL of samples containing 2 μL of serum will be applied. (Nishiyama K. et al., *Sensors and Actuators B: Chemical*. April 21, 2020)

Avian influenza is a poultry disease caused by influenza A virus infection. Rapid initial response for a suspected infection and continuous surveillance are essential to mitigate the damage from highly pathogenic, transmittable pathogens such as avian influenza viruses.

Generally, the polymerase chain reaction (PCR) method is used to detect the viral genome, but its complicated procedure requires a considerable amount of time. Another method involves detecting antibodies produced in the body in reaction to virus infection.

However, widely used antibody detection methods can be inaccurate because the antibodies' existence is generally determined by eyesight.

The group, including Keine Nishiyama, a doctoral student at Hokkaido University's Graduate School of Chemical Science and Engineering, and Professor Manabu Tokeshi of the university's Faculty of Engineering, conducted this study to develop a new method and analyzer capable of rapid, facile and selective detection of antibodies. The method is based



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on conventional fluorescence polarization immunoassay (FPIA) but applies a different measurement mechanism to make the analyzer much smaller and portable. The analyzer weighs only 5.5 kilograms.



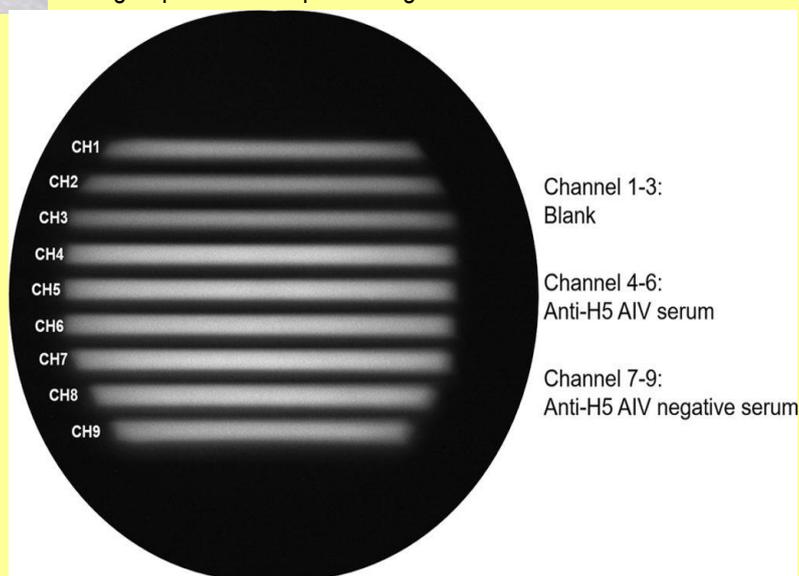
The newly developed portable fluorescence polarization analyzer (35 cm wide, 15 cm high, 15 cm long, and weighs 5.5 kg) combines a microfluidic device, an optical system, a liquid crystal, and an image sensor, enabling the rapid analysis of multiple samples. (Nishiyama K. et al., *Sensors and Actuators B: Chemical*. April 21, 2020)

The combined use of liquid crystal molecules, an image sensor and the microfluidic device makes it possible to simultaneously examine multiple samples and reduces the volume of each sample required. Liquid crystal molecules are capable of controlling the polarization direction of fluorescent light, while the microfluidic device has a number of microchannels as a measurement vessel.

The group also developed a reagent to detect anti-H5 avian influenza

virus antibody, a fluorescein-labeled protein that binds only with the antibody. The reagent was made by reproducing hemagglutinin (HA) protein fragments, which are expressed on the surface of H5 avian influenza virus, through gene recombination and by labeling fluorescent molecules to the fragments.

An image obtained by the device and to be analyzed by the image analyzer. Samples show different degrees of polarization of light depending on the presence, absence, or the amount of anti-H5 avian influenza virus antibodies. (Nishiyama K. et al., *Sensors and Actuators B: Chemical*. April 21, 2020)



To make the measurement, serum collected from birds was mixed with the reagent and left for 15 minutes. The mixture was injected into the microfluidic device and measured with the portable fluorescence polarization analyzer. Molecular movements of the reagent bound with the antibody will be smaller in the liquid, producing a different degree of polarization from the reagent not bound with the antibody. The system can detect anti-H5 avian influenza virus antibody with only 2 microliters of serum sample and within 20 minutes.

“Our analyzer could be used to conduct other bio tests if suitable reagents are developed,” says Tokeshi. The group has already successfully detected mycotoxin and drug constituents. “By reproducing fragments of spike proteins expressed in the novel coronavirus, and using them as the reagent, the analyzer should be able to detect anti-coronavirus antibodies.”

Federal Scientists Finally Publish Remdesivir Data

Source: <http://www.homelandsecuritynewswire.com/dr20200525-federal-scientists-finally-publish-remdesivir-data>

May 25 – A clinical trial led to the authorization of the only drug shown to work in Covid-19 patients. But until now, few experts had seen the numbers. Gina Kolata writes in the [New York Times](#) that nearly a month after federal scientists claimed that an experimental drug had helped patients severely ill with the coronavirus, the research has been published. The drug, remdesivir, was quickly authorized by the Food and Drug Administration for treatment of coronavirus patients, and hospitals rushed to obtain supplies. But until now, researchers and physicians had not seen the actual data. The long-awaited study confirms the essence of the government’s assertions. The trial was rigorous, randomly assigning 1,063 seriously ill patients to receive either remdesivir or a placebo, and remdesivir [shortened recovery time from 15 days to 11 days in hospitalized](#)



[patients](#). Those who received the drug not only recovered faster but also did not have serious adverse events more often than those who were given the placebo.

Coronavirus Antigen Tests: Quick and Cheap, but Too Often Wrong?

Source: <http://www.homelandsecuritynewswire.com/dr20200525-coronavirus-antigen-tests-quick-and-cheap-but-too-often-wrong>

May 25 – After a painfully slow rollout of diagnostic testing for active coronavirus infections across the country, some 400,000 people a day in the United States may now receive such a test, estimates suggest. Yet a few public health experts say sending people back to work and school safely and identifying new outbreaks before they spread out of control could require testing much of the U.S. population of 330 million every day. Others suggest checking roughly 900,000 people per day would be enough. Robert F. Service writes in [Science](#) that either way, nearly all the current tests to diagnose infections work by identifying the genetic material of the virus, a technology that will be difficult to scale up much further.

CDC Test Counting Error Leaves Epidemiologists “Really Baffled”

Source: <http://www.homelandsecuritynewswire.com/dr20200525-cdc-test-counting-error-leaves-epidemiologists-really-baffled>

May 25 – As it tracks the coronavirus’s spread, the [Centers for Disease Control](#) and Prevention is combining tests that detect active infection with those that detect recovery from Covid-19 — a system that muddies the picture of the pandemic but raises the percentage of Americans tested as President Trump boasts about testing. Sheryl Gay Stolberg, Sheila Kaplan and Sarah Mervosh write in the [New York Times](#) that now that serology tests, which look for antibodies in the blood of people who have recovered, are more widespread, [C.D.C.](#) officials said Friday they would work to separate them from the results of diagnostic tests, which detect active infection. One of the agency’s data tracker websites has been lumping them together.

Terrorists could use coronavirus as example for future biological attack

Source: <http://www.homelandsecuritynewswire.com/dr20200525-terrorists-could-use-coronavirus-as-example-for-future-biological-attack>

May 25 – Terrorism experts are warning that the coronavirus pandemic could be used as a template for future biological attacks by either state or non-state actors.

So far, the coronavirus has infected more five-and-a-half million people around the world, leading to the death of more than 350,000, and caused an economic downturn not seen since the 1930s’ Great Depression.

[DW](#) reports that security experts with the Council of Europe say that terrorists, assessing the impact of the coronavirus, would now recognize the fact that they can use biological weapons to inflict a major blow on Western countries (or, for that matter, on any country). According to these experts, the virus has exposed how vulnerable modern societies are.

The Council of Europe said in a statement: “The COVID-19 pandemic has demonstrated the vulnerability of modern societies to viral infections and their potential for disruption.

The intentional use of a pathogen or other biological agent for the purpose of terrorism may prove highly effective and cause damage – both human and economic – on a far grander scale than “traditional” terrorist attacks, paralyzing societies for prolonged periods, spreading fear and sowing distrust far beyond those communities immediately affected.

All countries are vulnerable to bioterrorism.

Its damage is rapid and potentially global.

It is necessary to strengthen preventive bioterrorism measures by means of competent interinstitutional intervention and effective international cooperation.”

The Council stressed, though, that there have been no reports of a planned terrorist bio-attack.

The UN Secretary-General, Antonio Guterres also warned that terrorists could also seize on the opportunity to strike. He said:

The weaknesses and lack of preparedness exposed by this pandemic provide a window onto how a bioterrorist attack might unfold – and may increase its risks.

“Non-state groups could gain access to virulent strains that could pose similar devastation to societies around the globe.

We are seeing stigma, hate speech, and white supremacists and other extremists seeking to exploit the situation.

We are witnessing discrimination in accessing health services.

Refugees and internally displaced persons are particularly vulnerable.



And there are growing manifestations of authoritarianism, including limits on the media, civic space and freedom of expression.”

The [Daily Express](#) reports that U.S. and U.K. intelligence and defense officials have also expressed their fear of a potentially damaging bioweapon.

Chris Phillips, the former head of the U.K. government’s National Counter Terrorism Security Office, warned of the potential for a laboratory-created virus.

Phillips stated in the wake of the virus’s outbreak that COVID-19 had now highlighted just how vulnerable the world is. “If you were a hardened terrorist and had worked in a lab for years, you would know how to do it,” he said

Robert Kadlec, assistant secretary for preparedness and response at the U.S. Department of Health and Human Services, told NBC News how the virus could greenlight a potential attack.

He said: “Many of the very worst-case characteristics of an intentional event are also being seen in this naturally occurring pandemic.”

EDITOR’S COMMENT: It will take 3-5 years to recover from the pandemic plus 1-2 years to forget the whole thing, that is, we might expect a bioterrorism attack around 2030 or so!

Five post-pandemic pivots in Canadian security and intelligence

By Irvin Studin

Source: <https://policyoptions.irpp.org/magazines/may-2020/five-post-pandemic-pivots-in-canadian-security-and-intelligence/>

May 25 – Post-COVID emergency, Canada’s security and intelligence (S&I) community will find itself protecting a country whose strategic circumstances have changed dramatically since the publication of the ground-breaking 2004 [National Security Policy](#). The long-term existence of the country is far from assured. That our American ally will protect us in a pinch is wholly uncertain. (American-based threats to Canada are themselves far from improbable.) The border with the US is quasi-closed. Our global enemy-to-ally ratio, in demographic terms, is six-to-one. And our national information space, online, on TV, radio and in print, is increasingly colonized by debates led by American algorithms, topics and vocabulary that have little to do with the pith and substance of Canada’s daily reality, including a national security picture that is far more complicated than that of the post-9/11 period.

In this more complicated context, the consequences of national security failure for Canada could be catastrophic, and the need for national seriousness and excellence in national security is commensurately great.

Canada’s first National Security Policy (2004)

Back in 2004, I was a member of the small team that wrote the first National Security Policy our country has known. That team, led by Canada’s first national security adviser (Rob Wright), was comprised of a handful of people who worked out of the Privy Council Office (PCO). Other notable players on that task force were William Elliott (future RCMP commissioner), Graham Flack (future deputy minister), Ben Rowswell (future ambassador to Venezuela) and Peter Jones (future professor at the University of Ottawa). I was in my second full year at PCO, fresh out of graduate school, and had, out of the Priorities and Planning (P&P) Secretariat, written several of the principal framing papers for national security in the context of the large-scale, year-and-a-half transition planning exercise between the Chrétien and Martin governments.

The final National Security Policy (NSP), titled [Securing an Open Society](#), had eight chapters, with individual chapters dedicated to classical intelligence, emergency planning and management, public health emergencies, transportation security, border security, and international security.

Just as the Spanish flu led to the creation of Canada’s Department of Health in the early 20th century, the NSP built on the world’s and our country’s contemporaneous experiences with SARS (and [BSE](#)), leading to the creation of the Public Health Agency of Canada as well as the position of Chief Public Health Officer (now significantly in the news) for Canada’s new century. The NSP stated clearly that “the Government intends to take all necessary measures to fully integrate its approach to public health emergencies with the national security agenda.”

Nevertheless, the clear driving force behind the 2004 NSP was not health emergency management but instead the national reaction to 9/11 and growing American strategic, political and security-community preoccupation with counter-terrorism. The NSP was meant to signal Canada’s domestic security bona fides in exchange for American



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economic forbearance – in particular, at the Canada-US border, then considered an existential economic interest for Canada. (The Iraq and Afghanistan wars were raging at the time, but for Ottawa, neither strategic event was deemed to portend existential domestic threats to Canada.)

To be sure, the public health dimension of the NSP was itself significantly connected to the overall counter-terrorism agenda – both explicitly and in psychological presupposition: it included measures related to chemical-biological-radiological-nuclear (CBRN) terrorism and emergencies, for instance.

COVID-19 and the end of Canadian strategic luck (2020)

A year after the NSP was published, I would be sent on secondment from PCO to the Australian Department of the Prime Minister and Cabinet (PM&C) in Canberra. There, I would become the chief writer of Australia's 2006 national counter-terrorism policy, [Protecting Australia Against Terrorism](#), an important deliverable in the last years of the government of John Howard.

CBRN terrorism in particular and public health emergencies in general, just as in the Canadian NSP, were part and parcel of the Australian policy, consistent with a whole-of-government, whole-of-federation, all-hazards approach to national security.

Australia, too, was responding to the 9/11 attacks, but even more so to the [2002](#) and [2005](#) terrorist attacks in Bali, Indonesia, preceded by the [2005 attacks](#) in London.

My humble observation is that while Australia is a smaller, younger and considerably less complex federation and society than Canada, its security and intelligence community and culture are not only better resourced than Canada's but also far more serious in terms of their "felt appreciation" of the consequences of failure.

How could this be so? Answer: The Australians had a reckoning with strategic (indeed, existential) bad luck that Canada had not experienced until the coronavirus emergency. The "white," colonial Australia that the late Australian wit Donald Horne [described](#) as "the lucky country" saw itself as abandoned during the Second World War to [Japanese bombardment](#) by its principal imperial ally, Great Britain. Thenceforth, Australia would have to defend itself.

Now, as Canada emerges from the Great Quarantine, we will find ourselves poorer, more anxious, and more surrounded by global (and continental) instability than at any point since the Second World War. We will, for the first time in modern history, have to think for ourselves and not presume that any country, starting with the US, is there to protect us. Canadian S&I will evidently be critical in this regard.

I propose five key pivots to bring us to the right standard of S&I performance.

Pivot One – Canada's mental map and national interests. The "border" preoccupation of the NSP has, over the last two decades, become consolidated in the mental map that underpins the calculations of Canada's S&I community. But that mental map is, in my judgment, badly outdated and excessively simplistic in light of Canada's real strategic geography and changing power relationships in the world. A mental map of "ACRE" – America to the south, China to the west, Russia across the Arctic, and Europe to the east – makes far more sense for the coming decades. (We will live or die by this four-point strategic game. We may even become a major power in our own right in the process of playing it.) Canada must survive the ferocious pulls of these great powers at all our borders while trying to avoid being crushed by their various interactions across our massive geography and political space. Moreover, the "A" vector in ACRE should not be presumed to be automatically friendly – or even not hostile – to Canada.

Pivot Two – Ideology. The Canadian S&I community is today intellectually and psychologically vassalized to the American S&I community. Even within the [Five Eyes](#) framework, Canada considers itself "one" with the US, subordinates readily, quotes from American texts and publications as authority, and presumes that American analytical frameworks for the world and Canada alike are sound. But what if the American frameworks are poor or outright wrong? What if American political pressure torques intelligence reporting into unreliable territory? And what if American analytics represent strict American interests in a world in which America will not necessarily wish or be able to defend Canada (and certainly not Canadian interests)? Answer: Canada will need to learn to think for itself in S&I terms. This ideological transformation will take time, but it will necessarily be self-conscious and carefully choreographed.

Pivot Three – Capabilities and size. A Canadian S&I community that thinks for itself and is surrounded by great powers must operate at an appropriately significant scale (bulk) and with substantial independent capabilities. This means: a manifestly independent human intelligence capability (in my view, deployed eventually out of the Department of National Defence (DND), as with the birth of the [Australian Secret Intelligence Service](#)); triple the quantum of linguists and top area and disciplinary analysts at the International Assessment Secretariat (IAS) within the Privy Council Office, the Canadian Security Intelligence Service (CSIS), DND, the [Communications Security Establishment](#), Global Affairs (GAC) and, yes, Public Health;



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and original research and contributions to the development of a properly *Canadian school of strategy* with its own mentality, doctrine, vocabulary and world-beating talent.

Pivot Four – Relationships. While the US S&I relationship within the Five Eyes may (or may not) remain *primus inter pares* – first among equals – a Canada that thinks for itself will need and want to profit from professional working relationships with all of the major powers of the world, and indeed most of the second-order ones as well – whether they are like-minded or, as in most of the cases, not. The global coronavirus emergency will have disabused us of the notion that only democracies generate good, legitimate or moral intelligence or frameworks, and should commend to us far greater promiscuity in our search for the best information possible to defend or advance Canadian interests.

Pivot Five – Literacy of consumers. Canadian intelligence and security information is irrelevant without a Canadian political and bureaucratic readership (audience) that is not only literate about the issues, but also, critically, *curious* about what it does not know. The emergence of a literate and porous audience for Canadian S&I is fully a matter of political leadership. A political leadership in Canada that recognizes Canada's changing strategic circumstances, the more dramatic pressures on our national survival, and the need for real Canadian thinking and strategy can, within less than a decade, change Canada's S&I culture – from the term-taking to the term-setting. The latter will better equip our country for survival and success in a world that is far less innocent than the one in which the original NSP was written.

Irvin Studin is president of the Institute for 21st Century Questions, and editor-in-chief and publisher of Global Brief magazine.

Why we need another Memorial Day ... for COVID-19 victims

By EJ Montini Arizona Republic

Source: <https://eu.azcentral.com/story/opinion/op-ed/ej-montini/2020/05/25/why-we-need-another-memorial-day-one-covid-19-victims/5254372002/>

"All the News
That's Fit to Print"

The New York Times

Late Edition
Today, morning clouds giving way to sunshine by the afternoon, high 65. Tonight, cloudy, low 54. Tomorrow, clouds giving way to sunshine, high 70. Weather map is on Page 23.

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U.S. DEATHS NEAR 100,000, AN INCALCULABLE LOSS

They Were Not Simply Names on a List. They Were Us.

Numbers alone cannot possibly measure the impact of the coronavirus on America, whether it is the number of patients treated, jobs interrupted or lives cut short. As the country nears a grim milestone of 100,000 deaths attributed to the virus, The New York Times scoured obituaries and death notices of the victims. The 1,000 people here reflect just 1 percent of the toll. None were mere numbers.

Patricia Dowd, 57, San Jose, Calif., auditor in Silicon Valley • Marion Krueger, 85, Kirkland, Wash., great-grandmother with an easy laugh • Jermaine Ferro, 77, Lee County, Fla., wife with little time to enjoy a new marriage • Cornelius Lawyer, 84, Bellevue, Wash., sharecropper's son • Loretta Mendoza Dionisio, 68, Los Angeles, cancer survivor born in the Philippines • Patricia Frieson, 61, Chicago, former nurse • Luis Juarez, 54, Romeoville, Ill., traveled often in the United States and Mexico • Merle C. Dry, 55, Tulsa, Okla., ordained minister • Alan Lund, 81, Washington, conductor with "the most amazing ear" • Black W. Mink, 44, New Orleans, bounce DJ and radio personality • Michael

real jokerster • Michael Sorokin, 71, New York City, champion of social justice through architecture • George Valentine, 66, Washington, D.C., lawyer who mentored others • James Quigley, 77, Chicago, rebel of the family • Sherman Pittman, 61, Chicago, dedicated his life to his church and his neighborhood • Susan McPherson Gottsegen, 74, Palm Beach, Fla., loyal and generous friend to many • Andreas Koutsoudakis, 59, New York City, trailblazer for TriBeCa • Bob Barnum, 84, St. Petersburg, Fla., leader in Florida Pride events • Noel Sinkiat, 64, Olney, Md., nurse planning for retirement • Thomas E. Anglin, 85, Cumming, Ga., created many wonderful memories for his family • Robert Manley Arpe Jr., 75, South Bay, Calif., member of Del Amo Flyers • Michael McKinell, 84, Beverly, Mass., architect of Boston's monumental City Hall • Hugnette Dorsey, 94, Somerville, N.J., coached several championship-winning junior high girls basketball teams • Lynne Sierra, 68, Roseville, Ill., grandmother who was always full of ideas • Louvenia Henderson, 44, Tonawanda, N.Y., proud single mother of three • Carol Sue Rubin, 69, West Bloomfield, Mich., loved travel, mahjong and crossword puzzles • Marion Lucille Kujala, 92, Royal Oak, Mich., would use chalk and oil paints to capture family portraits • Alice Chaudarian, 92, Michigan, loving, generous and adventurous spirit • Bassey Offiong, 25, Michigan, saw friends at their worst but brought out their best • Bobby Joseph Hebert, 81, Cut Off, La., a 35-year career with the Louisiana Department of Transportation

jazz trumpeter virtuoso • Cristina, 64, New York City, downtown New York singer with a cult following • Robert H. Westphal, 75, Fond du Lac, Wis., statesman in the construction industry • Clair Dunlap, 89, Washington, pilot still teaching people to fly at 81 • Marylou Armer, 43, Sonoma Valley, Calif., veteran police detective • Regina D. Cullen, 81, Shrewsbury, Mass., small in stature but strong in spirit • Sandra Santos-Vizeaino, 54, New York City, beloved public school teacher • Frank Gabriel, 60, New York City, emergency room doctor who died in husband's arms • Sterling E. Matthews, 60, Middleboro, Va., cancer survivor who served as a deacon • Abby Kass, 59, California, lead singer of a Yiddish folk group • Roger Eckart, 78, Indiana, retired freighter and old-school barber • Martin Douglas, 71, New York City, maestro of a steel-pan band • Daniel Spector, 68, Memphis, mentor to other Memphis artists • Mary Minervini, 91, Oak Lawn, Ill., sign-language interpreter • Salomon S. Podgursky, 84, Morrisstown, N.J., loved to figure out how things worked • Dale E. Thurman, 65, Lexington, Ky., tailor known for his exacting work and strong opinions • Ellis Marsalis, 83, New Orleans, jazz pianist and patriarch of a family of musicians • Richard Passman, 94, Silver Spring, Md., rocket engineer in the early days of supersonic flight • David Driskell, 88, Hyattsville, Md., champion of African-American art • Buckley Pizzarelli, 94, Saddle River, N.J., master of jazz guitar • Tariach MacNiallais, 57, New York City, Belfast-born fighter for L.B.G.T. and disability

spirit • Jack Butler, 78, Indiana, lived in the house he grew up in • Susan Grey Hopp Crofoot, 97, Westwood, N.J., took great joy in writing little ditties under her pen name, Penelope Pen-wiper • James David Gewirtzman, 72, New City, N.Y., spent some of his happiest hours hiking in the Adirondacks • Henry F. Graff, 98, Greenwich, Conn., Columbia University historian of U.S. presidents • Mari Jo Davitto, 82, Thornton, Ill., people were her hobby • Yaakov Perlow, 89, New York City, leader of the Novominskier Hassidic dynasty • Joseph E. Kelly, 81, New York City, did two tours through the Panama Canal to Antarctica • John Prime, 73, Nashville, country-folk singer who was a favorite of Bob Dylan • Perry Buchalter, 63, Florida, quiet hero • Monica Maley, 74, Rehoboth Beach, Del., loved animals, had dogs and cats, and rode horses • Thomas Tarbell Russell, 83, Longmeadow, Mass., mentored by the computer science pioneer Grace Hopper • Ruth Skapinok, 85, Roseville, Calif., backyard birds were known to eat from her hand • Faralyn Havir, 92, Minnesota, her favorite thing was meeting new people • Torin Jamal Howard, 26, Waterbury, Conn., gentle giant, athlete and musician • James O'Brien Johnson, 74, Joplin, Mo., pastor of Mt. Sinai Church of God in Christ • Joseph W. Hammond, 64, Chicago, stopped working to look after his aging parents • Morris Loeb, 90, Northbrook, Ill., endlessly curious, never really finished • Dante Dennis Flagello, 62, Rome, Ga., his greatest accomplishment was his relationship with his wife • Tommie

II, 69, Fremont, Ohio, known throughout Ohio for his knowledge of local history • Harley E. Acker, 79, Troupsburg, N.Y., discovered his true calling when he started driving a school bus • Arleta Rawls, 81, Chicago, caretaker of her neighborhood • Roger Liddell, 65, Flint, Mich., brought smiles to everyone he interacted with • Luther Coleman, 108, Evergreen Park, Ill., man who seemed to know everything • Denise Camille Buzek, 72, Bristol, Conn., loved writing birthday and holiday cards, poems and lists • Charles Constantino, 86, Meslo Park, N.J., worked 40 years for The New York Times • Ben Doherty, 83, Boston, stockbroker who founded Doherty Financial Services • John Horton Conway, 82, New Brunswick, N.J., mathematician known as the "magical genius" • Stanley Chera, 77, New York City, developer and friend of the president • Robby Browne, 72, New York City, Realtor and philanthropist who socialized with celebrities • Wynn Handman, 97, New York City, acting teacher and a founder of the American Place Theater • Adam Kovacs, 72, New York City, cartoonist and an expert on musicals • Peter Brown, 53, New Jersey, manager of the S.W. Brown & Son Funeral Home • Irene Gasior, 94, Pennsylvania, great-grandmother with a flair for pizzelles • Stanley L. Morse, 88, Stark County, Ohio, trombonist who once turned down an offer to join Duke Ellington's orchestra • Margaret Laughlin, 91, Massachusetts, had a mystic's direct sense of wonder and oneness • Cynthia Whiting, 68, La Plata, Md., retired determined to spoil her grand-

May 25 – Every president – except one, maybe – has regrets. It almost always involves lives lost during the course of making difficult decisions.

President Barack Obama regrets the lack of planning for the chaos that occurred following the overthrow of Libya's Muammar Gaddafi.



President George W. Bush regrets the failure of intelligence over Iraqi weapons of mass destruction (others might also point to the response to Hurricane Katrina).

His father, President George H.W. Bush, regretted not forcing Saddam Hussein to surrender after liberating Kuwait.

President Bill Clinton regrets the lives lost by not doing more to prevent genocide in Rwanda.

I'd guess there are many, many more.

During an interview a while back Clinton spoke of the value of presidents discussing the mistakes they made.

"You want each new president to make new mistakes, not the same ones," Clinton said.

Have we done 'amazingly well'?

He added, "all of us know if you make enough decisions, you're going to make a few of them (that) aren't right."

Unless you are President Donald Trump, or so he seems to believe.

As the number of COVID-19 deaths approached 100,000, a reporter at a press conference asked Trump, "Mr. President, with 4 percent of the world's population and 30 percent of the — of the outbreak, what would you have done differently facing this crisis?"

Trump answered in part, "Well, nothing. If you take New York and New Jersey -- which were very hard hit -- we were very, very low.... We've done, you know, amazingly well."

A recent Columbia University study estimated that if social distancing restrictions had been implemented only one week earlier at least 36,000 American lives could have been saved.

Yet the president would have done nothing differently?

Nothing?

Because we've done "amazingly well"?

We've lost nearly 100,000 Americans.

Not learning would be the worst thing

Imagine if only in the past couple of months the entire population of Flagstaff was wiped out. Along with the entire population of Sun City West. That's roughly 100,000 people.

As it is, we're going to need another Memorial Day, one dedicated to the victims of COVID-19, one dedicated as well, hopefully, to not making the same mistakes we made this time.

COVID-19 isn't the end. The worst thing possible would be not to learn from what has happened, to believe we need to do nothing to prepare for the future. For the next virus. The next pandemic.

"You want each new president to make new mistakes, not the same ones," Clinton said.

To believe that our system for responding to infectious disease has done "amazingly well," as Trump said, would not be a new mistake.

It would be the same one we just made.

Global mortality associated with **seasonal influenza epidemics:** New burden estimates and predictors from the GLaMOR Project

By John Paget, Peter Spreeuwenberg, Vivek Charu, et al.

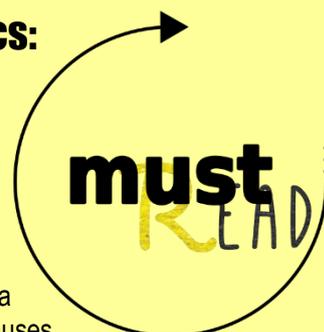
J Glob Health. 2019 Dec; 9(2): 020421.

Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6815659/>

Background: Until recently, the World Health Organization (WHO) estimated the annual mortality burden of influenza to be 250 000 to 500 000 all-cause deaths globally; however, a 2017 study indicated a substantially higher mortality burden, at 290 000-650 000 influenza-associated deaths from respiratory causes alone, and a 2019 study estimated 99 000-200 000 deaths from lower respiratory tract infections directly caused by influenza. Here we revisit global and regional estimates of influenza mortality burden and explore mortality trends over time and geography.

Methods: We compiled influenza-associated excess respiratory mortality estimates for 31 countries representing 5 WHO regions during 2002-2011. From these we extrapolated the influenza burden for all 193 countries of the world using a multiple imputation approach. We then used mixed linear regression models to identify factors associated with high seasonal influenza mortality burden, including influenza types and subtypes, health care and socio-demographic development indicators, and baseline mortality levels.

Results: We estimated an average of 389 000 (uncertainty range 294 000-518 000) respiratory deaths were associated with influenza globally each year during the study period, corresponding to ~2% of all annual respiratory deaths. Of these, 67% were



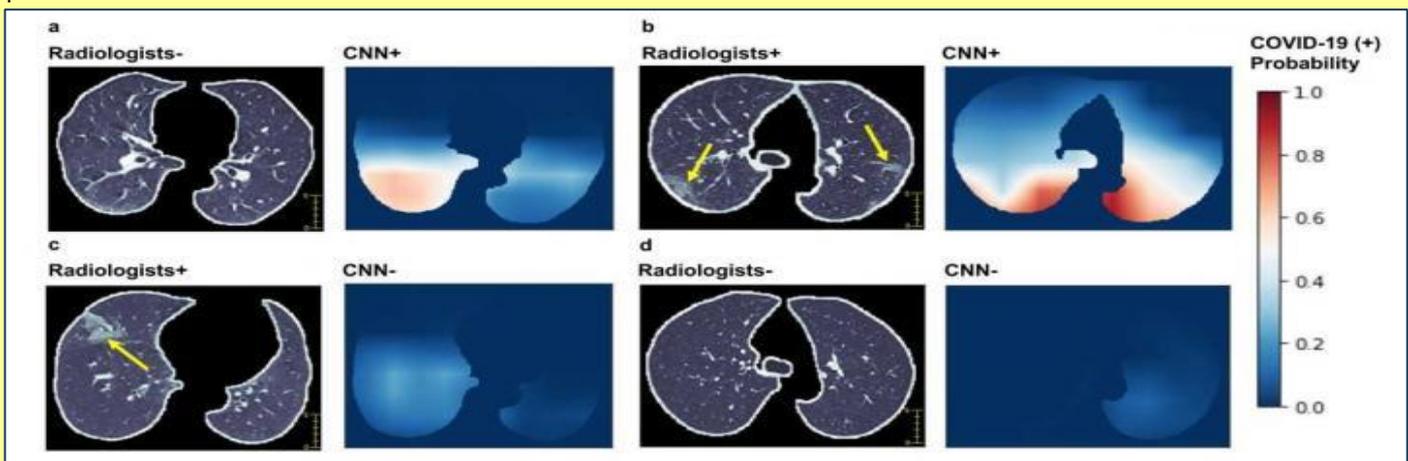
among people 65 years and older. Global burden estimates were robust to the choice of countries included in the extrapolation model. For people <65 years, higher baseline respiratory mortality, lower level of access to health care and seasons dominated by the A(H1N1)pdm09 subtype were associated with higher influenza-associated mortality, while lower level of socio-demographic development and A(H3N2) dominance was associated with higher influenza mortality in adults ≥65 years.

Conclusions: Our global estimate of influenza-associated excess respiratory mortality is consistent with the 2017 estimate, despite a different modelling strategy, and the lower 2019 estimate which only captured deaths directly caused by influenza. Our finding that baseline respiratory mortality and access to health care are associated with influenza-related mortality in persons <65 years suggests that health care improvements in low and middle-income countries might substantially reduce seasonal influenza mortality. Our estimates add to the body of evidence on the variation in influenza burden over time and geography, and begin to address the relationship between influenza-associated mortality, health and development.

COVID-19 Accurately Diagnosed by AI Model

Source: <https://www.genengnews.com/news/covid-19-accurately-diagnosed-by-ai-model/>

May 26 – A COVID-19 diagnosis is routinely made by a positive test for the presence of SARS-CoV-2. However, the current tests are fraught with challenges. Not only are there shortages of kits, but they take time to complete and carry a possibility of false-negative results. Researchers at Mount Sinai sought an alternative method for rapid and accurate diagnosis of patients with COVID-19. They are the first in the country to use artificial intelligence (AI) combined with imaging, and clinical data to analyze patients with COVID-19. In doing this, they have developed a unique algorithm that can rapidly detect COVID-19 based on how lung disease looks in computed tomography (CT scans) of the chest, in combination with patient information including symptoms, age, bloodwork, and possible contact with someone infected with the virus.



For each pair of images, the left image is a CT image showing the segmented lung used as input for the CNN (convolutional neural network algorithm) model trained on CT images only, and the right image shows the heatmap of pixels that the CNN model classified as having SARS-CoV-2 infection (red indicates higher probability). (a) A 51-year-old female with fever and history of exposure to SARS-CoV-2. The CNN model identified abnormal features in the right lower lobe (white color), whereas the two radiologists labeled this CT as negative. (b) A 52-year-old female who had a history of exposure to SARS-CoV-2 and presented with fever and productive cough. Bilateral peripheral ground-glass opacities (arrows) were labeled by the radiologists, and the CNN model predicted positivity based on features in matching areas. (c) A 72-year-old female with exposure history to the animal market in Wuhan presented with fever and productive cough. The segmented CT image shows ground-glass opacity in the anterior aspect of the right lung (arrow), whereas the CNN model labeled this CT as negative. (d) A 59-year-old female with cough and exposure history. The segmented CT image shows no evidence of pneumonia, and the CNN model also labeled this CT as negative. [BioMedical Engineering and Imaging Institute (BMEII) at the Icahn School of Medicine at Mount Sinai] This research expands on a previous Mount Sinai study that identified a characteristic pattern of disease in the lungs of COVID-19 patients and showed how it develops over the course of a week and a half.

This study, titled “[Artificial intelligence-enabled rapid diagnosis of patients with COVID-19.](#)” was published recently in *Nature Medicine* and could help hospitals across the world quickly detect the virus, isolate patients, and prevent it from spreading during this pandemic.

“AI has huge potential for analyzing large amounts of data quickly, an attribute that can have a big impact in a situation such as a pandemic. At Mount Sinai, we recognized this early and were able to mobilize the expertise of our faculty and our international collaborations to work



on implementing a novel AI model using CT data from COVID-19 patients in Chinese medical centers. We were able to show that the AI model was as accurate as an experienced radiologist in diagnosing the disease, and even better in some cases where there was no clear sign of lung disease on CT,” said one of the lead authors, Zahi Fayad, PhD, director of the BioMedical Engineering and Imaging Institute (BMEII) at the Icahn School of Medicine at Mount Sinai. “We’re now working on how to use this at home and share our findings with others—this toolkit can easily be deployed worldwide to other hospitals, either online or integrated into their own systems.”

The new study involved scans of more than 900 patients that Mount Sinai received from institutional collaborators at hospitals in China. The patients were admitted to 18 medical centers in 13 Chinese provinces between January 17 and March 3, 2020. The scans included 419 confirmed COVID-19-positive cases (most either had recently traveled to Wuhan, China, where the outbreak began, or had contact with an infected COVID-19 patient) and 486 COVID-19-negative scans. Researchers also had patients’ clinical information, including blood test results showing any abnormalities in white blood cell counts or lymphocyte counts as well as their age, sex, and symptoms (fever, cough, or cough with mucus). They focused on CT scans and blood tests since doctors in China use both of these to diagnose patients with COVID-19 if they come in with fever or have been in contact with an infected patient.

The Mount Sinai team integrated data from those CT scans with the clinical information to develop an AI algorithm. It mimics the workflow a physician uses to diagnose COVID-19 and gives a final prediction of positive or negative diagnosis. The AI model produces separate probabilities of being COVID-19-positive based on CT images, clinical data, and both combined. Researchers initially trained and fine-tuned the algorithm on data from 626 out of 905 patients, and then tested the algorithm on the remaining 279 patients in the study group (split between COVID-19-positive and negative cases) to judge the test’s sensitivity; higher sensitivity means better detection performance. The algorithm was shown to have statistically significantly higher sensitivity (84%) compared to 75% for radiologists evaluating the images and clinical data. The AI system also improved the detection of COVID-19-positive patients who had negative CT scans. Specifically, it recognized 68% of COVID-19-positive cases, whereas radiologists interpreted all of these cases as negative due to the negative CT appearance. Improved detection is particularly important to keep patients isolated if scans don’t show lung disease when patients first present symptoms (since the previous study showed that lung disease doesn’t always show up on CT in the first few days) and COVID-19 symptoms are often nonspecific, resembling a flu or common cold, so it can be difficult to diagnose.

CT scans are not widely used for diagnosis of COVID-19 in the United States; however, Fayad explains that imaging can still play an important role.

“Imaging can help give a rapid and accurate diagnosis—lab tests can take up to two days, and there is the possibility of false negatives—meaning imaging can help isolate patients immediately if needed, and manage hospital resources effectively. The high sensitivity of our AI model can provide a ‘second opinion’ to physicians in cases where CT is either negative (in the early course of infection) or shows nonspecific findings, which can be common. It’s something that should be considered on a wider scale, especially in the United States, where currently we have more spare capacity for CT scanning than in labs for genetic tests,” said Fayad, who is also a professor of diagnostic, molecular and interventional radiology at the Icahn School of Medicine at Mount Sinai.

“This study is important because it shows that an artificial intelligence algorithm can be trained to help with early identification of COVID-19, and this can be used in the clinical setting to triage or prioritize the evaluation of sick patients early in their admission to the emergency room,” said Matthew Levin, MD, director of the Mount Sinai Health System’s Clinical Data Science Team, and a member of the Mount Sinai COVID Informatics Center. “This is an early proof concept that we can apply to our own patient data to further develop algorithms that are more specific to our region and diverse populations.”

Mount Sinai researchers are now focused on further developing the model to find clues about how well patients will do based on subtleties in their CT data and clinical information. They say this could be important to optimize treatment and improve outcomes.

Has Covid-19 increased the risk of bioterrorism?

By Amresh Gunasingham

Source: <https://www.todayonline.com/commentary/has-covid-19-increased-risk-bioterrorism>

May 26 – The Covid-19 pandemic has exposed the vulnerability of global societies to biological threats, both natural and manmade, and their potential for disruption.

In many parts of the world, the coronavirus has morphed into an invisible enemy, capable of hiding within our ranks and multiplying in secret, before exploding onto the surface.



The crisis has prompted unfounded accusations of biological warfare, with conspiracy theories abounding that the virus originated from a laboratory in Wuhan, and was then deliberately unleashed on the rest of the world by China.

The possibility of terrorist groups of various persuasions attempting or experimenting with bioterrorism, has also been mooted, and the risk of this cannot be dismissed.

The vast human and economic toll from the pandemic highlights the vulnerability of most states to the asymmetric threat from a weaponised virus.

For terrorist groups such as Islamic State in Iraq and Syria (Isis) which seek more effective tools to cause chaos and sow discord, it provides a potential roadmap for their future activities.

Weaponising the coronavirus

Since the outset, far-right and Islamist terrorist groups have exploited Covid-19 to aggressively advance their agendas.

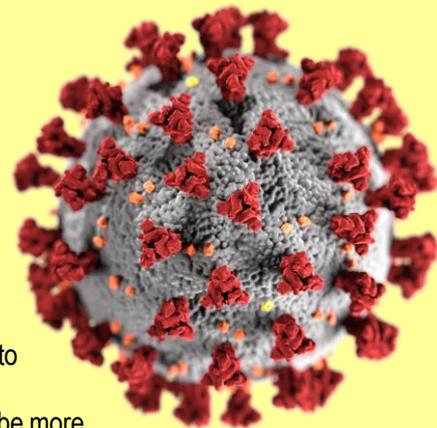
On social media and other channels, the idea of using the virus as a bioweapon has been widely promoted.

In Southeast Asia Indonesian pro-Isis groups have called on infected followers to spread the virus to their enemies, including law enforcement officials.

Last month, authorities in Tunisia arrested two men over a similar jihadist plot to spread the virus among security forces. One of them, who had to report regularly to a police station, had planned to deliberately cough to infect officers there.

While such attacks or plots have seen limited success, Isis has an apocalyptic worldview, and could be more emboldened in future.

Deemed far-fetched till recently, some experts now say modern advances in biotechnology can theoretically allow a sufficiently motivated violent actor to cheaply acquire and then genetically modify an airborne virus in a lab for maximum contagiousness and virulence.



Is it far-fetched?

The feasibility of developing and dispersing a bioweapon varies in difficulty depending on the pathogen involved.

For example, the bacterium that causes the anthrax disease is relatively easy to acquire and can be inhaled through aerosols or ingested via contaminated water supplies.

But an anthrax attack will have a limited impact, both in terms of the geographical area and casualties involved. The illness is not contagious and cannot be transmitted easily from person to person.

While technologies have now become more accessible, and groups like Isis have developed some infrastructural and scientific capabilities, they likely still lack the necessary resources to self-engineer a bioweapon that can wreak widespread devastation.

In a broader sense, movements across the ideological spectrum long interested in gaining chemical, biological, radiological or nuclear weapons continue to be hampered in these efforts by a lack of access, unlike state actors, to adequate technical expertise, materials, funding and infrastructure.

Evolving tactics

Military doctrines also largely downplay the risk of Covid-19, or a similarly virulent strain, being used as a bioweapon by terrorists on a large scale.

This is because, given its highly infectious characteristics, a virus would not only cripple the attackers, but also risk blowback on their own supporters and communities.

But tactics have evolved, particularly since the turn of the century, from one of targeted attacks to the indiscriminate use of violence, including suicide bomb attacks, wherein collateral deaths among the aggressors are deemed more acceptable.

Among far-right groups in the West, successful bioterror attacks involving transmittable pathogens or toxins have been rare.

Notable incidents include the Rajneesh Cult salmonella poisoning incident, which saw 751 individuals in the American state of Oregon suffer food poisoning when their meals were deliberately contaminated.

Others include the Aum Shinrikyo cult's nerve gas attack in Tokyo and the Anthrax letter attacks of 2001, where five people in the United States died.

For its part, Isis has used chemical attacks in Syria, and has also showed intent to gain bioterror capabilities.



In 2014, it was revealed that a confiscated laptop belonging to a Tunisian Isis operative allegedly contained information on how to weaponise the Bubonic plague using infected animals.

There was, however, little indication of Isis' capability to unleash such a bioweapon on humans.

Buttressing defences

Renewed threat assessments may be needed in an evolving security environment, as terrorists seek to develop new capabilities. Current deterrence and prevention responses in many countries remain vulnerable to another biological disruption, whether natural or man-made.

Another event on the scale of Covid-19 could more severely dent confidence in governments' capacity to respond, while also exacerbating fears and distrust far beyond those communities immediately affected.

Health authorities will need to be better prepared not just for the next pandemic, but also against bioterrorism and other public health threats.

The development of rapid detection and surveillance systems that allow for the timely detection and categorisation of a range of potential pathogens is needed in many places.

Intelligence agencies also need to increase cross-border collaborations, and be prepared to more readily share actionable intelligence that could prove crucial to prevent an attack.

Major urban areas could be further fortified through the development and stockpiling of vaccines and medicines that can effectively treat infections triggered by a potential attack. Programmes to adequately train emergency response teams on quick response efforts also need to be implemented widely.

Fears of a major bioterror attack at the hands of a highly motivated and capable violent actor are ever-present.

Such an attack, by nature, is exceedingly hard to detect and respond to.

Enhanced surveillance, a robust public health infrastructure and most crucially, a willingness to heed the advice of front-line experts, are all needed as effective countermeasures.

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Coronavirus Best Practices and Protocols Needed During 'New Normal'

Source: <https://www.govtech.com/em/safety/-Coronavirus-Best-Practices-and-Protocols-Needed-during-New-Normal.html>

May 20 – As the United States begins to reopen after the coronavirus shutdown, the country must do so on different timelines and different protocols and best practices to ensure the protection of workers and citizens.

The shutdown of normalcy brought on by the coronavirus outbreak was difficult, more for some than others. But returning to what will be a new normal will be more difficult, said infectious disease specialists in a media briefing hosted by the Infectious Diseases Society of America, Tuesday.

Since the coronavirus was detected in the United States in January, there have been an estimated 1.5 million confirmed cases and about 90,000 deaths. Those numbers may be on the low side because of the challenges of testing, especially early on, according to Dr. Preeti Malani, Chief Health Officer at the University of Michigan, who spoke during the briefing.

Malani said different parts of the country and even different industries will see different challenges as the pandemic moves into a new phase and some will adjust better and more quickly than others. Some may not survive.

"As things have improved from a public health standpoint, everyone is thinking about reengaging as a nation," she said. "And waiting for a timeline, depending on where you live as the timeline is going to vary a bit even within states."

She said in her state of Michigan the northern part is ready open other parts are still waiting on the timeline. "Ramping down was pretty easy, although it didn't feel like it at the time," Malani said. "Reopening is going to be much more complicated."

It's going to have to be done with safeguards in place for workers, and the public and will take concerted efforts on the part of organizations to protect people as they return to the new normal. "We're thinking about this at the University of Michigan as we prepare to open campus," Malani said.

She said the campus wasn't fully closed but students and employees were removed for remote learning and remote work. She said research labs on campus will begin opening up in the next few days. Many manufacturing businesses are also beginning to open up in the state and some of the same protocols—and some new ones—will need to be put into place.



“Businesses and workplaces vary in terms of risk and you can think of them as high, medium and low risk, both in terms of the type of activity that occurs and also the number of customers that are served or the number of employees that work in a particular space,” Malani said.

There are going to have to be best practices related to things like access control (how people enter establishments); health screenings; taking the temperature of people entering buildings or establishments; social distancing, where possible; contact tracing; cleaning and sanitation and the use of personal protective equipment.

“It’s extremely important to ensure workers that they are being kept safe,” Malani said. “A lot of this is unknown because the playbook doesn’t exist.”

She said it’s important for establishments and governments to be transparent and provide information in as much detail as possible. Some industries won’t be able to reopen safely for the time being because of the nature of the business. Social distancing in some industries may not be possible so new protocols may have to be developed.

“In those cases, maybe you can do a better job of screening workers and customers and having better cleaning protocols, using personal protective equipment and decreasing density in some way that can make economic sense,” Malani said, “Like with expanded hours or different shifts.”

She said hand hygiene remains important as does the use of masks or face shields. “None of this is going to be perfect or easy and there is going to be some residual risk no matter what. We’re going to have cases of Covid-19, especially as businesses return to work but some basic public health practice can help prevent large outbreaks and help prevent and protect our most vulnerable populations.”

Dr. Leonard Mermel, medical director for the Department of Epidemiology and Infection Control at Rhode Island Hospital, reiterated the need for people to continue to observe practices like wearing masks or face guards and social distancing to keep the rate of infections from spiking.

“I spend most of my time thinking about how to reduce the risk of transmission of infections in health care settings,” Mermel said. “But the average individual, who is not in health care, may not realize some of the things they need to do to protect themselves.”

Mermel said he still has not touched a door handle since the outbreak started. He carries paper towels with him wherever he goes and uses those as protection when touching surfaces. He also carries hand sanitizer and wears a mask.

“We all produce bio-aerosols when we talk,” he said. “When we talk loudly, we produce more and when we sneeze or cough and those bio-aerosols get trapped in your mask or face shield. It’s important when you start getting together with your friends to continue to stay six feet apart even if you’re each covered with a mask or face shield.”

How the Coronavirus Increases Terrorism Threats in the Developing World

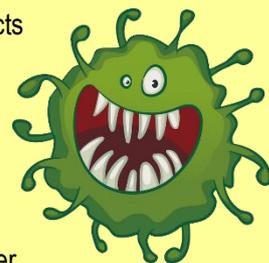
By Nisha Bellinger and Kyle Kattelman

Source: <http://www.homelandsecuritynewswire.com/dr20200526-how-the-coronavirus-increases-terrorism-threats-in-the-developing-world>

May 26 – As the coronavirus reaches [developing countries in Africa and Asia](#), the pandemic will have effects beyond public health and economic activity. As the disease wreaks its havoc in areas poorly equipped to handle its spread, terrorism likely will increase there as well.

We are political scientists who study the [developing world](#) and [political conflict](#). Our recently [published research](#) identifies a potential link between the pandemic and an uptick in violence. We find that food insecurity – the lack of both financial and physical access to nutritious food, which leads to malnutrition and undernourishment in a population – makes citizens angry at their governments.

Citizens conclude that their political leaders are either unable or unwilling to ease their suffering. This anger gives terrorist groups opportunities to recruit new members by providing them a violent outlet for venting their frustrations. In many cases, terrorist organizations do what their governments can’t or won’t do: give people the food and money they badly need to survive.



An Existing Food Crisis

Extreme weather, political conflict and economic shocks tend to [increase food insecurity](#), especially among children, the elderly, the poor and people with disabilities.

In [2019](#), about 55 countries from regions in Africa, Latin America and the Middle East and Asia were in food crisis. The [coronavirus pandemic is causing political and economic problems](#) even in wealthy countries.

As the crisis extends to the developing world, nations will face serious problems feeding their people – and keeping the peace.



Difficult Days Ahead in Africa

The types of conflicts plaguing Africa before the pandemic arrived mostly consist of bands of terrorist organizations using violence to cause political or social changes in their home countries, such as Boko Haram's violent insurgency in [Nigeria](#). These conflicts happen in places where the government is too weak to monitor and capture the terrorists and their group leaders. Due to weak governance and lack of border restrictions between countries, the violence often spills into [neighboring](#) weak states, enveloping entire regions.

Even before the pandemic broke out, regional conflicts had already created food crises in parts of [Africa](#). The national lockdowns will help contain the coronavirus, but they also [cause other civic and economic problems](#) that can lead to violence.

For example, Nigeria has a large number of [self-employed people](#) who are now unable to earn a living due to the lockdown. As a result, they do not have [enough to eat](#), and the government has been unable to provide food to everyone in need.

This food scarcity has led to [protests](#) in Abuja and food [stampedes](#) to collect food supplies from the government in Lagos, Nigeria. People are frustrated with the government's response in dealing with the pandemic and its inability to provide essential food for all who need it.

Terrorist organizations such as Boko Haram, an organization dedicated to the creation of an Islamic state within Nigeria, are actively using the grief caused by the coronavirus to [strengthen](#) their [campaigns of violence](#). Boko Haram is known for recruiting [unemployed young adults](#) from families who live in poverty without sufficient food. The group is now [increasing its recruitment](#) of young men to carry out ambushes, kidnappings and bombings in the region.

These efforts have resulted in renewed violence across the Lake Chad region, where a recent Boko Haram attack against the [Nigerian military](#) killed 47.

In neighboring Chad, the group ambushed a large group of Chadian soldiers, killing 92. It was the [deadliest attack ever](#) on Chad's military.

Even as Nigeria is gradually lifting lockdown measures, [unemployment](#) is likely to persist, diminishing people's ability to afford basic goods such as food.

This pattern of violence is extending to other war-torn areas. [Mozambique](#) and [Mali](#), for example, are experiencing an increase in attacks from Islamist insurgents in the wake of the pandemic. It is likely that food insecurity brought on by the coronavirus pandemic is playing a role there as well.

Increasing Violence in Asia

In Asia, Pakistan was experiencing a [food crisis](#) before the pandemic began, with 60% of the population facing food insecurity because of drought and [poor economic conditions](#).

Now, there are over 48,000 positive COVID-19 cases in [the country](#). Lockdown measures are making it difficult for day laborers and tradesmen to earn a living, and [hunger](#) is an even greater immediate concern.

The government's efforts to provide food to its citizens may not be able to meet the need. Particularly worrisome are the [one-third](#) of Pakistani citizens who are illiterate and face difficulty reading and applying for aid.

The worsening conditions in Pakistan brought on by the coronavirus are causing an [increase](#) in terrorism.

The Pakistani-based terrorist groups Lashkar-e-Taiba and Jaish-e-Mohammad are currently approaching people who have been affected by the coronavirus and [offering to provide essential services and assistance](#). In return, they [gain the loyalty of local populations](#) and access to a new pool of recruits for their efforts to set up an Islamist government in the contested territory of Kashmir. The effort by the two terrorist groups has led to an [increase in the number of terrorist training camps](#) in the region. Indian intelligence sources also indicate that the groups, along with their ally Hizbul Mujahideen, may [send terrorists into northern India](#) in an effort to seize the contested land from the Indian government.

We are seeing similar recruitment tactics in other parts of the continent.

In [Turkey](#), Islamic State recruiters are targeting migrants from Turkmenistan who have lost their jobs as a result of the pandemic. The Islamic State frequently recruits unemployed and disillusioned individuals to join its efforts to create an independent state dedicated to the teachings of its extremist brand of Sunni Islam.

Across the developing world, the coronavirus is magnifying existing societal problems, worsening food and financial shortages that give rise to terrorist violence.

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Source: <http://nct-magazine.com/nct-magazine-may-2020/reusable-respirators-the-unsung-covid-19-hero/>

“We rely on clean air with a suitable oxygen concentration to keep our bodies alive. When the world finds a way to deprive of us this, we fight back with respiratory protection.”

In January of 2020 it would have been hard to imagine opening a supply cabinet at a local hospital to find that there are just no more N95 masks to hand out to your staff. It would almost seem preposterous to assume that a point would come where there was just no supplier to even procure them from. Alas, March 2020 arrived and first response agencies, hospitals, other healthcare facilities found themselves in this very position.

Throughout my career I have worn a plethora of respirators to protect me from the hazards of my work. I have worn SCBAs (Self-Contained Breathing Apparatus), PAPRs (Powered Air-Purifying Respirators), APRs (Air-Purifying Respirators), and rebreathing circuits. Respiratory protection always fascinated me in that as resilient as the human body can be, we have an inherent weakness through the openings of the nose, mouth, and ocular membranes. We rely on clean air with a suitable oxygen concentration to keep our bodies alive. When the world finds a way to deprive of us this, we fight back with respiratory protection.

As the need for continuous respiratory protection arose with the uncertainty of COVID-19 transmission, we had an answer. It was the N95. The N95, though never genuinely appreciated, is a formidable opponent to the viral particles allowing workers to be in harm's way, yet truly protected. When worn with splash glasses, face shield, and other PPE, we had a great way of keeping ourselves safe. This proved to be problematic when our supply nationwide began to dwindle.

The answer: reusable respirators.

►► Read the rest of this article at source's URL.

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COVID-19, Stories from the Frontline

By Elisa Morin, Consultant, IB Consultancy

Source: <http://nct-magazine.com/nct-magazine-may-2020/the-first-nct-webinar-covid-19-stories-from-the-frontline/>

NCT Talks

The CBRNe Society and IB Consultancy hosted their first NCT Talks on May 13th, gathering panelists from all over the world to share their experience in the fight against COVID-19. This Webinar was the opportunity for the CBRNe Society to honor its commitment to create a platform for CBRNe stakeholders to exchange knowledge, build partnerships and promote innovation, in the safest way possible. For this first edition of the NCT Webinar, BG (ret.) William King, retired Commanding General of the 20th CBRNE Command was present as a subject matter expert.



HZS C²BRNE DIARY – June 2020

His numerous years of active duty within the US Army and his expertise on complex CBRNe challenges were a valuable contribution to the discussions. For this first webinar, our team of panelists was composed of high-level stakeholders and first responders who are working at the frontline of this battle against COVID-19, and who shared with us their experience and the lessons learned from this crisis.

EDITOR'S COMMENT: The Editor was there as well – last panelist! Watch: <https://vimeo.com/422445197>

Go.C wearable hand sanitizer keeps hands hygienic on the go

Source (+video): <https://newatlas.com/sponsored-content/go-c-wearable-hand-sanitizer/>

May 26 – Maintaining good personal hygiene is always important to reduce the risk of catching infectious diseases, but in the midst of a global pandemic it is downright vital. Washing your hands may be pretty easy when at home, but as lockdowns around the world ease and people venture out more, keeping hands clean becomes much more difficult. That's where the Go.C Sanitizer comes in.



Carrying a bottle of hand sanitizer has quickly become essential in the wake of COVID-19, but it's hardly convenient. The bottles don't fit in a pocket well and are easy to lose in the bottom of a bag or backpack – not to mention the hassle of fumbling with the caps that are even easier to lose. And needing to reach for them every time you come into contact with multitude of surfaces that potentially harbor viruses – from door handles and keyboards to money and doorbells – can quickly become a nuisance.

Developed by Wellness Innovation Labs, the Go.C is a personal, wearable hand sanitizer dispenser that ensures clean hands are conveniently always within reach. Designed to clip onto a belt, pocket or bag using the built-in fastening system, the device dispenses the optimal amount of liquid hand sanitizer right into the palm of your hand at the push

of a button – no mess, no fuss and, most importantly, no risk of contamination.

Its ergonomic design makes the Go.C easy to use at all times of the day. Plus, it's made from recycled and recyclable plastic that's resistant to alcohol without painting, meaning it's much better for the environment than using disposable bottles of hand sanitizer. Additionally, the device's button and tube are made from hypoallergenic silicone, and two color options are on offer to ensure it'll match your style.

Measuring 3.74 x 1.97 x 1.18 inches (95 x 50 x 30 mm), the Go.C is compact enough to sit unobtrusively on your belt all day, even when sitting down. It holds 1.12 oz (33 ml) of liquid, which means it easily comes in under the carry-on limit for air travel. When empty, the device is easy to refill with your preferred sanitizer using the simple refill cap.

Get your hands on the Go.C personal, wearable hand sanitizer [here](#).



Norway Health Chief: Lockdown Was Not Needed to Tame COVID

Source: <http://www.homelandsecuritynewswire.com/dr20200528-norway-health-chief-lockdown-was-not-needed-to-tame-covid>

May 28 – Norway is assembling a picture of what happened before lockdown and its latest discovery is pretty significant. It is using observed data – hospital figures, infection numbers and so on – to construct a picture of what was happening in March. At the time, no one really knew. Fraser Nelson writes in [The Spectator](#) that it was feared that virus was rampant with each person infecting two or three others – and only lockdown could get this exponential



growth rate (the so-called R number) down to a safe level of 1. This was the hypothesis [advanced](#) in various graphs by Imperial College London for Britain, Norway and several European countries.

But the Norwegian public health authority has published a [report](#) with a striking conclusion: the virus was never spreading as fast as had been feared and was already on the way out when lockdown was ordered. 'It looks as if the effective reproduction rate had already dropped to around 1.1 when the most comprehensive measures were implemented on 12 March, and that there would not be much to push it down below 1... We have seen in retrospect that the infection was on its way down.'

This raises an awkward question: was lockdown necessary? What did it achieve that could not have been achieved by voluntary social distancing?

Game Theory and the COVID-19 Outbreak: Coordinating Our Interests at Individual to National Levels

Source: <http://www.homelandsecuritynewswire.com/dr20200527-game-theory-and-the-covid19-outbreak-coordinating-our-interests-at-individual-to-national-levels>

May 27 – Shedding light on how officials at different levels of government can work together to maximize COVID-safe behavior is a new goal of a multi-scale game theory project funded with \$6.5 million from the Department of Defense. The [University of Michigan](#) notes that when human behavior is competitive, we don't use resources in the way that is most efficient for the community—as seen in behaviors like mask, sanitizer and toilet paper hoarding. But most of our decisions about how to behave aren't entirely individualistic. We make them as part of a community. We are swayed both by leadership—and the incentives and disincentives that they can offer—as well as altruism. Most of the literature in game theory examines individual behavior, but Liu and her colleagues are exploring what happens when decisions are made at multiple scales.

Trump's Mockery of Wearing Masks Divides Republicans

Source: <http://www.homelandsecuritynewswire.com/dr20200527-trump-s-mockery-of-wearing-masks-divides-republicans>

May 27 – A growing chorus of Republicans are pushing back against President Trump's suggestion that wearing cloth masks to prevent the spread of the novel coronavirus is a sign of personal weakness or political correctness. Michael Scherer writes in the [Washington Post](#) that they include governors seeking to prevent a rebound in coronavirus cases and federal lawmakers who face tough reelection fights this fall, as national polling shows lopsided support for wearing masks in public. Pointed comments by leading Republicans in support of wearing masks – from Ohio Gov. Mike DeWine; Majority Leader Mitch McConnell; North Dakota Gov. Doug Burgum; Rep. Fred Upton of Michigan; Sen. John Cornyn, and many others — come as Trump continues to treat face masks as something to mock, refusing to wear one in public and joining his staff and family in ridiculing his Democratic rival Joe Biden for doing otherwise.

Trust in Medical Scientists Has Grown in the U.S., but Mainly among Democrats

Source: <http://www.homelandsecuritynewswire.com/dr20200527-trust-in-medical-scientists-has-grown-in-the-u-s-but-mainly-among-democrats>

May 27 – Americans' confidence in medical scientists has grown since the [coronavirus outbreak](#) first began to upend life in the United States, as have perceptions that medical doctors hold very high ethical standards. And in their own estimation, most U.S. adults think the outbreak raises the importance of scientific developments. Cary Funk, Brian Kennedy, and Courtney Johnson write for [Pew Research Center](#), however, that public confidence has turned upward with Democrats, not Republicans. Among Democrats and those leaning to the Democratic Party, 53% have a great deal of confidence in medical scientists to act in the public interest, up from 37% in January 2019. But among Republicans and those who lean Republican, 31% express a great deal of confidence in medical scientists, roughly the same as in 2019 (32%). As a result, there is now a 22 percentage point difference between partisan groups when it comes to trust in medical scientists.



How Sweden Wasted a “Rare Opportunity” to Study Coronavirus in Schools

Source: <http://www.homelandsecuritynewswire.com/dr20200527-how-sweden-wasted-a-rare-opportunity-to-study-coronavirus-in-schools>

May 27 – During this pandemic, does that harm to student’s learning, and the isolation-induced mental harm, outweigh the risk—of children, school staff, families, and the community at large—of keeping schools open and giving the coronavirus more chances to spread? Gretchen Vogel writes in [Science](#) that the one country that could have definitively answered that question has apparently failed to collect any data. Bucking a global trend, Sweden has kept day care centers and schools through ninth grade open since COVID-19 emerged, without any major adjustments to class size, lunch policies, or recess rules. That made the country a perfect natural experiment about schools’ role in viral spread that many others could have learned from as they [reopen schools or ponder when to do so](#). Yet Swedish officials have not tract infections among school children—even when large outbreaks led to the closure of individual schools or staff members died of the disease.

Which Interventions Work Best in a Pandemic?

Source: <http://www.homelandsecuritynewswire.com/dr20200527-which-interventions-work-best-in-a-pandemic>

May 27 – The only approaches currently available to reduce transmission of the novel coronavirus severe acute respiratory syndrome—coronavirus 2 (SARS-CoV-2) are behavioral: handwashing, cough and sneeze etiquette, and above all, social distancing. Johannes Haushofer and C. Jessica E. Metcalf write in [Science](#) that policy-makers have a variety of tools to enable these “nonpharmaceutical interventions” (NPIs), ranging from simple encouragement and recommendations to full-on regulation and sanctions. However, these interventions are often used without rigorous empirical evidence: They make sense in theory, and mathematical models can be used to predict their likely impact, but with different policies being tried in different places—often in complicated combinations and without systematic, built-in evaluation—we cannot confidently attribute any given reduction in transmission to a specific policy.

Students on lockdown create a global guide to coronavirus conspiracy theories, fake cures, and other whopping lies

Source: <https://thebulletin.org/2020/05/students-on-lockdown-create-a-global-guide-to-coronavirus-conspiracy-theories-fake-cures-and-other-whopping-lies/>

That Widely Shared Study About Hamsters Doesn't Actually Have Them Wearing Masks

Source: <https://www.sciencealert.com/a-widely-shared-study-involving-hamsters-adds-even-more-confusion-over-wearing-masks>

May 28 – Surgical masks may help keep hamsters' cages [coronavirus](#)-free, but it's still unclear how much extra protection they provide to healthy people, when out and about in the real world.

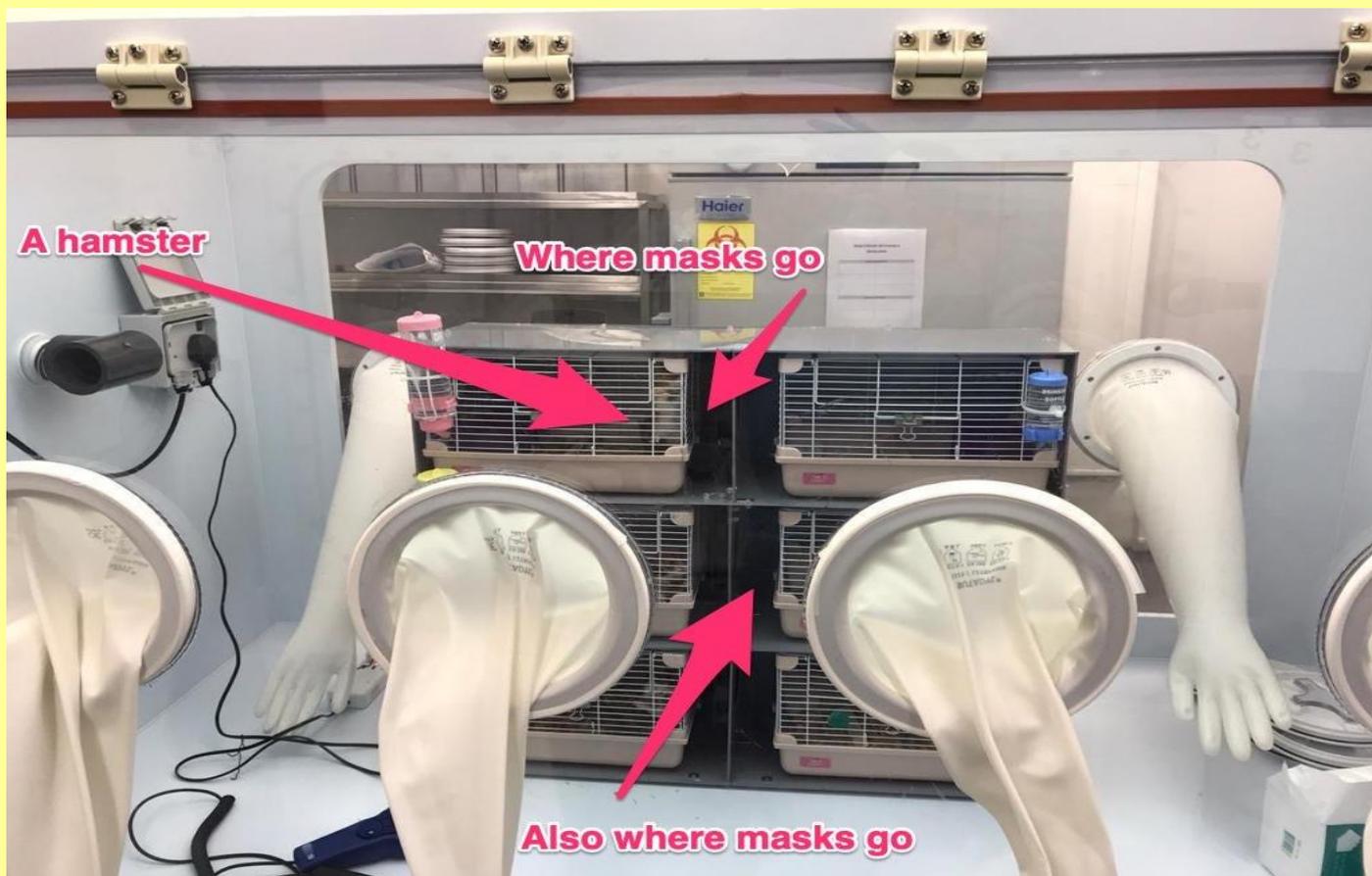
A new and widely-shared study – performed on [hamsters, not people](#) – suggests that putting a surgical mask in between infected and healthy hammies can help keep many of them [virus](#)-free longer, and make their illnesses milder, if they do eventually get sick. But the hamsters in this study didn't even wear their masks at all, so unfortunately they're not such a great model for our human-sized, coronavirus-infected world.

"I think the big takeaway for me is that we are really desperately looking for data, especially that would be applicable to humans, in a real-world setting," Dr. Abraar Karan, a [physician at Harvard Medical School](#) who was not involved in this hamster study, told Insider. "I think a lot of us really want hard data to say masks work."

This study doesn't go quite that far. Instead, human-sized surgical masks were placed in between the cages of sick and healthy hamsters, as air flowed in one direction only, from sick hamsters (on the left) toward healthy ones (on the right).

Despite the lack of adorable, hamster-sized face masks used in this [University of Hong Kong](#) study, it still demonstrated that surgical masks help prevent coronavirus transmission.





But others aren't quite convinced that draping a mask in front of a critter's cage 24/7 provides a good model for what people do, as they take their masks on and off throughout the course of the day whenever they eat, drink, or [unlock their phone](#), touching them with their hands, and readjusting the fit.

►► Read the entire article at source's URL.

Histologic and molecular diagnosis of tularemia: a potential bioterrorism agent endemic to North America

By Laura W Lamps, Jennifer M Havens, Anders Sjostedt, David L Page and Margie A Scott

Modern Pathology, Volume 17, pp.489–495 (2004)

Source: <https://www.nature.com/articles/3800087>

Francisella tularensis (FT), a zoonotic bacterium that causes tularemia, has received attention as a possible bioterrorism threat. We developed a PCR assay for use in fixed, processed tissues, which are safer to handle and allow archival testing. PCR analysis for a 211-bp fragment of the FT lipoprotein gene was performed on tissues from 16 cases of tularemia. In all, 14/15 cases with intact DNA (93%) were positive for FT by PCR. Frequent histologic findings in PCR-positive tissues included irregular microabscesses and granulomas in liver, spleen, kidney, and lymph nodes, and necrotizing pneumonia. Unusual cases featuring suppurative leptomeningitis and gastrointestinal ulcers were also seen. As this disease is endemic in North America, and has been identified as a potential bioterroristic threat, awareness of the



clinicopathologic spectrum of disease and available detection methods is increasingly important. This PCR assay, the first designed for use in processed tissues, is an excellent method for diagnosis of tularemia.

Temperature Screening and Civil Liberties During an Epidemic

Source: <https://www.aclu.org/aclu-white-paper-temperature-screening-and-civil-liberties-during-epidemic>

Painter Juan Lucena (2020 – Grand parents gone alone ...)



Keep this in mind!

Mortality and pulmonary complications in patients undergoing surgery with perioperative SARS-CoV-2 infection: an international cohort study

COVIDSurg Collaborative*

Source: <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2820%2931182-X>

Postoperative pulmonary complications occur in half of patients with perioperative SARS-CoV-2 infection and are associated with high mortality. Thresholds for surgery during the COVID-19 pandemic should be higher than during normal practice, particularly in men aged 70 years and older. Consideration should be given for postponing non-urgent procedures and promoting non-operative treatment to delay or avoid the need for surgery.

Testing Is Key to Beating Coronavirus, Right? Japan Has Other Ideas

Source: <https://www.nytimes.com/2020/05/29/world/asia/japan-coronavirus.html>

May 29 – As the world tries to get a handle on the coronavirus and emerge from paralyzing lockdowns, public health officials have repeated a mantra: “test, test, test.”

But Japan went its own way, limiting tests to only the most severe cases as other countries raced to screen as many people as possible. Medical experts worried that the approach would blind the country to the spread of infection, allowing cases to explode and swamping hospitals.

It hasn't happened. Japan — the grayest country in the world and a popular tourist destination with large, crowded cities — has one of the lowest mortality rates from Covid-19 among major nations. The medical system has not been overwhelmed. And the government never forced businesses to close, although many chose to.

This week, Prime Minister Shinzo Abe declared Japan's battle against the outbreak a resounding success, taking the country off an emergency footing — a sort of “lockdown lite” that lasted only a month and a half.

“By doing things in a uniquely Japanese way, we were able to almost completely end this wave of infection,” Mr. Abe said, adding that what he called the “Japan model” offered a path out of the global pandemic.

It's still unclear, though, exactly what accounts for Japan's achievement and whether other countries can take lessons from its approach. Critics say Japan undercounted coronavirus deaths. And some warn that further waves of infection could undermine the government's self-congratulatory pronouncements.

Instead of testing widely to understand and limit the virus's spread through the general population, Japan has focused on quickly containing small outbreaks through contact tracing. Instead of dictating strict constraints on daily life, it has focused on educating people about measures like social distancing and gently prodding them to follow along.

Theories for the country's relatively low mortality rate run the gamut from cultural attributes — widespread mask wearing, a practice of regular hand washing, a near absence of physical greetings like hugs and handshakes — to just plain luck.

A combination of many other factors, including government measures and changes in behavior among a public that feels strong pressure to follow the rules, could also be at work.

Individual actions “may seem small or mundane,” said Keiji Fukuda, an epidemiologist who directs the School of Public Health at the University of Hong Kong. But, he added, “the cumulative impact of all of those efforts across the entire country to really implement some kind of distancing” may have been substantial.

Whatever the formula, Japan has so far succeeded in keeping deaths low. The country has recorded fewer than 900 deaths even as the United States and European countries have reported tens of thousands.

Epidemiologists say widespread testing for the virus is important because it allows officials to isolate those who test positive, and to track trends in infection rates to help determine when it is safe to reopen schools, businesses and other places where people congregate.



Researchers at Harvard have said [the goal](#) should be to test nearly everyone who has at least mild flulike symptoms, as well as an average of 10 contacts for each person who tests positive.

Countries like South Korea and China that faced fast-growing outbreaks early in the pandemic quickly ramped up testing. China [performed more than three times as many tests in Wuhan](#) in a single day than those Japan has conducted nationwide since Feb. 18 — about 455,000 tests on around 278,000 people.

Japan initially told people who suspected they were infected with the virus not to seek help unless they had experienced a fever for four days, or two days if they were over 65. Even some people with seemingly severe symptoms were refused, provoking theories that the government was trying to hide the true extent of the problem.

Medical experts said the guideline was intended to conserve hospital resources. A national law on infectious diseases mandated that anyone who tested positive, even those who were asymptomatic, had to be placed in one of the country's few isolation wards, creating a strong disincentive for doctors to test patients with milder symptoms.

The Japanese government also said early on that test kits must be rationed because they were in short supply. That argument has since faded, however, as Japan has never used even half of its testing capacity on any given day, and it has increased its testing capacity to just over 24,000 a day.

Japan has since eased its rules to allow those who test positive but are asymptomatic to stay in hotels. It is preparing to begin limited testing for antibodies, hoping to get a better grasp of the number of people who have been infected. It also plans to introduce a smartphone app to help with contact tracing.

Despite the constrained testing for the virus, the rate of positive results has dropped below 1 percent, a fact that the government's expert panel on the virus [says demonstrates](#) that current testing levels are sufficient.

But a group of prominent Japanese academics, businesspeople and other figures has called on the government to take a much bolder step: [build a capacity of 10 million tests](#) a day and offer testing to anyone who wants it. Consecutive negative results, the group argues, could allow people to fully resume social and economic activities.

As the country has seemingly defied the odds, many public health experts, including some in the government, have warned against drawing any definite conclusions from Japan's experience.

They caution that Japan is not in the clear yet, and that a second or third wave of infections could strike at any time. As more data



on deaths from this year becomes available — there are indications that Tokyo has [undercounted dozens of coronavirus deaths](#) — the picture may not look quite as good.

[Social distancing at a bank in Tokyo. Credit...Noriko Hayashi for The New York Times](#)

Some say Japan may have a large hidden population of asymptomatic cases. Shigeru Omi, the deputy head of the government's expert panel on the coronavirus, [told lawmakers](#) that the real number of infections could be as much as 10 or 20 times as high as currently believed. Japan has reported fewer than 17,000 cases, versus more than 1.7 million in the United States.

Norio Sugaya, an infectious diseases expert at Keiyu Hospital in Yokohama, noted that Japan's mortality rate, while vastly lower than those in hard-hit countries like Spain or Britain, is one of the worst in Asia.

In February, an outbreak of the virus aboard the cruise ship Diamond Princess left officials scrambling. The response was widely seen as a disaster, but health experts turned it into a learning opportunity.

Epidemiologists and public health experts used the data from the ship to help develop a framework for stopping the virus's spread in Japan.

The approach emphasized reducing people's exposure to the conditions that led the pathogen to spread on the ship. A public education campaign urged **people to avoid the "Three C's" — closed spaces with poor ventilation, crowded places and close contact.**

On TV talk shows, hosts took a "no question is too stupid" approach to talking about the virus, assuaging viewers' anxiety and stressing the basic science of prevention: wash your hands, wear a mask, keep your distance from others.



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At the same time, community health centers raced to investigate clusters using a monitoring system that had been developed to trace cases of influenza and tuberculosis.

Another key factor may have been Mr. Abe's decision to close schools in late February, well before almost any other country. The decision was hugely unpopular, but it appears to have provoked an almost instantaneous change in behavior, according to [polling](#) conducted by researchers at Hiroshima University.

The day after the announcement, the percentage of people who were avoiding crowded places nearly doubled, rising to almost 60 percent. By mid-March, it was over 75, the study found.

In April, as cases began to spike, Mr. Abe declared a state of emergency. Businesses were requested to close or reduce their hours. People were asked to make only necessary trips. There were no penalties, but many complied anyway.

Makoto Sasho, 50, decided to close his grilled eel restaurant in the Meguro neighborhood of Tokyo and focus on delivery and carryout, despite assurances from the government that businesses like his could continue table service.

"We conformed to society's expectations of us," he said, adding that "when I thought about the future, I knew we absolutely could not be responsible for a cluster."

As Japan now begins to reopen, some experts fear that people will begin to let down their guard.

In a speech on Monday night, Mr. Abe emphasized that the end of the state of emergency did not mean a return to normal life.

"What we need to aim for," he said, "is establishing a new normal."

Mr. Sasho said that his customers were clamoring for him to reopen, but that he was not sure he was ready.

"It's a new way of life," he said. "Maybe I'll just stick with delivery and takeout."

How Vietnam managed to keep its coronavirus death toll at zero

By Nectar Gan, CNN

Source: <https://edition.cnn.com/2020/05/29/asia/coronavirus-vietnam-intl-hnk/index.html>

May 30 – When the world looked to Asia for successful examples in handling the novel coronavirus outbreak, much attention and plaudits were paid to South Korea, Taiwan and Hong Kong.

But there's one overlooked success story -- Vietnam. The country of 97 million people has not reported a single coronavirus-related death and on Saturday had just [323 confirmed cases](#), despite its long border with China and the millions of Chinese visitors it receives each year.

This is all the more remarkable considering Vietnam is a low-middle income country with a much less-advanced healthcare system than others in the region. It only has [8 doctors](#) for every 10,000 people, a third of the ratio in South Korea, according to the World Bank.

After a three-week nationwide lockdown, Vietnam lifted [social distancing rules](#) in late April. It hasn't reported any local infections for [more than 40 days](#). Businesses and schools have [reopened](#), and life is gradually returning to normal.



Motorbike riders with face masks are stuck in traffic during the morning peak hour on May 19 in Hanoi.

To skeptics, Vietnam's official numbers may seem too good to be true. But Guy Thwaites, an infectious disease doctor who works in one of the main hospitals designated by the Vietnamese government to treat Covid-19 patients, said the numbers matched the reality on the ground.

"I go to the wards every day, I know the cases, I know there has

been no death," said Thwaites, who also heads the Oxford University Clinical Research Unit in Ho Chi Minh City.



"If you had unreported or uncontrolled community transmission, then we'll be seeing cases in our hospital, people coming in with chest infections perhaps not diagnosed -- that has never happened," he said.

So how has Vietnam seemingly bucked the global trend and largely escaped the scourge of the coronavirus? The answer, according to public health experts, lies in a combination of factors, from the government's swift, early response to prevent its spread, to rigorous contact-tracing and quarantining and effective public communication.

Acting early

Vietnam started preparing for a coronavirus outbreak weeks before its first case was detected.

At the time, the Chinese authorities and the World Health Organization had both maintained that there was no "clear evidence" for human-to-human transmission. But Vietnam was not taking any chances.

"We were not only waiting for guidelines from WHO. We used the data we gathered from outside and inside (the country) to decide to take action early," said Pham Quang Thai, deputy head of the Infection Control Department at the National Institute of Hygiene and Epidemiology in Hanoi.

By early January, [temperature screening](#) was already in place for passengers arriving from Wuhan at Hanoi's international airport. Travelers found with a fever were isolated and closely monitored, the country's national broadcaster [reported](#) at the time.

By mid-January, Deputy Prime Minister Vu Duc Dam was [ordering](#) government agencies to take "drastic measures" to prevent the disease from spreading into Vietnam, strengthening medical quarantine at border gates, airports and seaports.

On January 23, Vietnam confirmed its [first two coronavirus cases](#) -- a Chinese national living in Vietnam and his father, who had traveled from Wuhan to visit his son. The next day, Vietnam's aviation authorities [canceled](#) all flights to and from Wuhan.

As the country celebrated the Lunar New Year holiday, its Prime Minister Nguyen Xuan Phuc declared war on the coronavirus. "Fighting this epidemic is like fighting the enemy," he [said](#) at an urgent Communist Party meeting on January 27. Three days later, he set up a national steering committee on controlling the outbreak -- the same day the WHO [declared](#) the coronavirus a public health emergency of international concern.

On February 1, Vietnam [declared](#) a national epidemic -- with just six confirmed cases recorded across the country. All flights between Vietnam and China were halted, followed by the suspension of visas to Chinese citizens the next day.

Over the course of the month, the travel restrictions, arrival quarantines and visa suspensions [expanded](#) in scope as the coronavirus spread beyond China to countries like South Korea, Iran and Italy. Vietnam eventually [suspended](#) entry to all foreigners in late March.



[A Vietnamese People's Army officer stands next to a sign warning about the lockdown on the Son Loi commune in Vinh Phuc province on February 20.](#)

Vietnam was also quick to take proactive lockdown measures. On February 12, it [locked down](#) an entire rural community of 10,000 people north of Hanoi for 20 days over seven coronavirus cases -- the first large-scale lockdown known outside China. Schools and universities, which had been

scheduled to reopen in February after the Lunar New Year holiday, were [ordered](#) to remain closed, and only reopened in May.

Thwaites, the infectious disease expert in Ho Chi Minh City, said the speed of Vietnam's response was the main reason behind its success.

"Their actions in late January and early February were very much in advance of many other countries. And that was enormously helpful ... for them to be able to retain control," he said.

Meticulous contact-tracing

The decisive early actions effectively curbed community transmission and kept Vietnam's confirmed cases at just 16 by February 13. For three weeks, there were no new infections - until the second wave hit in March, brought by Vietnamese returning from abroad.



Authorities rigorously traced down the contacts of confirmed coronavirus patients and placed them in a mandatory two-week quarantine.

"We have a very strong system: 63 provincial CDCs (centers for disease control), more than 700 district-level CDCs, and more than 11,000 commune health centers. All of them attribute to contact tracing," said doctor Pham with the National Institute of Hygiene and Epidemiology.

A confirmed coronavirus patient has to give health authorities an exhaustive list of all the people he or she has met in the past 14 days. Announcements are placed in newspapers and aired on television to inform the public of where and when a coronavirus patient has been, calling on people to go to health authorities for testing if they have also been there at the same time, Pham said.

When the Bach Mai hospital in Hanoi, one of the biggest hospitals in Vietnam, became a coronavirus hotspot with dozens of cases in March, authorities imposed a lockdown on the facility and tracked down nearly 100,000 people related to the hospital, including medics, patients, visitors and their close contacts, according to Pham.

"Using contact-tracing, we located almost everyone, and asked them to stay home and self-quarantine, (and that) if they have any symptoms, they can visit the health centers for free testing," he said.

Authorities also [tested](#) more than 15,000 people linked to the hospitals, including 1,000 health care workers.

Vietnam's contact-tracing effort was so meticulous that it goes after not only the direct contacts of an infected person, but also indirect contacts. "That's one of the unique parts of their response. I don't think any country has done quarantine to that level," Thwaites said.

All direct contacts were placed in government quarantine in health centers, hotels or military camps. Some indirect contacts were ordered to self isolate at home, according to a [study](#) of Vietnam's Covid-19 control measures by about 20 public health experts in the country.

As of May 1, about 70,000 people had been quarantined in Vietnam's government facilities, while about 140,000 had undergone isolation at home or in hotels, the study said.

The study also found that of the country's first 270 Covid-19 patients, 43 percent were asymptomatic cases -- which it said highlighted the value of strict contact-tracing and quarantine. If authorities had not proactively sought out people with infection risks, the virus could have quietly spread in communities days before being detected.

Public communication and propaganda

From the start, the Vietnamese government has communicated clearly with the public about the outbreak.

Dedicated websites, telephone hotlines and phone apps were set up to update the public on the latest situations of the outbreak and medical advisories. The ministry of health also regularly sent out reminders to citizens via SMS messages.

Pham said on a busy day, the national hotlines alone could receive 20,000 calls, not to count the hundreds of provincial and district-level hotlines.

The country's massive propaganda apparatus was also mobilized, [raising awareness](#) of the outbreak through loudspeakers, street posters, the press and social media. In late February, the health ministry released a catchy music video based on a Vietnamese pop hit to teach people how to properly wash their hands and other hygiene measures during the outbreak. Known as the "hand-washing song," it immediately went viral, so far attracting more than [48 million](#) views on Youtube.

Thwaites said Vietnam's rich experience in dealing with infectious disease outbreaks, such as the SARS epidemic from 2002 to 2003 and the following avian influenza, had helped the government and the public to better prepare for the Covid-19 pandemic.

"The population is much more respectful of infectious diseases than many perhaps more affluent countries or countries that don't see as much infectious disease -- Europe, the UK and the US for example," he said.

"The country understands that these things need to be taken seriously and complies with guidance from the government on how to prevent the infection from spreading."

It's Not Whether You Were Exposed to the Virus. It's How Much.

By Apoorva Mandavilli

Source: <https://www.nytimes.com/2020/05/29/health/coronavirus-transmission-dose.html>



May 29 - When experts recommend wearing masks, staying at least six feet away from others, washing your hands frequently and avoiding crowded spaces, what they're really saying is: Try to minimize the amount of virus you encounter.

A few viral particles cannot make you sick — the immune system would vanquish the intruders before they could. **But how much virus is needed for an infection to take root? What is the minimum effective dose?**



A precise answer is impossible, because it's difficult to capture the moment of infection. Scientists are studying ferrets, hamsters and mice for clues but, of course, it wouldn't be ethical for scientists to expose people to different doses of the coronavirus, as they do with milder cold viruses.

"The truth is, we really just don't know," said Angela Rasmussen, a virologist at Columbia University in New York. "I don't think we can make anything better than an educated guess."

Common respiratory viruses, like influenza and other coronaviruses, should offer some insight. But researchers have found little consistency.

For SARS, also a coronavirus, the estimated infective dose is just a few hundred particles. For MERS, the infective dose is much higher, on the order of thousands of particles.

The new coronavirus, SARS-CoV-2, is more similar to the SARS virus and, therefore, the infectious dose may be hundreds of particles, Dr. Rasmussen said.

But the virus has a habit of defying predictions.

Generally, people who harbor high levels of pathogens — whether from [influenza](#), [H.I.V.](#) or [SARS](#) — tend to have more severe symptoms and are more likely to pass on the pathogens to others.

But in the case of the new coronavirus, people who have no symptoms seem to have viral loads — that is, the amount of virus in their bodies — just as high as those who are seriously ill, according to some studies.

And coronavirus patients are most infectious [two to three days before symptoms begin](#), less so after the illness really hits.

Some people are generous transmitters of the coronavirus; others are stingy. So-called super-spreaders seem to be particularly gifted in transmitting it, although it's unclear whether that's because of their biology or their behavior.

On the receiving end, the shape of a person's nostrils and the amount of nose hair and mucus present — as well as the distribution of certain cellular receptors in the airway that the virus needs to latch on to — can all influence how much virus it takes to become infected.

A higher dose is clearly worse, though, and that may explain why some young health care workers have fallen victim even though the virus usually targets older people.

The crucial dose may also vary depending on whether it's ingested or inhaled.

People may take in virus by touching a contaminated surface and then putting their hands on their nose or mouth. But "this isn't thought to be the main way the virus spreads," according to the Centers for Disease Control and Prevention.

That form of transmission may require [millions more copies of the virus](#) to cause an infection, compared to inhalation.

Coughing, sneezing, [singing](#), [talking](#) and even heavy breathing can result in the expulsion of thousands of large and small respiratory droplets carrying the virus.

"It's clear that one doesn't have to be sick and coughing and sneezing for transmission to occur," said Dr. Dan Barouch, a viral immunologist at Beth Israel Deaconess Medical Center in Boston.

Larger droplets are heavy and float down quickly — unless there's a breeze or an air-conditioning blast — and can't penetrate surgical masks. But droplets less than 5 microns in diameter, called aerosols, can linger in the air for hours.

"They travel further, last longer and have the potential of more spread than the large droplets," Dr. Barouch said.

Three factors seem to be particularly important for aerosol transmission: proximity to the infected person, air flow and timing.

A windowless public bathroom with high foot traffic is riskier than a bathroom with a window, or a bathroom that's rarely used. A short outdoor conversation with a masked neighbor is much safer than either of those scenarios.

Recently, Dutch researchers used a special spray nozzle to simulate the expulsion of saliva droplets and then tracked their movement. The scientists found that just cracking open a door or a window [can banish aerosols](#).

"Even the smallest breeze will do something," said Daniel Bonn, a physicist at the University of Amsterdam who led the study.

Observations from two hospitals in Wuhan, China, published in April in the journal *Nature*, determined much the same thing: more aerosolized particles were found [in unventilated toilet areas](#) than in airier patient rooms or crowded public areas.

This makes intuitive sense, experts said. But they noted that aerosols, because they are smaller than 5 microns, would also contain much less, perhaps millions-fold less, virus than droplets of 500 microns.

"It really takes a lot of these single-digit size droplets to change the risk for you," said Dr. Joshua Rabinowitz, a quantitative biologist at Princeton University.

Apart from avoiding crowded indoor spaces, the most effective thing people can do is wear masks, all of the experts said. Even if masks don't fully shield you from droplets loaded with virus, they can cut down the amount you receive, and perhaps bring it below the infectious dose.



“This is not a virus for which hand washing seems like it will be enough,” Dr. Rabinowitz said. “We have to limit crowds; we have to wear masks.”

Apoorva Mandavilli is a reporter for The Times, focusing on science and global health. She is the 2019 winner of the Victor Cohn Prize for Excellence in Medical Science Reporting. She is the founding editor in chief of Spectrum, an award-winning news site on autism science that grew an audience of millions. She led the team there for 13 years. She joined The Times in May 2020, after two years as a regular contributor. Apoorva has won numerous awards for her writing. Her work has been published in The Atlantic, Slate and The New Yorker online, and in the anthology "Best American Science and Nature Writing."

The coronavirus pandemic reawakens bioweapon fears

By Bryan Walsh (author of Future)

Source: <https://www.axios.com/coronavirus-pandemic-pathogen-bioweapon-45417c86-52aa-41b1-8a99-44a6e597d3a8.html>



May 14 – The immense human and economic toll of the COVID-19 pandemic only underscores the threat posed by pathogens that could be deliberately engineered and released.

Why it matters: New technology like gene editing and DNA synthesis has made the creation of more virulent pathogens easier. Yet security and regulation efforts haven't kept pace with the science.

What's happening: Despite [some claims](#) by the White House, overwhelming scientific evidence indicates that the novel coronavirus was not accidentally released from a lab or deliberately engineered, but [naturally spilled over from an animal source](#).

- That doesn't mean the threat from bioweapons isn't dire. Along with AI, engineered pandemics are widely considered the [biggest existential risk](#) facing humanity.
- That's in part because a pathogen could be engineered in a lab for maximum contagiousness and virulence, well beyond what would arise through natural selection.
- Case in point: a 2018 [pandemic simulation](#) put on by the Johns Hopkins Center for Health Security featured a fictional engineered virus called Clade X that combined the contagiousness of the common cold with the virulence of the real-life Nipah virus, which has a [mortality rate of 40-75%](#). The resulting simulated global outbreak killed 150 million people.

COVID-19 isn't anywhere near that fatal, but the pandemic has shown the vulnerability of the U.S. and the world to biological threats both natural and manmade.

- "Potential adversaries are of course seeing the same things we're seeing," says Richard Pilch of the Middlebury Institute of International Studies. "Anyone looking for a radical leveling approach — whether a state actor like North Korea or a motivated terrorist organization — may be influenced by COVID-19 to consider pursuing a biological weapons capability."

Background: Bioweapons were officially banned by the Biological Weapons Convention in 1975, though North Korea [is suspected](#) of maintaining an offensive bioweapons program.

- A particular concern about biowarfare and bioterror, though, is that many of the tools and methods that could be used to create a weaponized virus are largely indistinguishable from those used in the course of legitimate scientific research. This makes biotechnology "dual-use" — and that much more difficult to safely regulate without cutting off research that could be vitally important.
- While earlier bioweapons fears focused on the possibility that a state or terror group could try to weaponize a known dangerous agent like smallpox — which would require somehow obtaining restricted pathogens — new technology means that someone could obtain the genetic sequence of a germ online and synthesize it in the lab.
- "If you've been trained in a relevant technical discipline, that means you can make almost any potentially harmful agent that you're aware of," says Kevin Esvelt, a biologist at the MIT Media Lab and a member of the CDC's Biological Agent Containment Working Group. That would include the novel coronavirus that causes COVID-19, which was recently synthesized from its genetic sequence in a study published in [Nature](#).

How it works: Currently, synthetic DNA is ordered through commercial suppliers. But while most suppliers screen DNA orders for the sequences of dangerous pathogens, they're not required to — and not all do, which means safety efforts are "incomplete, inaccurate, and insecure," says Esvelt.



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- Screening efforts that look for the genetic sequences of known pathogens also wouldn't necessarily be able to detect when synthetic DNA was being used to make something entirely novel and dangerous.
- In the near future, desktop DNA synthesizers may be able to generate synthetic DNA in the lab, cutting out the need for commercial suppliers — and potential security screenings.
- The democratization of biotechnology could unleash a wave of creativity and innovation, just as the democratization of personal computing did. But it also increases the number of people who could potentially make a dangerous engineered virus, whether deliberately or by accident.

What's next: Experts agree on the need for a stronger international regime aimed at controlling bioweapons and regulating dual-use biotechnology research. But given the [growing animosity](#) between the U.S. and China over the origins of the novel coronavirus, that may be an impossible ask.

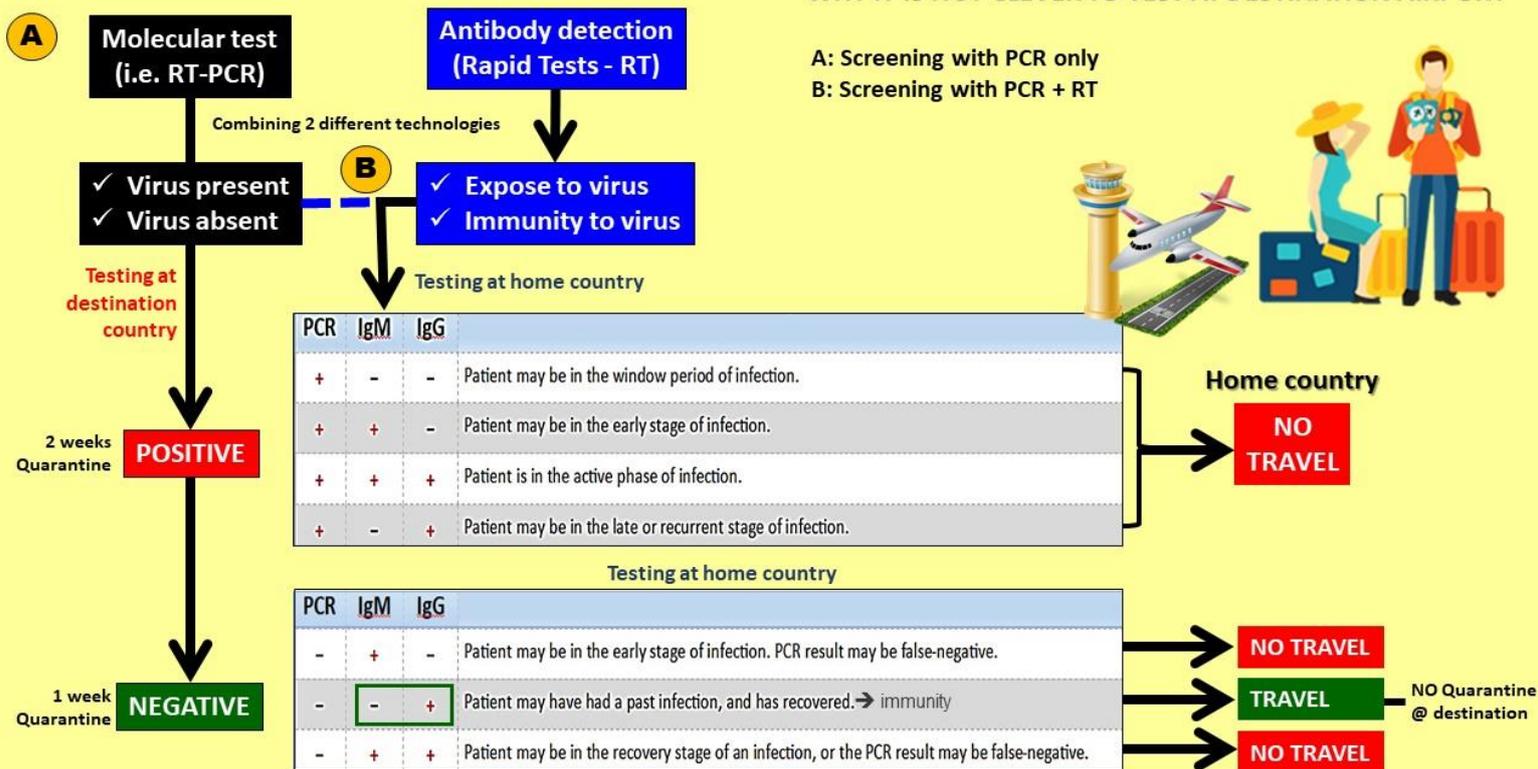
- Scientists in the biotechnology world working on dual-use research — and the organizations that fund them — need to "know as much as possible about the risks beforehand," says Beth Cameron of the Nuclear Threat Initiative.
- Esvelt has proposed the creation of a [secure screening process](#) that would use advanced cryptography to make it far more difficult for rogue actors to obtain synthetic DNA that could be used for potentially dangerous purposes.

"COVID-19 has been a catastrophe for the world but there is a potential for even greater catastrophe. And we are not prepared for this."

Covid-19 screen testing at incoming tourists in the post lockdown era

By the Editor-in-chief

C²BRNE Diary



PCR screening (only) is what Greek experts proposed to the gov for the incoming tourists to Greece. I have a different approach based on common logic. You plan with what is available; not with what you would like to have – i.e. the perfect 100% accurate, fast, cheap testing method. The proposal does not exclude import of foreign viruses but it is much better than using only molecular testing – PCR is the best [but compared with what?]

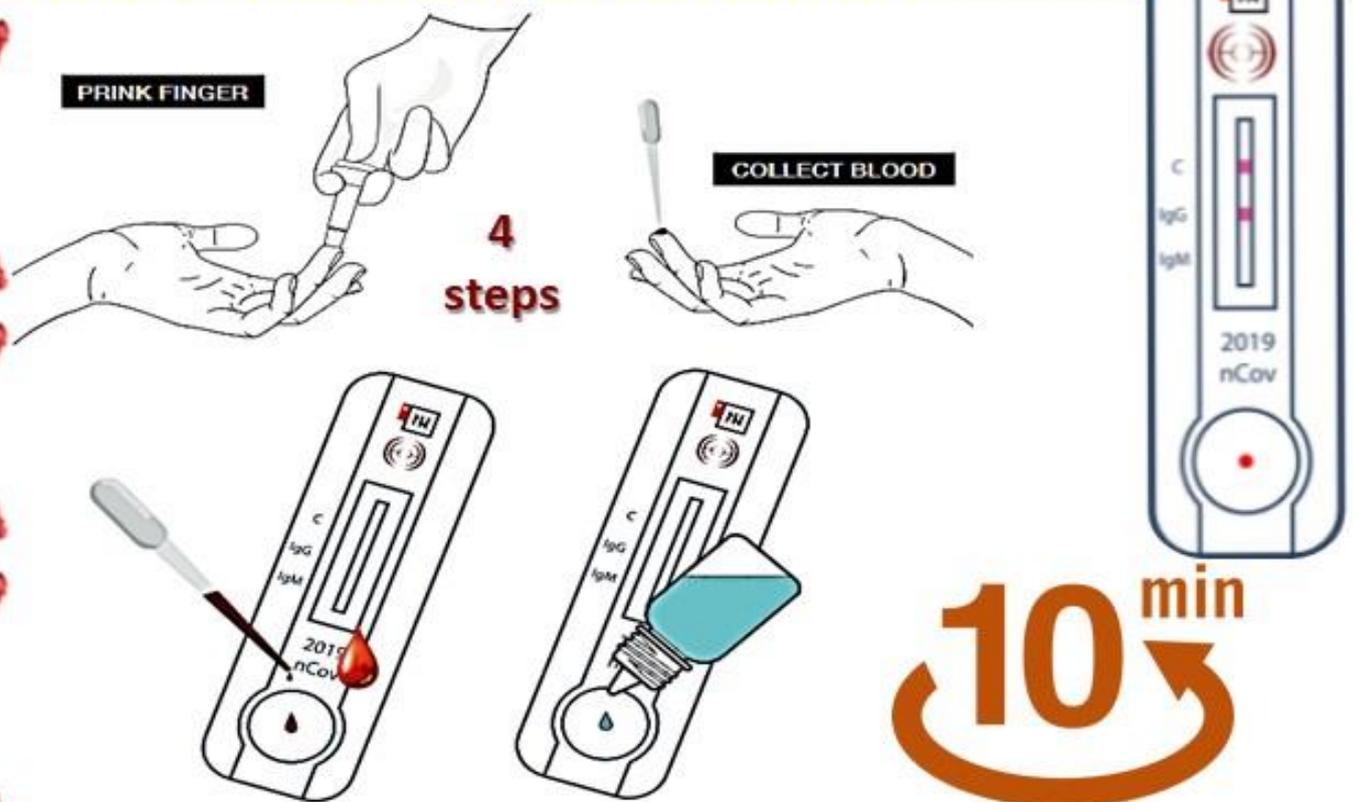


NEW IgM/IgG COVID-19 TEST KIT

Now available via Hotzone Solutions Group

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High accuracy (sensitivity: IgG 99.9%; IgM 85% ■ specificity: IgG 98%; IgM 96% (compared to PCR performed with BAL/ nasopharyngeal/oral samples).



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Development of a Portable, Ultra-Rapid and Ultra-Sensitive Cell-Based Biosensor for the Direct Detection of the SARS-CoV-2 S1 Spike Protein Antigen

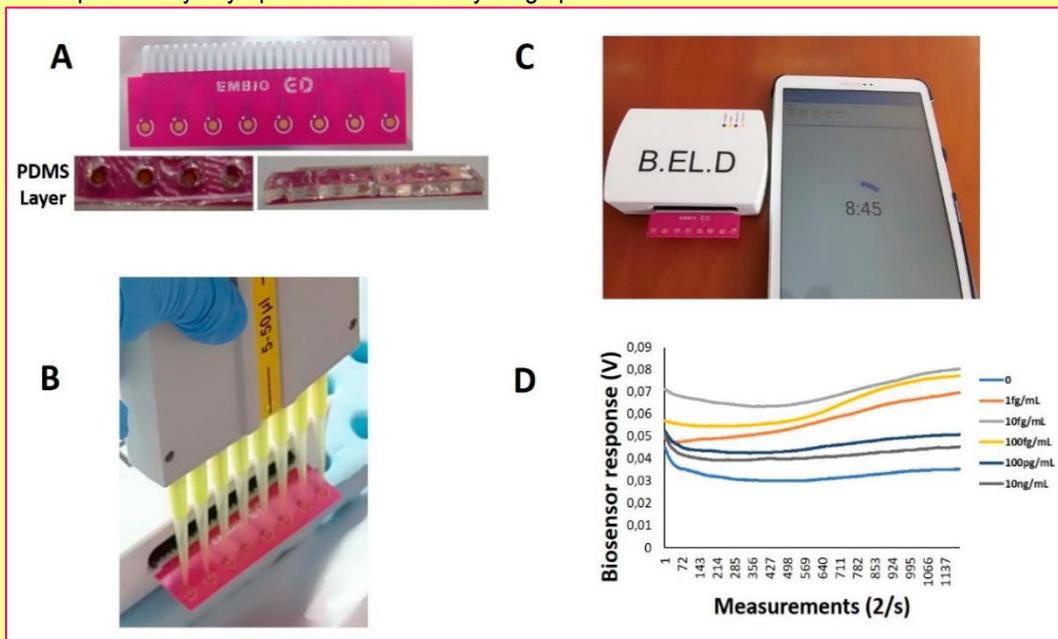
By Sophie Mavrikou, Georgia Moschopoulou, Vasileios Tsekouras and Spyridon Kintzios

Biosensors, Vol 20; issue 11 (2020)

Laboratory of Cell Technology, Department of Biotechnology, Agricultural University of Athens, EU-CONEXUS European University, 11855 Athens, Greece

Source: <https://www.mdpi.com/1424-8220/20/11/3121/htm>

One of the key challenges of the recent COVID-19 pandemic is the ability to accurately estimate the number of infected individuals, particularly asymptomatic and/or early-stage patients.



Experimental set-up of the Vero/anti-S1 cell-based biosensor's assembly. An eight-channel gold screen-printed electrode assembly was prepared with the PDMS layer attached for the well formation (A). The potentiometer device is connected to a tablet device for the recording of the measurements immediately after the sample application (B,C). The electric signal is visualized through a voltage vs. time graph (D).

We herewith report the proof-of-concept development of a biosensor able to detect the SARS-CoV-2 S1 spike protein expressed on the surface of the virus. The biosensor is based on membrane-engineered mammalian cells bearing the human

chimeric spike S1 antibody. We demonstrate that the attachment of the protein to the membrane-bound antibodies resulted in a selective and considerable change in the cellular bioelectric properties measured by means of a Bioelectric Recognition Assay. The novel biosensor provided results in an ultra-rapid manner (3 min), with a detection limit of 1 fg/mL and a semi-linear range of response between 10 fg and 1 µg/mL. In addition, no cross-reactivity was observed against the SARS-CoV-2 nucleocapsid protein. Furthermore, the biosensor was configured as a ready-to-use platform, including a portable read-out device operated via smartphone/tablet. In this way, we demonstrate that the novel biosensor can be potentially applied for the mass screening of SARS-CoV-2 surface antigens without prior sample processing, therefore offering a possible solution for the timely monitoring and eventual control of the global coronavirus pandemic.

There's Been a Dangerous Rise in People Selling Stem Cell 'Treatments' For Coronavirus

By Carly Cassella

Source: <https://www.sciencealert.com/scam-stem-cell-therapies-for-covid-19-are-all-over-don-t-buy-into-the-nonsense>

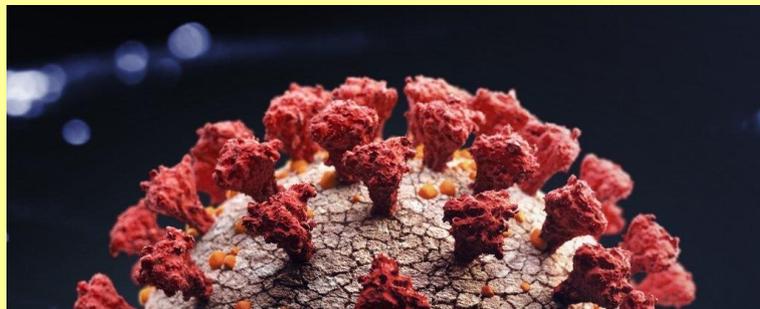
May 31 – As the world grows desperate for a [COVID-19](#) cure, some companies are trying to profit off our fear and eagerness to resume normal life.

Unsubstantiated and unlicensed stem cell treatments for [coronavirus](#) are popping up all over the place, and it's caused numerous scientific organisations around the world to sound the alarm. The [International Society for Stem Cell Research](#) and the [International Society for Cell](#)



[Gene Therapy](#) have recently warned that such marketing is "irresponsible" given that there are currently no approved stem cell-based approaches for the prevention and treatment of COVID-19 anywhere in the world.

Following suit, several other regional organisations in [Canada](#), [the United States](#), [Australia](#), and [Europe](#) have issued their own alerts and condemnations.



recognised clinical investigation."

The misinformation that's out there might not only put individuals who believe it at risk, but could also make others around them vulnerable.

In a new [paper](#) exploring these issues, bioethicist Leigh Turner from the University of Minnesota lays out the problem in full, taking the time to explain why these stem-cell-based 'therapies' are so dangerous for public health.

"I'm concerned that individuals purchasing these supposed 'therapies' for COVID-19 will be scammed," [says](#) Turner, whose paper is still currently in [corrected proof](#) status but [available to read online](#).

"I'm also worried that they'll be injured as a result of being given products that haven't been adequately tested, or that they'll forgo measures like social distancing because they've paid for a product that they think will protect them from being infected or getting sick."

What people deserve during this [pandemic](#), Turner argues, are evidence-based therapies, preventive measures, and supportive care for COVID-19, rather than unproven products sold as treatments or even outright 'cures'.

Yet by making it look like these stem cell treatments have already been confirmed by credible clinical studies, many of these businesses are misleading the public in a dangerous way.

Turner uses the example of one business in Colorado, which is advertising US\$3,000 mesenchymal stem cell [exosomes](#) "for patients that need to boost their immune system" or who want "additional defence against the [virus](#)".

"Our goal," the business claims, "is to give our patients peace of mind knowing that they've done everything possible to protect themselves and their family."

Other companies in Arizona, Florida, Alabama, and California have made similar claims. Some advertise stem cell or exosome therapy as a precautionary measure, while others say it can repair damage from COVID-19.

There are even those offering biobanking, where you can store your stem cells for the future, should you ever need them.

"Having a frozen line of one's own personal mesenchymal stem cells could prove life-saving should someone become a victim of the current viral pandemic," a clinic in Alabama [claimed](#).

But holding onto your stem cells might not help you with COVID-19. Right now, that's a far flung hope, and one which costs a lot of money.

"Only by conducting such trials will it be possible to determine whether there is substantial evidence that supports approving one or more stem cell products as treatments for COVID-19," [argues](#) Turner.

The few preliminary clinical studies that have been done with stem cells and exosomes don't support commercialising these interventions, let alone justify their use in the current pandemic.

Stem cells are an interesting treatment avenue for coronavirus, no doubt, but they have not yet proved effective under well-designed and rigorously conducted clinical trials.

Although stem cell treatments might yet turn out to show positive effects for recovery in coronavirus patients, others suggest any ["miracle treatment"](#) is more likely to take the form of a vaccine.

While Turner admits he is happy to see scientific organisations standing up against the surge of unsubstantiated coronavirus treatments, he is calling on the FDA and other regulatory bodies to crack down on these unproven and unlicensed stem cell and exosome products marketed for COVID-19.

"Such companies make misleading claims, expose patients to potentially risky products, promote false hope and might lead some individuals to place less emphasis on physical distancing and sheltering in place measures, and administer unproven stem cell



interventions that likely will result in the subsequent exclusion of recipients from well-designed and competently conducted clinical studies," Turner [concludes](#).

▶▶ The findings are reported in [Cell Press](#).

Scientists Find a Way to Infect Mice with Coronavirus. Here's Why That's So Important

Source: <https://www.sciencealert.com/scientists-have-found-a-way-to-infect-mice-with-the-coronavirus-here-s-why-that-s-super-important>

June 01 – With [COVID-19](#) cases continuing to rise around the world, scientists are doing everything they can to discover more about the [virus](#) that causes it - [SARS-CoV-2](#) - as well as [investigate potential vaccines](#) to help us stop the spread.

SARS-CoV-2 has been incredibly effective at infecting and replicating in humans, but it doesn't spread so well in mice. This is good for mice, but not so good for scientists.

One of the important ways scientists develop and test new therapies is through experiments with mice. But when scientists try to infect a healthy, normal mouse with SARS-CoV-2, the animal doesn't contract the disease.

This means that scientists can't use mice as a stand in for humans to test potential vaccines, or investigate the virus in more invasive ways.

"A small animal model that reproduces the clinical course and pathology observed in COVID-19 patients is highly needed," [says one of the researchers You-Chun Wang](#) of the National Institutes for Food and Drug Control (NIFDC) in China.

But there's good news. In a new study, a team of Chinese researchers used [CRISPR/Cas9](#) to create mice with a human receptor on their cells called [angiotensin-converting enzyme 2 \(hACE2\)](#).

(Sun et al., Cell Host & Microbe, 2020)

This is the receptor that SARS-CoV-2 uses [to piggyback a ride into human cells](#) - and it means that the virus can now infect mouse cells.

Once they had mice with the right receptor, the mice were infected through the nose with SARS-CoV-2, and the researchers saw replication of the viral RNA in their lungs, trachea, and brain.

"The presence of viral RNAs in brain was somewhat unexpected, as only a few COVID-19 patients have developed neurological symptoms," [says one of the researchers, Cheng-Feng Qin](#) of the Academy of Military Medical Sciences (AMMS) in Beijing.

The team also found that they could infect the mice through the stomach, mimicking the [gastrointestinal issues](#) sometimes seen in human infections - although the dose had to be 10 times as high as those entering the nose to cause an infection.

"Although fatalities were not observed, interstitial [pneumonia](#) and elevated cytokines were seen in SARS-CoV-2 infected- aged hACE2 mice," [the team write](#).

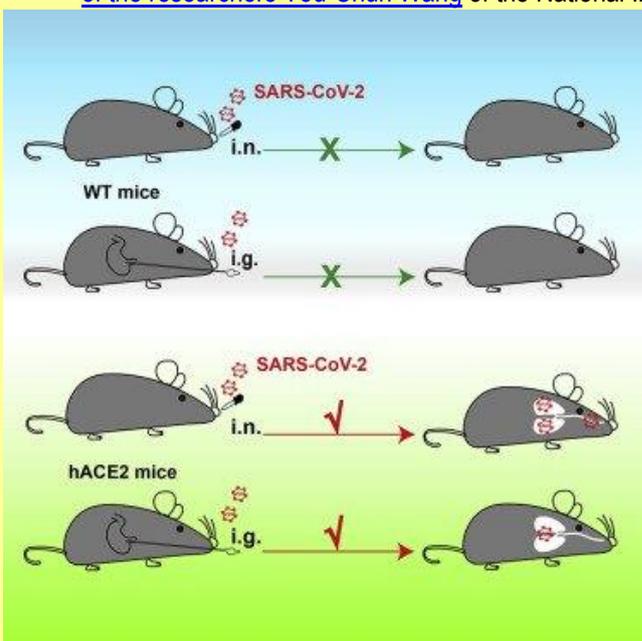
This [isn't the first time researchers](#) have used hACE2 to try and create a COVID-19 mouse, but the team says their model has several benefits.

Firstly, the new model removes the mouse version hACE2, by replacing the mouse receptor gene with the human version in the exact specific location on the X chromosome.

"Secondly, the tissue distribution of hACE2 in our mouse model matches the clinical findings from COVID-19 patients, and high level hACE2 expression were detected in lung," [the team write](#).

The team hopes that other researchers will use this same method and that it will eventually provide them with a way to investigate COVID-19 inside an animal model.

"The hACE2 mice described in our manuscript provide a small animal model for understanding unexpected clinical manifestations of SARS-CoV-2 infection in humans," [says researcher Chang-Fa Fan of NIFDC](#).



"This model will also be valuable for testing vaccines and therapeutics to combat SARS-CoV-2."

►► The research has been published in [Cell Host & Microbe](#)

Iran's coronavirus response: A lesson in what not to do

By Vahid Yücesoy

Source: <https://thebulletin.org/2020/05/irans-coronavirus-response-a-lesson-in-what-not-to-do/>

May 29 – From its very outset, Iran's response to the coronavirus pandemic has been shrouded in secrecy, cover-ups, and arrests redolent of authoritarian reactions to large-scale crises. In late February, as the news of COVID-19's spread became impossible to hide, the authorities resorted to belated containment measures in a bid to quell the mounting public anger. By mid-April, just as some of these measures were beginning to have an effect, Iran's government—battered by sanctions, economic mismanagement, and a precipitous fall in oil prices—was forced to try to gradually reopen its economy, making it one of the first countries to do so. The results have been less than favorable. The crisis has widened the chasm between the state and society, with little economic gains to show for it.

Background to the outbreak

The relations between the regime and the people were quite tense even before the outbreak of the coronavirus as a result of several recent major shocks to the establishment's legitimacy.

First, in November 2019, Iran was rocked by the [deadliest anti-regime protests since the 1979 revolution](#) in which an estimated [1,500 protesters](#) lost their lives. As the protests spread all over the country, officials shut down the internet for six consecutive days. The heavy-handed response was heavily criticized, both domestically and internationally.

The regime suffered another blow to its legitimacy in January 2020, when the Revolutionary Guards, a paramilitary group tasked with protecting Iran's political system, shot down a Ukrainian Airlines passenger plane killing all of the passengers and crew on board. After denying any involvement for three days, authorities were eventually compelled to admit culpability. Angry protests erupted.

By the time the coronavirus outbreak occurred, there was already pent-up public anger against the establishment. From the very beginning, disinformation and cover-ups became the modus operandi of the officials. As early as [January 22](#), a hospital in Qom had received patients showing symptoms of coronavirus, and a few of them died. Yet, on January 24, Iran's Health Ministry [announced that](#) it had not found even one suspected coronavirus case in the entire country. The government would continue to deny the existence of cases for almost another month.

To make matters worse, at a time when flights to China by many other countries were halted, Iran's Mahan Airlines persisted, even sending flights [directly to Wuhan](#). In late January, Reza Jafarzadeh, a spokesman for Iran's Civil Aviation Organization, [noted that flights to China were still underway](#), further heightening fears among many Iranians. Later, a [BBC documentary](#) revealed that Mahan Air ran hundreds of flights to and from Iran, Iraq, Lebanon, Syria, and the United Arab Emirates between late January and the end of March, spreading the virus not only throughout Iran, but also across the entire Middle East. Sources who worked for the airline revealed that the cabin crew, despite showing symptoms of COVID-19, were prevented from talking about their conditions.

By February, the cases of coronavirus became extremely difficult to conceal. Iran's interior minister, Abdolreza Rahmani Fazli, had to [admit](#) that there was a likelihood that coronavirus had reached Iran. But the health ministry still had not confirmed a single case. What accelerated the spread of the virus were two key events in February: celebrations for the 41st anniversary of the revolution and parliamentary elections. To boost participation in both of these events (which still registered [poor turnout](#)), the authorities hid COVID-19's spread. They also [refused](#) to quarantine the epicenter, Qom. Iran only admitted having coronavirus cases on February 19, after at least [two people](#) had died from it.

It was quite striking when, on February 24, Iraj Harirchi, the deputy health minister, gave a press conference and denied covering up the extent of the pandemic. As he spoke, he coughed repeatedly and kept wiping sweat from his forehead. The following day, he, too, tested positive. By early March, [8 percent](#) of Iranian parliamentarians had tested positive.

Iranian authorities also gave contradictory reactions throughout the crisis. From utterly denying that the virus had reached Iran, the authorities shifted their narrative to blaming the Americans both for [causing the pandemic](#) itself and for Iran's lack of access to protective equipment.

Yet despite concerns about a shortage of such equipment, Iran still [donated](#) one million masks to China in early February. In a speech in late March, Iran's supreme leader [said](#) that



the Americans had offered medical help, but that he had refused, while also accusing the Americans of having deliberately created the virus.

Reopening with unreliable data

Another significant issue is the reporting of the number of cases in Iran. In one instance, an Iranian official even [admitted](#) on television in late April that he had received directives from the health ministry as well as from the National Security Council not to report on the number of coronavirus cases. According to a [report](#) by Iran's own parliament, the death toll in the country could be at least twice what has been reported, and the number of cases could be at least 10 times higher. Around the same time, a spokesman for Iran's armed forces, Brig. Gen. Abolfazl Shekarchi, said [3,600 Iranians](#) had been arrested for "spreading rumors on coronavirus," including about official tallies.

Under acute economic pressure, the Rouhani government started relaxing the containment measures on April 11. Since then, the country has been hit by a resurgence of cases in various provinces of the country. Mosques in [132 towns](#) were reopened for worship, even as the deputy health minister [warned](#) that this did not mean that "the situation is back to normal." Recently, the southwestern part of Iran [has been hit hard by the resurgence](#), prompting the authorities to impose new containment measures.

The real statistics on coronavirus in Iran will probably never be available. Yet, what is abundantly clear is that the regime's mishandling of another crisis has further dented its legitimacy. The father of Iran's reform movement and Iran's former president, Mohammad Khatami, [recently admitted](#) in a recorded speech that there was widespread discontent amongst Iranians and that violent protests would be inevitable. A similar view was voiced by Faezeh Hashemi, a long-time reformist voice and the daughter of the deceased former president Akbar Hashemi Rafsanjani, [in an interview](#): "The regime has lost all popular support, and yet it is incapable of change. The result is that the Iranian people have lost hope. We are hopeless now."

Lessons for the world

As Iran has reopened its economy, the country has been hit by a second wave of infections that continue unabated to date. Although authorities deceptively gave the impression that Iran's curve had been flattened in early April before the economy reopened, a member of Iran's coronavirus taskforce later [said](#), "the coronavirus curve has not flattened anywhere in the country," once again casting doubts on the numbers.

One important lesson to take for countries that are reopening their economies is the importance of aggressive testing and contact tracing. Iran's economy reopened without satisfying the norms [recommended by healthcare experts](#), and the country still does not have widespread testing and contact tracing in place.

A second lesson is the importance of transparency and accurate record-keeping on coronavirus cases and deaths. Unfortunately, Iran is a perfect example of an authoritarian government attempting to look competent and effective by [keeping the numbers low](#) and restarting the economy as quickly as possible. Yet, this approach is unlikely to be successful and runs the risk of rendering a second wave more deadly than the first.

Vahid Yücesoy is a PhD candidate in political science and international relations at Université de Montréal, Canada. He's a specialist of Iranian and Turkish politics and political economy. His analyses have been published in various news outlets including Radio-Canada, La Presse, Le Devoir, Al-Jazeera English, World Politics Review, The Conversation, L'Orient le Jour, Al-Monitor, and Radio-Zamaneh. He speaks French, English, Turkish, Persian, and intermediary Kurdish.

Water and Bioterrorism: Preparing for the Potential Threat to U.S. Water Supplies and Public Health

By Patricia L Meinhardt

Center for Occupational and Environmental Medicine, Arnot Ogden Medical Center, Elmira, New York 14905, USA

Annu Rev Public Health. 2005; 26:213-37.

Source: <https://pubmed.ncbi.nlm.nih.gov/15760287/>

Water supplies and water distribution systems represent potential targets for terrorist activity in the United States because of the critical need for water in every sector of our industrialized society. Even short-term disruption of water service can significantly impact a community, and intentional contamination of a municipal water system as part of a terrorist attack could



lead to serious medical, public health, and economic consequences. Most practicing physicians and public health professionals in the United States have received limited training in the recognition and evaluation of waterborne disease from either natural or intentional contamination of water. Therefore, they are poorly prepared to detect water-related disease resulting from intentional contamination and may not be adequately trained to respond appropriately to a terrorist assault on water. The purpose of this review is to address this critical information gap and present relevant epidemiologic and clinical information for public health and medical practitioners who may be faced with addressing the recognition, management, and prevention of water terrorism in their communities.

These Scenarios Show What a Second Wave of COVID-19 Could Look Like

By Adam Kleczkowski

Source: <https://www.sciencealert.com/here-s-what-a-second-wave-of-covid-19-could-look-like>

June 02 – As the new [coronavirus](#) was rapidly spreading in February and March 2020, many governments introduced [stringent lockdown measures](#). Through a massive public effort, these countries have been [successful](#) at [slowing the pandemic](#). Combining various public health approaches, countries such as [Slovenia](#) and [New Zealand](#) have eradicated the [virus](#) within their borders. Other countries, including the UK, achieved significant progress in arresting the spread of the disease.

Yet the lockdown has led to [substantial economic and social loss](#) in countries where stringent social distancing measures have been applied. Governments, as well as the public, are now keen to start removing the restrictions and return to normal life.

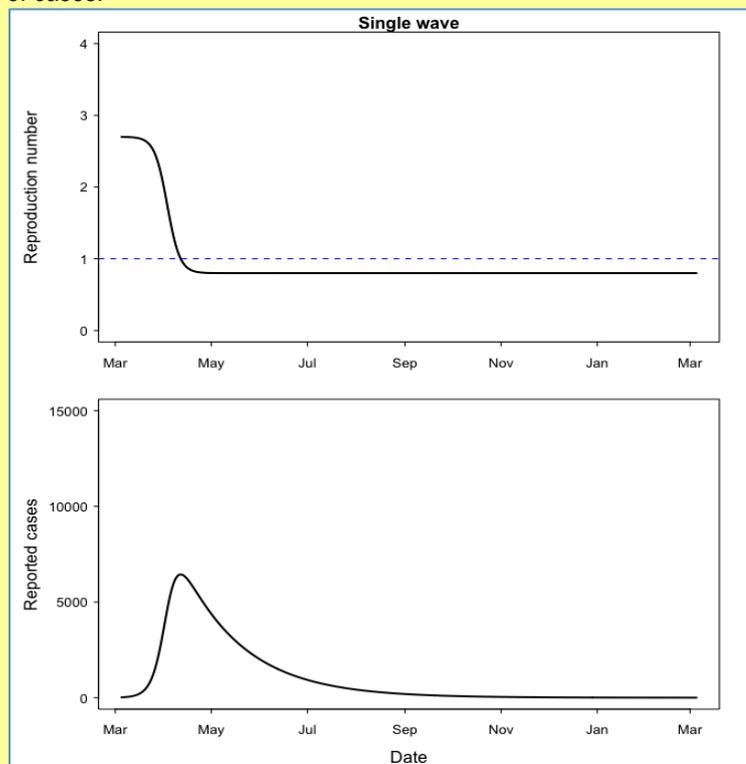
With the relaxation of the lockdown rules, warnings are being sounded about a [possible resurgence of COVID-19 cases](#) – a so-called second wave.

The second wave of the Spanish flu [pandemic](#) in 1918-20 was particularly devastating, as was the second wave of the [H1N1 epidemic in 2009-10](#). So what can be done to avoid a second wave of [COVID-19](#)?

For the virus to spread, it needs a supply of susceptible and infected hosts and a successful transmission. These factors are conveniently captured by the [reproduction number, R](#), the average number of new cases caused by one infected individual.

A value of R above one means the number of cases is increasing, whereas below one they are declining. Before the lockdown, the [value of R](#) for the coronavirus was estimated to be between two and four.

Countries such as China, South Korea, New Zealand, [the UK](#) and most European countries, have now reduced this value to below one. In other countries, such as Sweden or Russia, the value of R remains near or above one, reflecting the increase in the number of cases.



The [relationship between the population behaviour](#) and the value of R is [complicated](#), but we can still use this concept to illustrate how the second wave might appear.

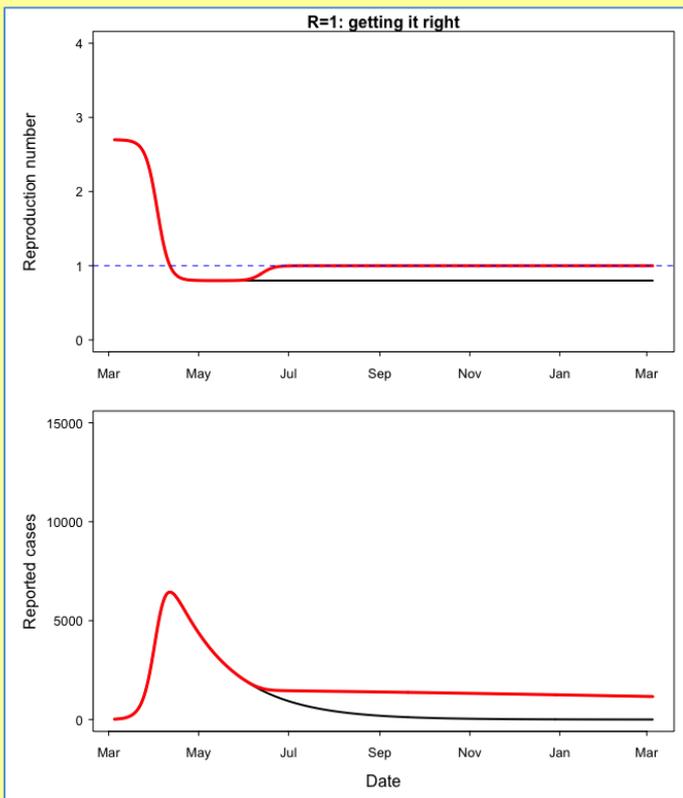
Above: Single wave [epidemic](#). The top graph shows the time dependence of the model reproduction number. The bottom graph shows the predicted number of cases. The initial value of R is 2.7 and drops to 0.8 with the lockdown.

As long as there are susceptible and infected people in the population, the virus can spread. Evidence is accumulating that the first wave of the epidemic resulted in only [limited immunity](#), well below [herd immunity levels](#).

There are also pockets of a population in which the virus not only survives but continues to spread. The transmission in care homes now accounts for a [large percentage of cases](#) in many countries.

As the lockdown measures are relaxed, people are starting to interact more. This might result in increased values of R. But it is critical that the value of R is



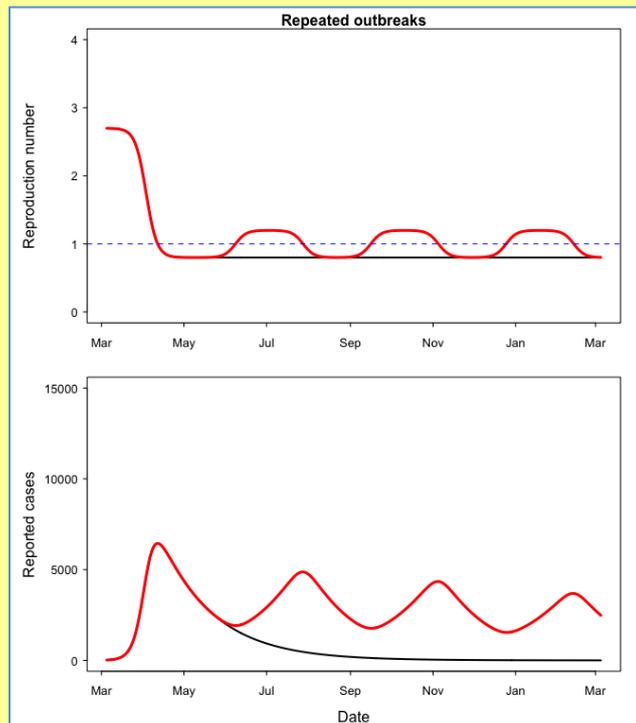
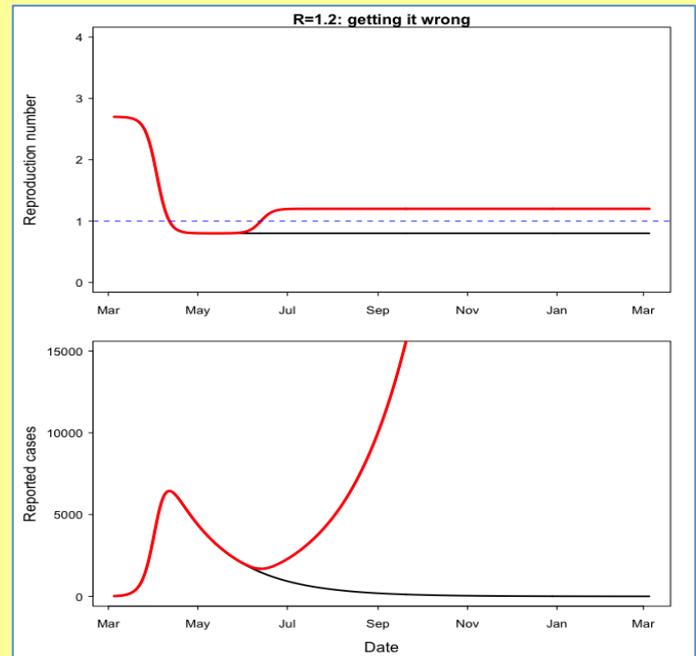


Above: Second wave. The initial value of R (top graph) is 2.7 and drops to 0.8 with the lockdown, but goes back to 1.2 as lockdown measures are relaxed.

kept below or equal to one, as shown in the diagram below.

Above: Single wave epidemic with rebound due to lockdown relaxation. The initial value of R (top graph) is 2.7 and drops to 0.8 with the lockdown, but goes back to 1 as lockdown measures are relaxed.

But even a relatively modest change of R to 1.2 would result in a large outbreak causing [the second wave](#), demonstrating how important it is to get the control measures right.



Response to the second wave requires recurrent lockdown measures, as shown below. But while society has so far obeyed the restrictions remarkably well, [lockdown fatigue](#) might make it more difficult to impose such strict policies again.

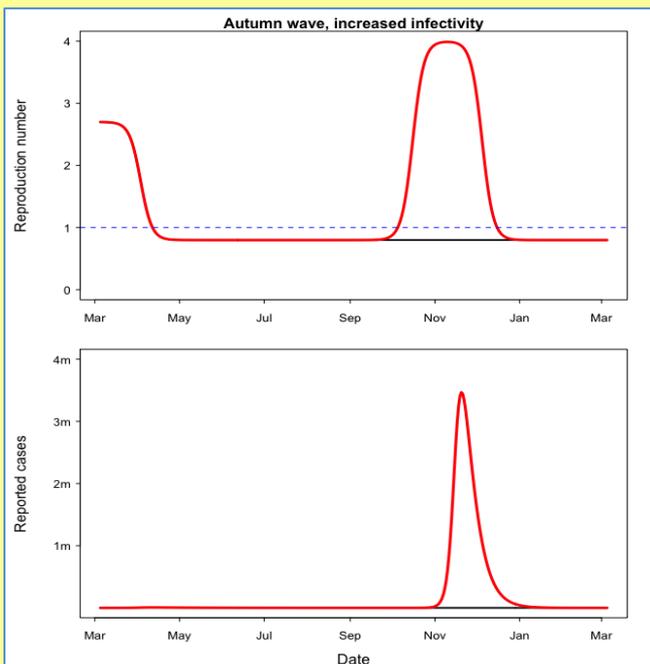
Above: A scenario involving multiple outbreaks and lockdown periods. The value of R (top graph) is periodically increased to 1.2 as lockdown is relaxed and then falls back to 0.8 as it is imposed again.

The epidemic could continue into autumn and winter when [seasonal flu might be prevalent](#). While it appears that the [SARS-CoV-2](#) virus is [not strongly affected by weather](#), the healthcare system might become overwhelmed if COVID-19 and the flu strike at the same time.

On the plus side, [preventive measures](#) aimed at SARS-CoV-2 virus (such as masks and handwashing) might [reduce the spread of the flu virus](#).

Finally, the virus could [mutate](#) resulting in a more infectious strain. Such a mutation might have caused the [second middle wave](#) of Spanish flu to be [particularly severe](#).





If something similar happened for SARS-CoV-2 virus, the resulting epidemic would dwarf the current outbreak even if the new R value was only four, [compared with](#) 10-12 for [mumps](#) or 12-18 for [measles](#). Mumps and measles are only kept from spreading widely by vaccination.

Above: Large autumn wave. The value of R (top graph) is increased to 4 for a short period in November. Note the changed number of cases compared to other graphs.

In the near future, governments will need to [delicately balance](#) the needs of the economy and social life with suppressing the spread of the virus. [Test, trace and contain](#) and [local responses](#) are key elements of the strategy. [Epidemiological models and concepts like R](#) can help in establishing where, how, when and for how long, the government needs to intervene to prevent the second wave.

Adam Kleczkowski is Professor of Mathematics and Statistics, University of Strathclyde.

The Right Level of Humidity May Be Important Weapon in Fighting Coronavirus, New Studies Show

Source: <https://www.newsweek.com/right-level-humidity-may-important-weapon-fighting-coronavirus-new-studies-show-1507947>

June 02 – A potentially important weapon against COVID-19 has emerged from two unrelated and seemingly unremarkable observations.

The first came several years ago when Walter Hugentobler, a Swiss physician who sometimes practices at a clinic in Zurich International Airport, noticed several years ago that pilots and flight attendants seemed unusually susceptible to the flu throughout the year, even though they were generally healthy.

More recently, Hazer Rahmandad, an engineer at the Massachusetts Institute of Technology's Sloan School of Management, noticed that COVID-19 tended to spread in his native Iran at different rates from one region to the next, even when population densities were similar.

Both scientists followed up with studies that have converged on an important insight into COVID-19: the spread of the disease is likely to vary significantly with temperature and humidity.

This characteristic of the virus offers hope that we can mitigate the spread of the novel coronavirus with simple measures such as installing humidifiers in the home. In the dry winter months, cold air gets pulled into the home and heated, which lowers the relative humidity—in other words, the heated air is capable of holding more moisture than it actually contains. Such dry air impairs the lungs' ability to clear out invading viruses and the immune system's ability to keep the virus from replicating. "We spend 90 percent of our lives indoors, where the air is very dry in the winter," says Akiko Iwasaki, a Yale immunobiologist who led one of the studies, with Hugentobler as a co-author. "That's exactly when the virus best survives and transmits."

The research suggests that a relative humidity of 40 percent to 60 percent could help the body fight off the virus.

The finding has a downside, however. It supports the theory that the summer's heat and humidity will suppress SARS-CoV-2, leading to a drop in new cases and deaths. The respite would certainly come as a relief, but experts warn that it could lead to a dangerous complacency that sets the conditions for a destructive rebound of the pandemic, similar to what happened in the 1918 influenza outbreak.

The flu-prone plight of pilots and flight attendants' casts new light on the long-known tendency of flus and some other respiratory infections to peak in the winter. The conventional wisdom held that colder temperatures support viruses and suppress our immune systems. But Hugentobler suspected that the ultra-low relative humidity in airplane cabins might be the bigger culprit. (Homes are similarly dry in the winter.) He found a series of studies from

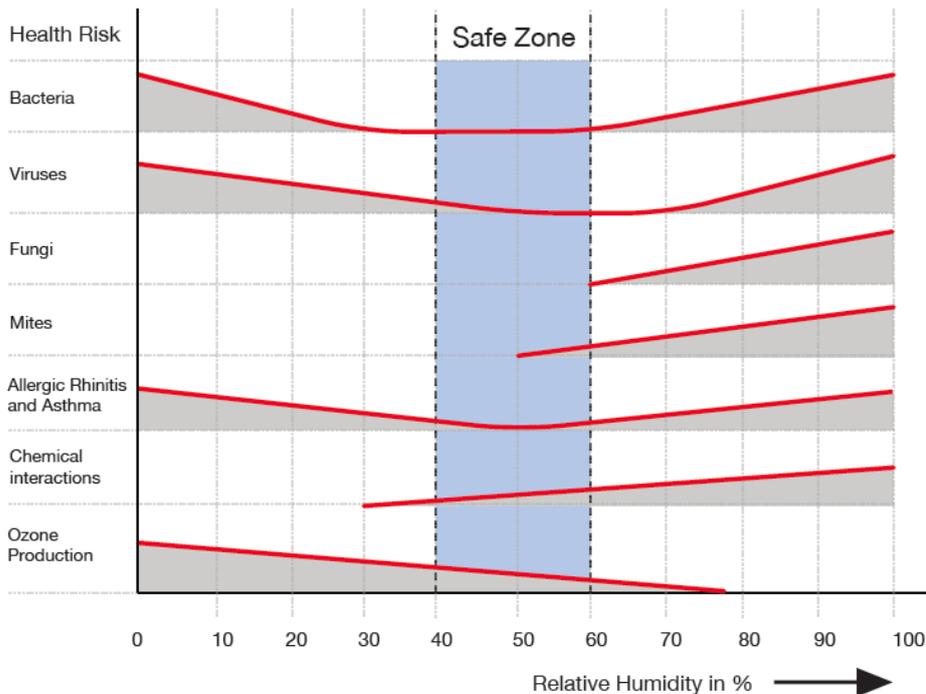


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decades earlier that linked indoor humidifiers to reduced absenteeism in schools, workplaces and the military during the winter months. "But no one had paid attention to the studies," he says.

Late last year, a colleague pointed Hugentobler across the Atlantic to Yale's Iwasaki, who earlier in the year had published a

Health Risk in relation to Relative Humidity



groundbreaking study showing that the immune system of mice was compromised in lower humidities, leaving them less able to fight off respiratory illnesses. Hugentobler and a third researcher helped Iwasaki pull together an exhaustive review of all relevant research. They found strong and consistent evidence that the dry, warm air found indoors in winter in much of the world helps keep viruses intact, while at the same time stressing out the immune system and the protective hair-like "cilia" that line the lungs. "During the night, the dry air keeps the cilia from clearing out all the pollutants and viruses you've inhaled," says Iwasaki.

When the pandemic hit, the three researchers reworked their study to take into account the available data on the impact of low humidity on the novel coronavirus behind COVID-19, which supported their conclusions. They published a preliminary version of the paper online in late March, to mostly positive reviews from other scientists—though Iwasaki notes that social-media comments

have included what she says is the standard dose of sexist trolling that accompanies most prominent work released by female scientists.

"Some people seem to feel threatened by it," she says. "You see criticisms that you don't see with similar work from male scientists." (For instance, critics sometimes say Iwasaki isn't qualified to comment on COVID-19 because she's not a physician, even though most medical advances emerge from Ph.D. labs. A tweet [in which she complained about the abuse](#) received over 11,000 likes, mostly from scientists and clinicians.)

Around the time Iwasaki's study was posted, MIT's Rahmandad was pondering the variation in COVID-19 infection rates throughout Iran's provinces. He noticed that the warmer, more humid parts of the country seemed less affected by the disease—as was much of warm-and-humid India and the rest of South Asia, even though the high population density and traffic with China should have made those areas ideal for fast spread of infections. "It all suggested that something related to the weather was important," says Rahmandad.

Having previously done research on modeling the spread of epidemics, Rahmandad in April joined up with scientists from Harvard, the University of Connecticut and Virginia Tech in order to figure out the impact of weather on COVID-19. Job one was to try to correct for the various significant errors and inconsistencies in infection-rate data that had been pouring in from different countries. "The official data from most countries grossly undercounted infections, and the numbers were anywhere from eight to fifteen days behind the disease," says Rahmandad. "So we had to do a lot of adjustment to get the true figures for each day so we could match them to the weather at the time."

Also, on the team was Harvard's Mohammad Jalali, a data scientist who focuses on public-health questions. Part of his role in the project was finding ways to adjust the results to account for non-weather-related differences between different countries and regions. "We had to control for population density, social and cultural norms, and variations in government policy," explains Jalali.

After nearly two months of complex data organization, calculations and testing, the group released its preliminary findings in mid-May. Based on data from more than **3,700 locations around the world from** December through April, the team found that infection rates start to



fall off with temperatures over 77 degrees, with very high levels of bright sunlight and with rising humidity. "Combined, these factors mean that weather can affect transmission rates by between 15 to 40 percent, depending on the location," says Rahmandad.

The implications for summer in the U.S. are significant. Compared to the transmission rates of the disease from early in the pandemic during the winter, most of the U.S. will see a roughly 30-percent drop in transmission rates at the peak of summer heat, sunlight and humidity, predicts Rahmandad. (See the scientists' [updated predictions for different locations](#).)

If you think that's good news, Rahmandad has a warning. Halting the pandemic entirely that would require a 70-percent drop in transmission rates. If people and governments get complacent as the warm, humid weather moves in, a deadly rebound could occur. "The summer weather by itself won't be nearly enough to quench the pandemic," he says. "Loosening our response strategies because we think the summer weather will change the picture would be a really terrible decision."

The research, though, should better equip scientists and public-health officials to advise the public to stay the course when it comes to social distancing and masks, even as the heat and humidity climb and new cases drop.

When it comes time to face a winter resurgence of the pandemic, the potential benefits of humidifiers, as shown in Iwasaki and Hugentobler's work, could prove important. In addition, says Iwasaki, longer-term protection against the winter spike in respiratory illnesses—including future pandemics—could come from changing building codes to force designs that better maintain humidity in the colder months. "That's especially important in hospitals and nursing homes," she says. She adds that she's been trying to push the World Health Organization to immediately back a high-priority drive for better indoor humidification, but hasn't had a response yet.

That's too bad. After a summer slowdown of the pandemic's brutal progress, we'll need every weapon we can muster heading into what threatens to be a disastrous fall and winter.

Can Nitric Oxide Prevent COVID-19 Infection or Progression?

By Laura A. Stokowski, RN, MS

Source: <https://www.medscape.com/viewarticle/931126?>

May 26 – The severity of COVID-19 respiratory failure in some patients has taken the medical community by surprise. And in response, that community has been trying just about anything that seems reasonable in an effort to improve outcomes — and in some cases as [last-resort measures to save lives](#).

One of these is inhaled nitric oxide (NO). Medscape spoke with anesthesiologist Lorenzo Berra, MD, medical director of respiratory care at Massachusetts General Hospital and the Reginald Jenney Associate Professor of [Anesthesia](#) at Harvard Medical School, about his research, which aims to clarify the role of NO gas in the prevention and treatment of COVID-19. The interview has been edited for length and clarity.

What is NO? How is it used in the treatment of pulmonary disorders?

Inhaled NO gas is a selective pulmonary vasodilator (eg, it does not dilate the systemic circulation). It has primarily been used to increase systemic oxygenation by reducing the pulmonary vascular resistance in ventilated lung regions, thereby improving ventilation-perfusion (V/Q) matching. Nitric oxide is FDA-approved for use in premature and term neonates with persistent [pulmonary hypertension](#), but it has also been used off-label for decades in the adult ICU and operating room to treat patients with pulmonary arterial [hypertension](#), [acute respiratory distress syndrome](#), hypoxia, and right ventricular failure after cardiac surgery or [lung transplantation](#).

I understand that [hundreds of hospitals are currently using NO](#) as a rescue strategy for COVID-19. What evidence do we have to suggest that NO has therapeutic benefit in severe COVID-19?

Traditionally, NO has been used as a rescue therapy for patients who are extremely hypoxic and to prevent the need for extracorporeal membrane oxygenation or other aggressive treatment. But we have not had a recent large multicenter trial of NO since low tidal volumes have been widely used to optimize lung ventilation in patients with ARDS. NO has been studied in small groups of ARDS patients — but not in a large randomized trial.

Everyone agrees that many patients with severe COVID-19 present with acute respiratory failure and hypoxemia. Ongoing studies are trying to better describe the phenotypes of respiratory failure in this disease. ARDS is a syndrome — with heterogeneous causes. Some patients develop the typical parenchymal disease, with V/Q mismatching and increased unperfused dead space.



COVID-19 produces an inflammatory process, with diffuse thrombosis in the pulmonary vascular bed. This inflammatory process is extremely important. A high degree of vascular involvement is often found on autopsy — much more than we expected.

Is NO expected to work in patients with different lung dynamics — low compliance and high compliance?

This is something we hope to learn from our research. From a strictly physiological point of view, NO should benefit both types of patients. For patients with evidence of low compliance, NO improves systemic oxygenation by improving V/Q mismatch. In high compliance, NO can also produce a significant improvement by reducing pulmonary artery pressure.

How do you assess the patient's response to inhaled NO? Is it dose-dependent, and how long is it used?

NO has multiple effects in the pulmonary vasculature. Improved systemic oxygenation is usually seen within minutes, and it doesn't require a high dose of NO. Some physicians start at 10-40 ppm. When we used it before COVID-19 in patients with acute respiratory failure, we would typically commence adding NO gas at 20 ppm or 40 ppm and wait for 1 hour. We seek at least a 20% improvement in oxygenation. That tells us whether the patient is a responder or a nonresponder to inhaled NO.

Patients can remain on this NO gas for weeks. Breathing high doses of NO inhibits the endogenous production of NO by NO synthase. Thus, it's important that patients are slowly tapered off inhaled NO. If it is weaned off too quickly, there's a risk for rebound pulmonary hypertension.

So, improved oxygenation is the acute response to NO among patients with COVID. But you are using NO differently, for the prevention of severe disease. What's the basis for that?

In this disease, regardless of the oxygenation response, NO has the [potential to be virucidal](#) against the coronavirus responsible for COVID-19 disease. So, we are not giving NO just for the improvement of oxygenation, which we usually observe, but also for this antiviral effect.

In addition to selective pulmonary vasodilation, NO has three other effects of interest in COVID19 therapy. The first is anti-inflammatory — NO has been shown to induce an anti-inflammatory response as well as a secondary antithrombotic effect, reducing the aggregation of [platelets](#) in lung vessels.

NO is also a bronchodilator. In our studies in the late 1990s, it was shown that adults with [mild asthma had improved FEV1](#) results after inhaling NO.

But the most appealing potential effect of NO for COVID-19 that now needs confirmation is its antiviral action. Back in 2003–2004 during the SARS outbreak in China, a group of clinicians used [NO in patients with SARS ARDS](#). Physicians reported that the chest X-rays of patients who had been given inhaled NO cleared much faster. Oxygenation improved, and the effect was lasting. In their report, the authors said they had never seen anything like that before with NO. Usually, there is an acute response of improved oxygenation, but not a rapid clearing of the chest x-ray. We began to question whether NO actually might have virucidal effects in COVID19.

Other groups tested the effects of [NO donor drugs](#) in patients infected with coronavirus species and found that the virus cleared faster and there was survival of eukaryotic cells. A similar effect has been shown in [children with viral bronchiolitis](#), in whom a high dose (160 ppm) of NO gas led to clearing of the infection. A typical dose for children and adults in the ICU is from 5 ppm to 20 ppm. The maximum dose recommended by the FDA is 80 ppm — so we are talking about double or even higher doses of NO.

High dose NO is safe. For example, we have used a dose of 200 ppm successfully in a compassionate use protocol for a patient with [cystic fibrosis](#) who had multidrug-resistant [bacterial pneumonia](#). The patient tolerated the use of high dose of NO well. Of note, the acute infection cleared, and we saw a change in the pattern of bacterial resistance.

Putting all this evidence together, we don't have direct proof that NO will have antiviral effects in CoV-2, but because this coronavirus is 80% similar to CoV-1, we decided to test the hypothesis of whether a high dose of NO is virucidal.

If you are using NO primarily for its antiviral effects, do you start it at an earlier stage of illness than would be used as part of a rescue strategy for severe COVID-19?

Correct. The earlier we start inhaled NO treatment the better the result. We suspect that the optimum antiviral doses of NO are much higher than what we have conventionally used to improve V/Q matching or produce pulmonary vasodilation. That's the basis for much of our ongoing research.

How does your research test the antiviral potential of inhaled NO in COVID-19?

Together with my teacher and mentor, [Dr Warren Zapol](#), and my colleagues, [Dr Fumito Ichinose](#), [Dr Robert Kacmarek](#), [Dr N. Stuart Harris](#), and [Dr Ryan Carroll](#), we have four



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ongoing NO trials aimed at preventing COVID-19 symptoms or severity of disease in several patient groups, with more than 200 patients in each trial.

Severe COVID-19 study. The first is a classical multicenter randomized ICU trial in severely ill patients who are intubated for hypoxic respiratory failure and receiving [mechanical ventilation](#). NO is started within 72 hours of admission and delivered continuously for 48 hours. We are looking for improvements in oxygenation, time spent on the ventilator, length of ICU stays, and length of hospital stay.



Patient (30-year old with COVID-19 symptoms) receiving NO inhalation treatment via the "magic flute" device. From L to R: Dr Lorenzo Berra, a patient, and Dr Bijan Safaee Fakhr.

Mild COVID-19 study. Because we believe the sooner you begin to administer NO, the better, the second randomized trial involves patients with COVID-19 who are hospitalized with pneumonia but are not intubated or receiving mechanical ventilation. The patient wears a tight-fitting mask that we developed and our own NO delivery device (called the "magic flute") and the treatment group receives high dose NO

inhalation therapy twice a day for 30 minutes until discharge or progression to intubation and ICU admission.

ED study. Dr N. Stuart Harris is the lead investigator of the third trial, which is a placebo-controlled, double-blind ED study. Just as early antibiotics can be lifesaving in sepsis, we believe this ED cohort (symptomatic, but without advanced pulmonary disease or injury) is most likely to respond well to this therapy. Patients with symptoms most likely related to COVID-19 are randomized, and the treatment group receives a 30-minute treatment of inhaled NO at doses up to 250 ppm. The patients are then discharged. Outcome measures include comparisons over the subsequent 28 days of need for return to the ED, hospitalization, intubation, and death.

Healthcare worker COVID-19 prevention study. The fourth trial uses NO to prevent symptoms in healthcare employees caring for COVID-19 patients. To date, more than 500 Massachusetts General Hospital employees have developed COVID-19. Volunteers randomized to the treatment group are given 10 minutes of NO inhalation at the beginning of each work shift and 10 minutes again at the end of their shift, breathing a dose of 160 ppm in air. Volunteers are not tested for the virus; the idea is to avoid symptoms and viral positivity at 28 days.

These are investigator-initiated trials, with the NO gas being provided by the manufacturer for the ICU and in-hospital trials. We are enrolling patients at a good pace.

We also have an in vitro study, in partnership with Dr Ron Corley of the National Emerging Infectious Diseases Laboratories, exploring the antiviral effects of NO donor compounds on the SARS-CoV-2 virus. Based on earlier work on SARS-CoV in 2003–2005, we are treating SARS-CoV-2 virus grown in cell culture with NO donors to determine the antiviral effect, as well as elucidate the mechanisms thereof.

Does NO have any systemic effects or potential adverse effects that must be monitored?

When NO gas mixes with oxygen as it is delivered to the patient, it forms nitrogen dioxide, which is toxic to lung tissue at over 2 ppm. Thus, we are monitoring nitrogen dioxide levels in all study patients.

NO gas is quickly metabolized by hemoglobin when it comes into contact with the lungs. It's immediately converted to nitrate and nitrite, which are eventually cleared by the kidneys. Inhaled NO has no systemic hemodynamic effects about which we are aware.



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There is a caveat in patients with a low ejection fraction, especially those with acute left [heart failure](#) and pulmonary edema. In these patients with high wedge pressures we avoid the use of NO.

Patients with methemoglobin reductase insufficiency can develop methemoglobinemia in the presence of NO, which needs to be treated immediately. It's a very rare condition. We have treated thousands of patients with NO at MGH and I've never seen it. However, we monitor methemoglobin levels in all patients.

The other safety concern is renal injury. No randomized trials have demonstrated that NO causes renal injury, although there was one [meta-analysis](#) that concluded that NO in patients with ARDS and [septic shock](#) is associated with an [increase in acute kidney injury](#). Many of these patients received NO as a last resort, and they were very sick when the gas was used. We don't know whether the kidney injury is simply a confounding factor. We decided to include assessment of renal injury incidence and need for renal replacement therapy as a safety outcome.

Are you using NO for COVID-19 patients outside of the trial? And if a patient is in the control group and doesn't receive NO or if patients progress in spite of NO for 48 hours, are they eligible for NO administration outside of the trial?

These are pragmatic trials. Thus, the ICU team is allowed to deliver NO gas (or any other clinically approved therapy) or use NO on a compassionate care basis in the control group.

Dr Lorenzo Berra is a staff anesthesiologist and intensivist at Massachusetts General Hospital and a member of Dr Warren Zapol's MGH Anesthesia Center for Critical Care Research. His current patient care activities are focused on caring for critically ill patients and their families. His primary research and academic interests involve translational research to improve diagnosis, treatment, and care of critically ill patients with cardiopulmonary failure or severe infections.

Laura A. Stokowski, RN, MS, is the editor of Medscape Internal Medicine/Family Medicine, and has an intense interest in all things critical care.

Nursing Homes Site of 40% of U.S. COVID-19 Deaths

Source: <http://www.homelandsecuritynewswire.com/dr20200602-nursing-homes-site-of-40-of-u-s-covid19-deaths>

June 02 – A [new analysis](#) in *USA Today* suggests up to 40% of US deaths from COVID-19 have taken place in nursing homes or long-term care facilities, a staggering statistic that represents 40,600 residents. More than 2.4 million Americans live in long-term care facilities. Stephanie Soucheray writes in [CIDRAP](#) that this means roughly 450 residents of these facilities have died each day from COVID-19 since March. But the newspaper said this is likely an undercount, as state reporting is inconsistent. Texas, Virginia, and Arizona, for example, have still not released facility-level data.

Long after the illness is gone, the damage from coronavirus may remain

By Peter Fimrite

Source: <https://www.sfchronicle.com/health/article/Long-after-the-illness-is-gone-the-damage-from-15305842.php>

May 31 - The roulette wheel of infection that determines which COVID-19 patients live and die has gripped the world in fear, but researchers are looking into another insidious danger — that the disease could be inflicting lasting, even permanent, damage on its victims.

Infectious disease specialists have learned that the health problems caused by the coronavirus sometimes linger for months, raising fears that the virus may have long-term consequences for people's health.

"There's no doubt there has been anecdotal evidence of symptoms lingering for a while, but we don't know if it's 1%, 5%, 20% or 50%" of the cases, said Jeffrey Martin, a clinical epidemiologist and professor of epidemiology and biostatistics at UCSF. "We need to find out how common that is. It's important that we separate the rare anecdotes from the true frequency."

Cases of chronic fatigue, heart problems, lung damage, blood clotting and neurological symptoms like dizziness and confusion have been documented in numerous patients long after the initial symptoms of COVID-19 have gone away.

The discovery of chronic symptoms could have a significant impact on human behavior as divisions erupt around the country over the speed with which businesses, parks, movie



theaters and other gathering spots reopen. Boozy beach parties and concerts may not have the same lure for the young and healthy if the bacchanalia includes the prospect of prolonged disease and long-term disability.

It is what happened to Cliff Morrison, 68, of Oakland, who is still suffering from mood swings, headaches, blurry vision, aching joints and other strange symptoms nobody warned him about nearly two months after he first fell ill with COVID-19.

“I still have shortness of breath and some of the cough and no energy or strength,” said Morrison, a nurse and health care administrator, who contracted the disease through his work. “My vision has improved but it’s still a little blurry. No one told me that it would go on as long as it has.”

Morrison, who worked as an AIDS coordinator in the 1980s, is one of 50 patients infected by COVID-19 who are enrolled in a study that Dr. Martin and a team of researchers at UCSF and San Francisco General Hospital are conducting. The investigation, called the Long-term Impact of Infection with Novel Coronavirus, or Liinc, is to determine what symptoms linger and how long the health problems last.

The study subjects, all of whom have been fever-free and tested negative for at least three weeks, were chosen because they had a wide spectrum of symptoms, from mild to severe.

Morrison, who lives alone, said he was very sick, unable to get out of bed except to go to the bathroom for three weeks. Besides being short of breath and feverish, his symptoms included vision problems, confusion and memory problems — he said there is a 10-day stretch when he can barely remember anything.

He suffered from unusually intense mood swings, ranging from deep depression to extreme anger. At one point he developed a rash over the lower half of his body that turned into sores, like the chicken pox, lasting two weeks.

Breathing issues, fatigue, lung damage, heart problems, blood clots, dizziness, confusion, memory loss, coughing, fever, headaches, loss of sense of smell, mood swings, blurry vision and aching joints.

In a small percentage of children who had a coronavirus infection, a condition called pediatric multisystem inflammatory syndrome surfaces weeks after exposure to the virus, causing rashes, fevers and heart inflammation — and, in a few cases, death.

Martin said the plan is to interview, take blood and saliva samples, and chart lingering health problems in study subjects for up to two years. It is important, he said, because the disease has not been around long enough to determine whether the lingering symptoms represent an abnormally long recovery process or a long-term problem.

It appears from the early evidence that Morrison’s case is not unusual. Many recovering coronavirus patients have reported residual problems months after the initial infection, far longer than the experts thought was possible. The World Health Organization says patients with mild cases of COVID-19 should expect a two-week recovery process while severe infections could last up to six weeks before they clear up.

The evidence of more chronic problems is preliminary, but it is mounting.

Studies in China have found that most COVID-19 patients — well over 70% — showed lesions or patches of irritation in the lungs known as “ground glass opacities” that could develop into permanent scars, or pulmonary fibrosis.

The SARS-CoV-2 virus that causes the illness is known to target ACE2 receptors, a protein on the surface of human cells that the spiky virus attaches to. Many of the receptors are in the heart muscle. Various studies indicate cardiovascular damage is common, with one study finding it in 12% of patients studied and another showing heart damage in 19% of the patients.

High rates of blood clots have been reported in China and France. Studies in the two countries found that between 5% and 30% of the hospitalized patients suffered strokes, blockages of arteries or pulmonary embolisms, which are obstructions in the lungs.

Tony-nominated Canadian actor Nick Cordero had his right leg amputated after numerous COVID-related blood clots. The Broadway actor has now been in the hospital for about two months, much of that time on a ventilator.

Others have suffered strokes and heart attacks after being declared disease free and discharged from hospitals. The clots, which are likely caused by immune system responses to the infection, can also cause long-term problems, including heart palpitations and severe shortness of breath.

The virus also appears to attack the central nervous system, causing delirium and hallucinations in about a third of the patients in intensive care units. Morrison never had to go to the hospital, but he nevertheless suffered cognitive issues, which have mostly cleared up.

But many of the long-term problems may be a direct result of the severity of the infection. For instance, most critical patients end up suffering from acute respiratory distress syndrome, or ARDS, which is characterized by fluid in the lungs. Previous studies have shown that as many as 20% of ARDS survivors experience long-term cognitive impairment, including concentration and memory lapses, epidemiologists say.

Timothy Henrich, an associate professor of medicine and Martin’s colleague at UCSF, said lingering problems can be expected in severe cases involving organ dysfunction, clotting



and ARDS, but some people with mild cases of COVID-19 have also reported post-infection problems.

“It’s not clear whether this is only in the severe cases,” said Henrich, an infectious disease clinician, virologist and immunologist. “This may be happening in a more sub-acute fashion as well, but it needs to be studied.”

Recovering COVID-19 victims, including some of Martin and Henrich’s colleagues, have reported feeling foggy and having trouble focusing on work. Others say their coughs, fevers and breathing issues have cycled on and off for a month after the initial symptoms. People have reported coughing up blood, losing their sense of smell, migraine-like headaches and short-term memory loss long after being cleared by doctors to go back to their normal routines.

Matt Willis, Marin County’s public health officer, said he is still tired, weak, short of breath and has lingering circulation problems two months after his initial diagnosis.

“I feel like my lungs have been traumatized by this,” said Willis, who is not part of the UCSF study. “I’m still close enough to the illness that I’m attributing some of these symptoms to post-viral inflammation.”

But Henrich said some of these problems continue even after PCR, or polymerase chain reaction, tests no longer detect the virus, indicating an overzealous reaction by the human immune system.

“We are seeing immune activation even after the PCR tests are negative, suggesting that the body has cleared the initial virus, but the immune response is ongoing for quite some time,” he said. “What we are interested in learning is: How long does this inflammation last, is there an ongoing immune activation?”

Infectious disease specialists believe that many of the more severe symptoms, including ARDS, are being caused by overly robust immune responses to the infection.

The human immune response may also be responsible for an inflammatory reaction similar to Kawasaki disease that has recently been affecting children exposed to the coronavirus, according to a Centers for Disease Control and Prevention warning. Experts say the ailment, known as pediatric multisystem inflammatory syndrome, can cause rashes, fevers and heart inflammation more than a month after exposure to the virus.

Doctors at UCSF’s Benioff Children’s Hospital have recently seen dozens of children with reddish-purple lesions on the feet and hands known as acral pernio. The rashes all appeared weeks or months after exposure to adult relatives with flu-like symptoms, leading researchers to believe it is an after-the-fact inflammatory reaction to COVID-19.

Martin said the study at San Francisco General Hospital will test patients for antibodies and try to figure out what is going on with their immune responses. Researchers will also try to determine whether the 30 patients in the study have developed immunity and how long that immunity prevents them from being reinfected.

Morrison said the lingering fatigue, shortness of breath and blurred vision are concerns, but he is happy the phenomenon is being studied.

“We’re only four months into this pandemic,” he said, “and there is still so much that we don’t know.”

Peter Fimrite is a San Francisco Chronicle staff writer.

Growing evidence that **minority ethnic groups in England may be at higher risk of COVID-19**

BMC Medicine volume 18, Article number: 160 (2020)

Source: <https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-020-01640-8>

Evidence available to date suggests that minority ethnic groups in England, **particularly black and south Asian people**, may be at increased risk of testing positive for Covid-19, compared to people from white British backgrounds, according to a study published in the open access journal *BMC Medicine*.

Previous pandemics have often disproportionately impacted ethnic minorities and socioeconomically disadvantaged populations. While early evidence suggests that the same may be occurring in the current SARS-CoV-2 pandemic, research into the subject remains limited.

A team of researchers at the University of Glasgow and Public Health Scotland, UK analysed data on 392,116 participants in the UK Biobank study, a large long-term study investigating the contribution of genes and the environment to the development of disease. UK Biobank data, which include information on social and demographic factors, such as ethnicity and socioeconomic position, health and behavioural risk factors, were linked to results of COVID-19 tests conducted in England between 16th March 2020 and 3rd May 2020. Out of the total number of participants whose



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data were analysed, 348,735 were White British, 7,323 were South Asian and 6,395 were from black ethnic backgrounds. 2,658 participants had been tested for SARS-CoV-2 and 948 had at least one positive test. Out of those, 726 received a positive test in a hospital setting, suggesting more severe illness.

The authors found that, compared to people from white British backgrounds, the risks of testing positive were largest in black and South Asian minority groups who were 3.4 and 2.4 times more likely to test positive, respectively, with people of Pakistani ethnicity at highest risk in the south Asian group (3.2 times more likely to test positive). Ethnic minorities also were more likely to receive their diagnosis in a hospital setting, which suggests more severe illness. **The observed ethnic differences in infection risk did not appear to be fully explained by differences in pre-existing health, behavioural risk factors, country of birth, or socioeconomic differences.** The authors also found that living in a disadvantaged area was associated with a higher risk of testing positive, particularly for the most disadvantaged (2.2 times more likely to test positive compared to the least disadvantaged), as was having the lowest level of education (2.0 times more likely to test positive compared to the highest level of education).

The findings suggest that some ethnic minority groups, especially black and South Asian people may be particularly vulnerable to the adverse consequences of COVID-19. An immediate policy response is needed to ensure that the health system is responsive to the needs of ethnic minority groups, according to the authors. This should include ensuring that health and care workers, who often are from minority ethnic populations, have access to the necessary protective personal equipment. Timely communication of guidelines to reduce the risk of being exposed to the virus in a range of languages should also be considered.

The authors caution that test result data was only available for England. Those who were more advantaged were more likely to participate in the UK Biobank study and ethnic minorities may be less well represented. Further research is needed to investigate whether these findings are reflective of the broader UK population, alongside analysis of other datasets examining how SARS-CoV-2 infection affects different ethnic and socioeconomic groups, including in representative samples across different countries.

Basic psychosocial skills – A guide for Covid-19 responders

Source: <https://interagencystandingcommittee.org/system/files/2020-05/Basic%20Psychosocial%20Skills-%20A%20Guide%20for%20COVID-19%20Responders.pdf>

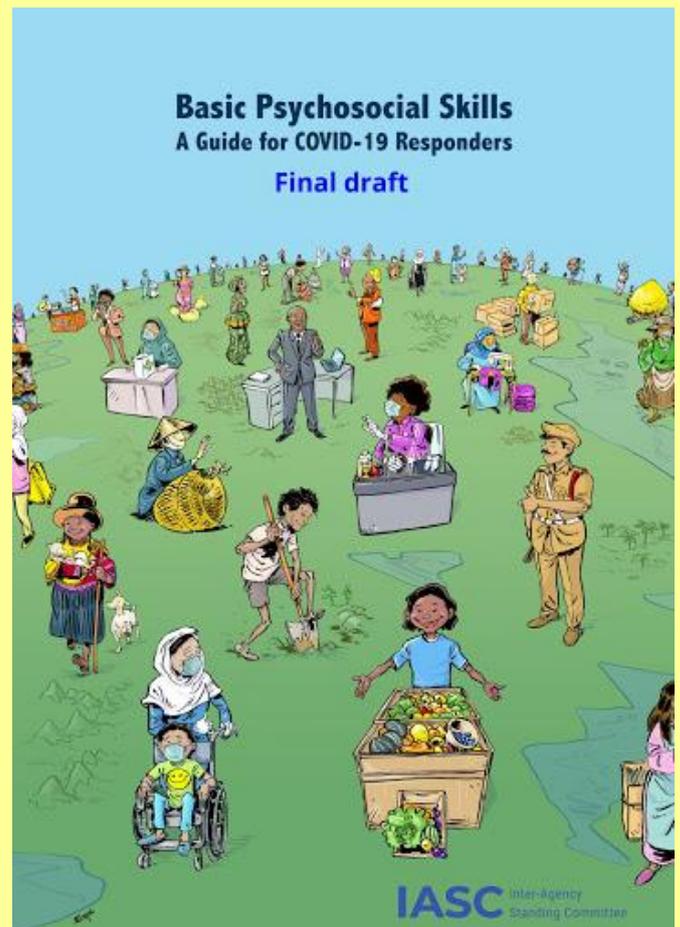
Basic psychosocial support skills are at the core of any Mental Health and Psychosocial Support (MHPSS) intervention. Such skills are also indispensable for many others involved in the COVID-19 response, whether they identify as an MHPSS provider or not. Thus, this guide is meant for all COVID-19 responders.

This Basic Psychosocial Skills Guide is a project by the Inter-Agency Standing Committee Reference Group on Mental Health and Psychosocial Support in Emergency Settings.

The project was supported by member agencies of the IASC MHPSS RG, with extensive inputs from COVID-19 survivors and COVID-19 responders from all sectors in the following countries: Australia, Bangladesh, Bulgaria, Bolivia, Canada, Denmark, Democratic Republic of Congo, Egypt, Ethiopia, Greece, India, Iraq, Italy, Jamaica, Kenya, Laos, Liberia, Morocco, Myanmar, Netherlands, Philippines, Portugal, Rwanda, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Uganda, UK, USA.

They all responded to a survey to help us draft this guide and make it more relevant to their mental health and psychosocial needs.

The initial draft was then opened up to further feedback from COVID-19 survivors and COVID-19 responders through review and additional in-depth interviews. The final guide incorporates this feedback.



The Future Bioweapons Threat: Lessons from the COVID-19 Pandemic

By Yong-Bee Lim

Source: <http://www.homelandsecuritynewswire.com/dr20200605-the-future-bioweapons-threat-lessons-from-the-covid19-pandemic>

June 05 – On May 28th, the Council on Strategic Risks hosted a timely webinar to discuss “The Future Bioweapons Threat: Lessons from the COVID-19 Pandemic.” This webinar brought together a diverse panel of experts areas from weapons of mass destruction (WMD), film and media, biotechnology and data science, and public health to discuss how the pandemic highlights existing gaps in addressing natural and potentially man-made biological threats; and understanding the obstacles and potential solutions to address future man-made and natural biological threats.

The panelists included the Honorable Andrew C. “Andy” Weber, Senior Fellow at the Council on Strategic Risks and the former Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs at the Pentagon; Max Brooks, the author of *World War Z* and *Devolution*, as well as a Nonresident Fellow at The Modern War Institute and the Atlantic Council; Dr. Alexander Titus, Chief Strategy Officer at the Advanced Regenerative Manufacturing Institute (ARMI) and Senior Fellow at the Council on Strategic Risks; and George Mason’s very-own Dr. Saskia Popescu, Senior Infection Preventionist and Epidemiologist at HonorHealth and Adjunct Professor at Mel and Enid Zuckerman College of Public Health at the University of Arizona.

The event was moderated by Dr. Natasha E. Bajema, Founder and CEO of Nuclear Spin Cycle Publishing and Senior Fellow at the Council on Strategic Risks; and Christine Parthemore, CEO of the Council on Strategic Risks.



Gaps in Biopreparedness and Biodefense

One main area the panelists and moderators focused on was understanding how the failures to detect, mitigate, and respond to COVID-19 may make a future biological weapon attack more likely. Mr. Weber warned how easily COVID-19 has spread through naval ships and other branches of the armed services, which enhances the allure of weaponizing biology to undermine operational readiness. Mr. Weber also argued that the cheapness and ease of developing biological weapons make them even more alluring in the modern day. These incentives, in turn, weaken deterrence against the use of offensive biological weapons.

Mr. Brooks echoed Mr. Weber’s thought and added how the superiority of U.S. conventional forces drives adversaries to find indirect ways to engage in conflict. Mr. Brooks noted that the ease of development and use of biological weapons makes it potentially attractive to use in a variety of situations – from deploying weapons at ports to shut down trade to even targeting American citizens to erode morale in the military.

Dr. Popescu expanded the conversation to include how the pandemic shed light on gaps in public health and its ability to detect, respond to, and recover from a large-scale bio-event. She highlighted how public health is expected to achieve the ideal (such as having testing every individual) in a reality where there are only a finite number of tests available, and a finite number of facilities and individuals to administer them. Dr. Popescu added preparedness is a difficult sell to senior hospital administrators since it requires private companies like hospitals to permanently assume additional overhead.

Dr. Titus discussed how the perception of technology as an end in and of itself, rather than a means to enhancing an organization’s mission, has slowed the adoption of emerging technologies like synthetic biology and big data science. These delays have significantly cost the U.S. in its ability to deter, detect, mitigate, respond to, and recover from biological events. Dr. Titus presented how the relationship between biotechnology development and application is not



a one-to-one relationship: a biotech development that allows a more efficient way to produce molecules of interest in yeast cells does not mean that technology has to be limited to a single molecule of interest. Rather, he viewed investment and development in biotechnology as an opportunity to mitigate infinite threats with infinite capabilities.

Obstacles and Solutions to Future Biothreats

One major obstacle all the panelists discussed was the issue of sustained efforts and funding. All the panelists pointed out how money is thrown at an issue in any crisis setting. This includes biological events like Amerithrax in 2001 and the Ebola outbreak from 2014 – 2016. However, biodefense suffers significantly once the crisis passes and the funding streams dry up. Therefore, panelists argued that funding alone was insufficient to meet the biothreats challenges of the future – current and future Administrations need to consider biothreats a priority, with stable funding streams to match.

Mr. Weber highlighted his personal experiences as the former Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs during the Obama administration to display the bureaucratic and administrative complexities of addressing biothreats both domestically and internationally. He particularly emphasized a need to increase interagency communications and cooperation within the Department of Defense as well as other agencies to implement an all-hands approach to deal with future biological events.

Mr. Brooks saw a growing gap between citizens and policymakers as a major obstacle. Compared to the American citizens in the past, he viewed current citizens as disengaged from serious issues like biothreats and that this disengagement was encouraged, whether deliberately or not, by U.S. leadership. Mr. Brooks thought it was essential to bridge this gap, increase biodefense education, and cultivate buy-in from citizens if policymakers want to take concrete steps towards a safer world. He drew from his vast experience in helping shape the social consciousness to suggest making biodefense topics more tangible and impactful to the average citizen through fiction books, television shows, and movies, and recruiting influential celebrities as spokespeople for biodefense causes.

Dr. Popescu expressed concerns about communicating accurate information to the general public and a need to make this information that captures the general public's attention. She also warned of potentially unscrupulous salesmen and armchair experts – individuals and companies that may exploit COVID-19 misinformation to sell “snake-oil” products ranging from sensationalist information to harmful cures, remedies, and cleaning agents to citizens. Finally, she strongly emphasized the need to discuss topics ranging from safer practices to operating in an ever-changing, uncertainty-filled environment as states begin to re-open after months of having citizens shelter in place.

Dr. Titus, along with other members of the panel, highlighted how inadvertent and deliberate misinformation is a major obstacle to getting buy-in and creating a plan of action to address biothreats. He, much in line with Dr. Popescu, noted that science communication alone is not sufficient to deal with misinformation campaigns on platforms like Twitter and Facebook. He asserted that disinformation spreads because it provides pay-offs to the recipient that factual information delivered in a dry, technical manner fails to deliver on. Compared to journal papers and books that experts often operate in, Dr. Titus noted that as little as 280 characters (2 tweets) is sufficient to sow doubt. Dr. Titus advocated for experts to find new ways to communicate with the public – new ways that do not require expertise to understand what experts are communicating.

Conclusion & Consensus

What is clear is the U.S. has a long way to go in addressing biological threats from natural and man-made sources. Further, the U.S. needs to adapt to new realities – a time where citizens' trust of government is significantly lower, where citizens actively protest experts and their recommendations, and where **misinformation is one tap on a smartphone away**. And while the solutions are difficult to implement, the panelists and moderators of this timely webinar all believe that the end goal is worth it: a potential world where biological threats are a relic of history, as opposed to the unavoidable fate of humanity's future.

Yong-Bee Lim is Biodefense Ph.D. Candidate at the Schar School of Policy and Government at George Mason University.

Quantifying additional COVID-19 symptoms will save lives

By Cristina Menni, Carole H Sudre, Claire J Steves, Sebastien Ourselin and Tim D Spector

(Published: June 04, 2020)

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31281-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31281-2/fulltext)



Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19

By Derek K Chu, MD, Prof Elie A Akl, MD, Stephanie Duda, MSc, et al. (Published: June 01, 2020)

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31142-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31142-9/fulltext)

ICU and Ventilator Mortality Among Critically Ill Adults With Coronavirus Disease 2019

Auld, Sara C. MD, MSc; Caridi-Scheible, Mark MD; Blum, James M. MD, et al.

Critical Care Medicine J. May 26, 2020

Source: https://journals.lww.com/ccmjournal/Abstract/9000/ICU_and_Ventilator_Mortality_Among_Critically_Ill.95639.aspx

Among 217 critically ill patients, mortality for those who required mechanical ventilation was 35.7% (59/165), with 4.8% of patients (8/165) still on the ventilator at the time of this report. Overall mortality to date in this critically ill cohort is 30.9% (67/217) and 60.4% (131/217) patients have survived to hospital discharge. Mortality was significantly associated with older age, lower body mass index, chronic renal disease, higher Sequential Organ Failure Assessment score, lower PaO₂/FIO₂ ratio, higher D-dimer, higher C-reactive protein, and receipt of mechanical ventilation, vasopressors, renal replacement therapy, or vasodilator therapy.

Conclusions: Despite multiple reports of mortality rates exceeding 50% among critically ill adults with coronavirus disease 2019, particularly among those requiring mechanical ventilation, our early experience indicates that many patients survive their critical illness.

Scientists Just Created Artificial Red Blood Cells That May Be Even Better Than the Real Thing

Source: <https://www.sciencealert.com/these-synthetic-red-blood-cells-could-be-even-better-than-the-real-thing>



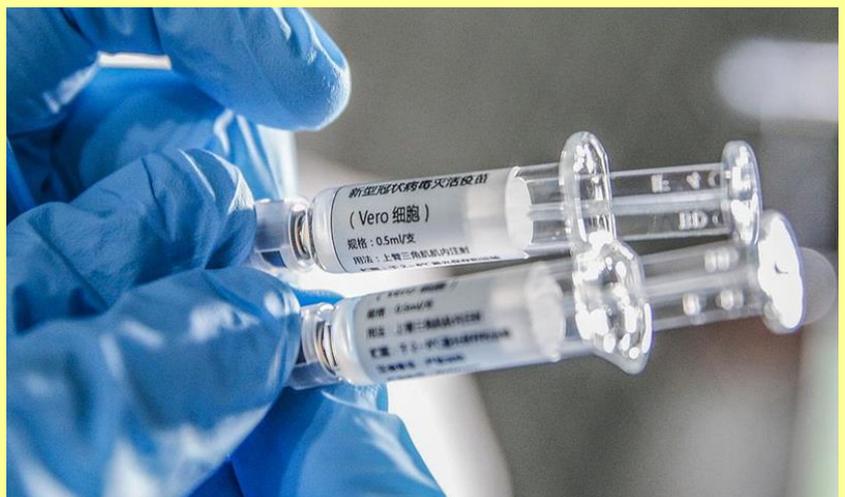
Anthrax human immunoglobulin enters trials, important to China's defense against biological and chemical attacks

Source: <https://www.globaltimes.cn/content/1190749.shtml>

A staff member displays samples of the COVID-19 inactivated vaccine at Sinovac Biotech Ltd., in Beijing, capital of China, March 16, 2020. (Xinhua/Zhang Yuwei)

Top epidemiologist Chen Wei launched phase I clinical trials of the intravenous injection of anthrax human immunoglobulin in conjunction with a pharmacy company in Southwest China's Guizhou Province on Saturday. The COVID-19 vaccine and specific immunoglobulin that her research team are developing currently will also be put into mass production by the company once they are available.

Chen Wei, a researcher at the Institute of Military Medicine of the Chinese Academy of Military Sciences, said the trials hold significant meaning to China's defense against terrorism, biological and chemical attacks and public health emergencies, reported a Guizhou-based news agency on Saturday.



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"From the perspective of national biosecurity, the prevention and treatment of anthrax is of vital importance," said Chen. An immunologist, who asked to remain anonymous, told the Global Times on Saturday that anthrax is a severe infectious disease that is hard to control and is often used for biological and chemical weapons. At present, the US is the only country in the world that has developed and produced anthrax human immunoglobulin products and has included the products into its national biodefense plan. Previously, Chen, also a member of the National Committee of the Chinese People's Political Consultative Conference, had already called for promoting [the development of national biosafety science](#) in China during the two sessions in May. At Saturday's launching ceremony for the trials, a local biological product company in Guizhou which has been collaborating with Chen's research team for a long time, also revealed that the COVID-19 vaccine and specific immunoglobulin developed by the team are expected to be put into mass production by the company once they are available. The anonymous immunologist said that the promising large-scale production of vaccines further proves the high quality of the vaccines and also reflects the maturity of vaccine production in China. He also predicted that China may be the first country in the world that successfully reaches a large scale of coronavirus vaccine production. "Research teams in other countries such as the UK and Australia have also been seeking mass production, but they may not be as fast as China due to their relatively higher expenses and less mature clinical trials," he said. Chen's team developed an adenovirus vector COVID-19 vaccine on March 16, the first domestically developed COVID-19 candidate vaccine to enter clinical trials. Later on May 22, the vaccine also became the first in the world to [disclose complete phase one clinical trial results](#) and declare dual immune response in the recipient.

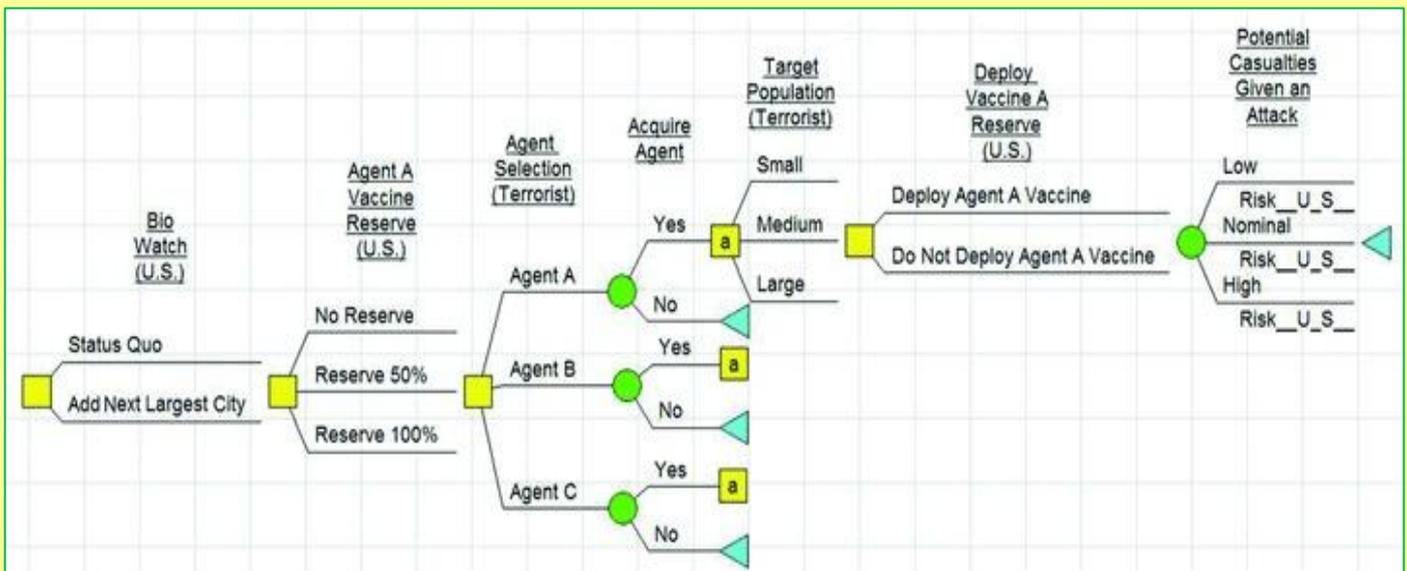
Intelligent Adversary Risk Analysis: A Bioterrorism Risk Management Model

By Gregory S Parnell , Christopher M Smith, and Frederick I Moxley

Risk Anal. 2010 Jan;30(1):32-48.

Source: <https://pubmed.ncbi.nlm.nih.gov/20002893/>

The tragic events of 9/11 and the concerns about the potential for a terrorist or hostile state attack with weapons of mass destruction have led to an increased emphasis on risk analysis for homeland security. Uncertain hazards (natural and engineering) have been



successfully analyzed using probabilistic risk analysis (PRA). Unlike uncertain hazards, terrorists and hostile states are intelligent adversaries who can observe our vulnerabilities and dynamically adapt their plans and actions to achieve their objectives. This article compares uncertain hazard risk analysis with intelligent adversary risk analysis, describes the intelligent adversary risk analysis challenges, and presents a probabilistic defender-attacker-defender model to evaluate the baseline risk and the potential risk reduction provided by defender investments. The model



includes defender decisions prior to an attack; attacker decisions during the attack; defender actions after an attack; and the uncertainties of attack implementation, detection, and consequences. The risk management model is demonstrated with an illustrative bioterrorism problem with notional data.

Could Coronavirus Be Killed Off Without a Vaccine? History Suggests There's a Chance

Source: <http://www.homelandsecuritynewswire.com/dr20200606-could-coronavirus-be-killed-off-without-a-vaccine-history-suggests-theres-a-chance>

June 06 – Already this century, devastating outbreaks of deadly cousins of today's virus have twice been crushed without global immunization programs – the 2002-2003 SARS-COV-1 and the 2014-2015 Ebola. Harry de Quetteville asks in [The Telegraph](#): as countries around the world begin to relax their lockdowns, **will the third time be lucky too?**

Watch a subway car get blasted with UVC light to get disinfected

Source: <https://www.timeout.com/newyork/news/watch-a-subway-car-get-blasted-with-uv-c-light-to-get-disinfected-052020>

May 20 – The MTA is using state-of-the-art technology to sanitize the city's subway systems and buses and it's straight out of a sci-fi movie.

All it takes is a flash of **Ultraviolet-C light** and the virus is eliminated, officials say.

Once the UVC emitter is set up on a subway pole, the flash goes off several times, immediately killing the germs on surfaces and in the air. It is immediate, however, so if someone transmits the virus to the subway car after the light treatment, it will remain there.

The MTA is sending out about 150 of these UVC emitter devices to test and evaluate their efficiency and cost-effectiveness on NYC trains, buses, stations and facilities as part of the new pilot program. They'll be setting the light off while [staff disinfect the system overnight](#) from 1am to 5am on R188, R62, R46, R68, and R160 cars, stations and yards at Corona, Coney Island, Jamaica and Pelham. If all goes well, the lights will be used on the Long Island Rail Road and Metro-North as well, officials say.

But how exactly does it work?

The energy of UVC actually destroys the genetic material inside viruses and other microbes, according to [nationalacademies.org](#).

And according to [Columbia University](#), germicidal UV light has been used to kill viruses and bacteria for decades although it is dangerous to human cells. When using UV, people need to keep away while the light goes off. UVC light, however, can't harm us. But it can still penetrate and kill very small viruses and bacteria floating in the air or on surfaces.

"Our system is a low-cost, safe solution to eradicating airborne viruses' minutes after they've been breathed, coughed or sneezed into the air," Dr. David Brenner, the director of the Center for



Radiological Research at Columbia University, said in the Columbia University report. "Not only does it have the potential to prevent the global spread of the virus that causes COV ID-19, but also future novel viruses, as well as more familiar viruses like influenza and measles."

"The UV light that will be used in the current overnight subway and bus disinfection program is very efficient in killing the virus that is responsible for COVID-19," Dr. David Brenner said in a





rear-door boarding on buses and eliminated cash transactions at stations and on commuter rails to prevent person-to-person contact to ensure the safety of operating employees.

Brazil Is in Coronavirus Free Fall

By Vanessa Barbara

Source: <https://www.nytimes.com/2020/06/08/opinion/brazil-coronavirus-bolsonaro.html>



Gravediggers work at the Vila Formosa cemetery in São Paulo, Brazil in May. Credit...Victor Moriyama for The New York Times

June 08 — It's been almost three months since my toddler left the apartment. We've been enduring as best as we can: We spend countless afternoons at the balcony watching the street and counting red cars; we open and close all the curtains; we pile up boxes of paper tissues and make mountains; we invent stories about our neighbors based on the smells of their cooking. Recently, she has started to play with her own shadow. This was a wise move, since both of her parents are exhausted.

Quarantining with a 2-year-old is a draining job. On top of that, my husband and I are both still working remotely — he is a tax inspector for city hall — even as we cook and clean and disinfect the doorknobs. Day after day, we try to stay strong. But while many of us are making sacrifices, there are others who couldn't care less.

In the city of São Paulo, according to [mobile location data](#), a little less than half the population is complying with social-distancing measures. It is true that some have no choice but to keep commuting to their jobs, as underpaid freelancers, essential workers or merely exploited employees. But many are simply counting on their immune system's superpowers, denying the severity of the pandemic, or free-riding off the efforts of the rest of us.

Every afternoon I can see from my window a group of men chatting on the sidewalk and drinking beer, as if this were all a joyous vacation. The other day I went to the drugstore to pick up a prescription and saw a group of three women lingering over the nail polish — mask-



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free, of course. I recently heard about someone who had just decided to resume his Pilates classes, as though his health is more important than everybody else's.

Late last month, [Brazil](#) passed a milestone: Our daily death toll has [now surpassed](#) that of the United States. We have a contagion rate that ensures more deaths are coming. We have had more than [690,000 diagnosed cases of coronavirus and 36,000 deaths](#), and yet, the actual numbers are probably much higher — we've had such limited testing that we just don't know. In other parts of the world, the growth curve for infections is flattening out or falling; here, it is actually spiking. Hospitals are on the brink of collapse; so are morgues and cemeteries. In the Amazonian city of Manaus, deaths have soared so much that the main cemetery has begun burying [five coffins at a time](#) in shared graves.

Given the grimness of our statistics, one might reasonably expect that the population would start strictly adhering to health and safety protocols. But this is not happening. As the cases spread, so does the contempt of certain people in the streets for social-distancing measures. And it's easy to pinpoint one of the main reasons for this contempt: our president.

Since the beginning of the pandemic, Jair Bolsonaro has shown disdain for everything that doesn't suit his personal agenda — especially if it's fact-based news or scientific recommendations. He said in the past that Covid-19 is a ["measly cold"](#) and that people would soon see that they'd been ["tricked"](#) by governors and media when it came to the outbreak. On April 12, when more than a thousand Brazilians had already died, he [proclaimed that](#) "the matter of the virus" was "starting to go away." When this proved to be wrong, he spent his days fighting against state and municipal shutdowns, deeming them economically disastrous for the country.

He [fired our health minister](#), Luiz Henrique Mandetta, for supporting the isolation measures while resisting Mr. Bolsonaro's attempts to promote chloroquine and hydroxychloroquine as treatments for Covid-19. Along the way, the president has continued to attend pro-government street rallies, shaking the hands of his supporters and drawing large crowds just to appease his ego.

On [April 23](#), [Brazil](#) registered more than 3,300 deaths. Asked about the rising toll, the president replied: ["I'm not a gravedigger."](#) Five days — and more than 1,700 deaths — later, ["So what? I'm sorry. What do you want me to do?"](#)

On the day Brazil [reached 11,653 deaths](#), Mr. Bolsonaro issued an [executive order](#) classifying gyms, barbershops and beauty salons as essential businesses that could reopen. (Finally! Those women at the drugstore can get a decent manicure!) A few days later, the new health minister, Nelson Teich, [resigned from his post](#), after less than a month on the job. The interim minister is an active-duty army general who has no experience in public health and [immediately appointed](#) nine other army officers to the ministry.

In the end, Mr. Bolsonaro is exactly like those fools, chatting idly on the sidewalk as doctors struggle to manage an influx of patients at already overcrowded hospitals. Those who follow him are choosing nail polish colors while many of us gasp for air. They are not only taking advantage of other people's sacrifices — they are also rendering our efforts almost pointless.

Perhaps such blatant incompetence in dealing with the outbreak, combined with the various corruption investigations around Mr. Bolsonaro right now, will have political consequences for him, finally. (In the midst of the pandemic, he's been accused of [interfering in investigations](#) by the federal police, in order to shield his sons.) Indeed, some have [made this argument](#). But I'm not that optimistic.

Mr. Bolsonaro's approval rating may be low — around 30 percent — but his radical base, which includes the agricultural caucus, the military and evangelicals, is still behind him, fueled by bigotry and fake news. The government has also managed to forge an alliance with the powerful centrist bloc in Congress, obtaining its support [in return for political favors](#).

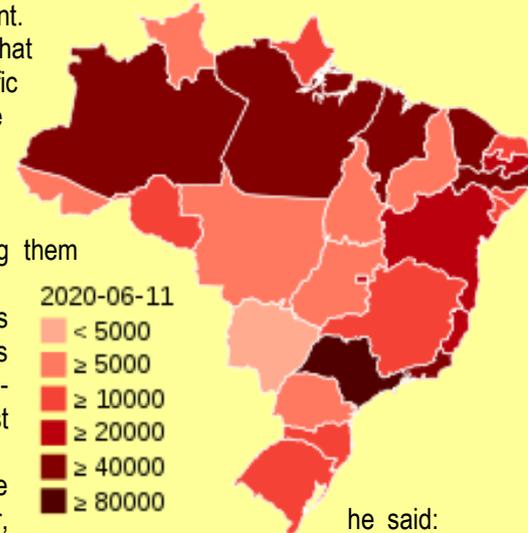
So, I wouldn't count on any changes soon. We're just at the beginning of a long, painful, hopeless quarantine.

Vanessa Barbara is the editor of the literary website A Hortaliça, the author of two novels and two nonfiction books in Portuguese, and a contributing opinion writer.

How Many More Will Die from Fear of the Coronavirus?

Source: <http://www.homelandsecuritynewswire.com/dr20200609-how-many-more-will-die-from-fear-of-the-coronavirus>

June 09 – More than 100,000 Americans have died from Covid-19. Beyond those deaths are other casualties of the pandemic — Americans seriously ill with other ailments who avoided



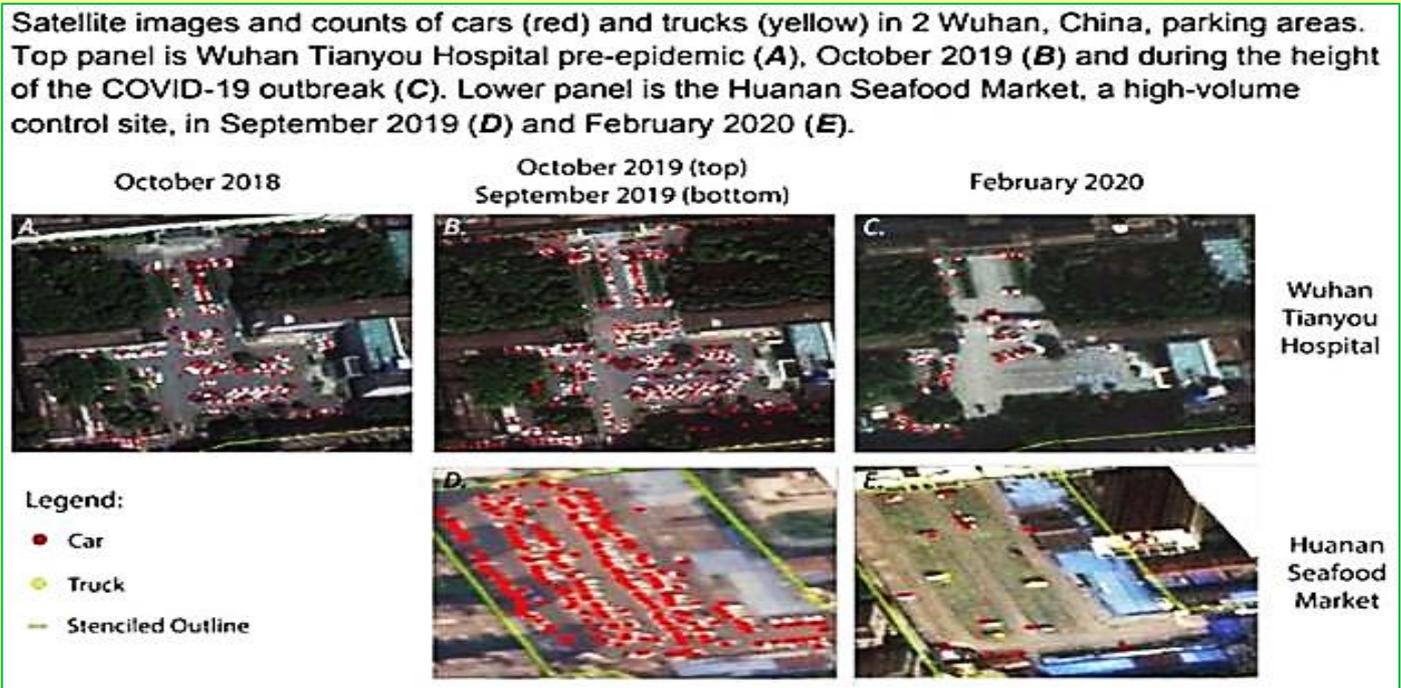
he said:



care because they feared contracting the coronavirus at hospitals and clinics. Tomislav Mihaljevic and Gianrico Farrugia write in the [New York Times](#) that the toll from their deaths may be [close to the toll](#) from Covid-19.

Satellite Images of Wuhan May Suggest Coronavirus Was Spreading as Early as August

Source: <http://www.homelandsecuritynewswire.com/dr20200609-satellite-images-of-wuhan-may-suggest-coronavirus-was-spreading-as-early-as-august>



June 09 – Satellite images of hospital parking lots in Wuhan as well as internet search trends, show the coronavirus may have been spreading in China as early as last August, according to a new study from Harvard Medical School. Shelby Lin Erdman writes for [CNN](#) that the study, which has not yet been peer-viewed, found a significantly higher number of cars in parking lots at five Wuhan hospitals in the late summer and fall of 2019 compared to a year earlier; and an uptick in searches of keywords associated with an infectious disease on China's Baidu search engine.

Majority of First-Wave COVID-19 Clinical Trials Have Significant Design Shortcomings, Study Finds

Source: <http://www.homelandsecuritynewswire.com/dr20200609-majority-of-firstwave-covid19-clinical-trials-have-significant-design-shortcomings-study-finds>

June 09 – Most of the registered clinical trials of potential treatments for COVID-19 underway as of late March were designed in ways that will greatly limit their value in understanding potential treatments, according to a study from researchers at [Johns Hopkins Bloomberg School of Public Health](#).

Scientists Aim Gene-Targeting Breakthrough Against COVID-19

Source: <https://newscenter.lbl.gov/2020/06/04/gene-targeting-covid-19/>

June 04 – A team of scientists from Stanford University is working with researchers at the [Molecular Foundry](#), a nanoscience user facility located at the Department of Energy's

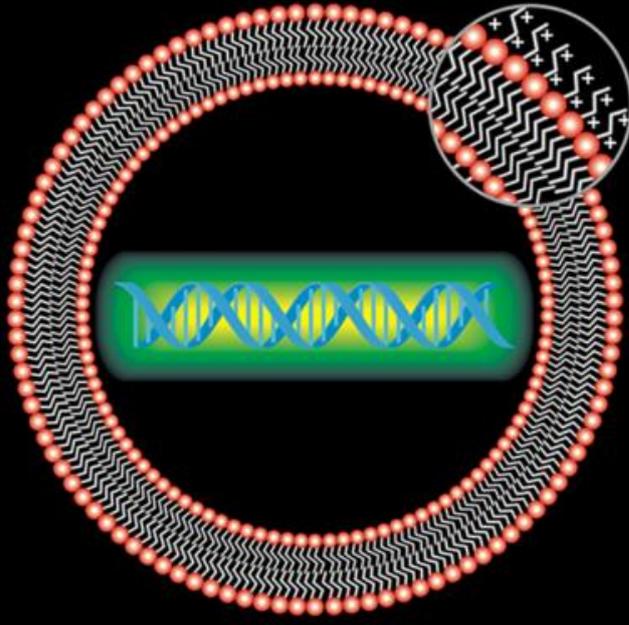


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Lawrence Berkeley National Laboratory (Berkeley Lab), to develop a gene-targeting, antiviral agent against COVID-19.

Last year, Stanley Qi, an assistant professor in the departments of bioengineering, and chemical and systems biology at Stanford University and his team had begun working on a technique called PAC-MAN – or Prophylactic Antiviral CRISPR in human cells – that uses the gene-editing tool CRISPR to fight influenza.

But that all changed in January, when news of the COVID-19 pandemic emerged. Qi and his team were suddenly confronted with a mysterious new virus for which no one had a clear solution. “So we thought, ‘Why don’t we try using our PAC-MAN technology to fight it?’” said Qi.



Lipitoids, which self-assemble with DNA and RNA, can serve as cellular delivery systems for antiviral therapies that could prevent COVID-19 and other coronavirus infections. (Illustration courtesy of R.N. Zuckermann)

Since late March, Qi and his team have been collaborating with a group led by [Michael Connolly](#), a principal scientific engineering associate in the Biological Nanostructures Facility at Berkeley Lab’s Molecular Foundry, to develop a system that delivers PAC-MAN into the cells of a patient.

Like all CRISPR systems, PAC-MAN is composed of an enzyme – in this case, the virus-killing enzyme Cas13 – and a strand of guide RNA, which commands

Cas13 to destroy specific nucleotide sequences in the coronavirus’s genome. By scrambling the virus’s genetic code, PAC-MAN could neutralize the coronavirus and stop it from replicating inside cells.

It’s all in the delivery

Qi said that the key challenge to translating PAC-MAN from a molecular tool into an anti-COVID-19 therapy is finding an effective way to deliver it into lung cells. When SARS-CoV-2, the coronavirus that causes COVID-19, invades the lungs, the air sacs in an infected person can become inflamed and fill with fluid, hijacking a patient’s ability to breathe.

“But my lab doesn’t work on delivery methods,” he said. So on March 14, they published a preprint of their paper, and even tweeted, in the hopes of catching the eye of a potential collaborator with expertise in cellular delivery techniques.

Soon after, they learned of Connolly’s work on synthetic molecules called [lipitoids](#) at the Molecular Foundry.

Lipitoids are a type of synthetic peptide mimic known as a “peptoid” first discovered 20 years ago by Connolly’s mentor Ron Zuckermann. In the decades since, Connolly and Zuckermann have worked to develop peptoid delivery molecules such as lipitoids. And in collaboration with Molecular Foundry users, they have demonstrated lipitoids’ effectiveness in the delivery of [DNA](#) and [RNA](#) to a wide variety of cell lines.

Today, [researchers studying lipitoids for potential therapeutic applications](#) have shown that these materials are nontoxic to the body and can deliver nucleotides by encapsulating them in tiny nanoparticles just one billionth of a meter wide – the size of a virus.

Now Qi hopes to add his CRISPR-based COVID-19 therapy to the Molecular Foundry’s growing body of lipitoid delivery systems.

In late April, the Stanford researchers tested a type of lipitoid – Lipitoid 1 – that self-assembles with DNA and RNA into PAC-MAN carriers in a sample of human epithelial lung cells.

According to Qi, the lipitoids performed very well. When packaged with coronavirus-targeting PAC-MAN, the system reduced the amount of synthetic SARS-CoV-2 in solution by more than 90%. “Berkeley Lab’s Molecular Foundry has provided us with a molecular treasure that transformed our research,” he said.

The team next plans to test the PAC-MAN/lipitoid system in an animal model against a live SARS-CoV-2 virus. They will be joined by collaborators at New York University and Karolinska Institute in Stockholm, Sweden.



If successful, they hope to continue working with Connolly and his team to further develop PAC-MAN/lipitoid therapies for SARS-CoV-2 and other coronaviruses, and to explore scaling up their experiments for preclinical tests.

“An effective lipitoid delivery, coupled with CRISPR targeting, could enable a very powerful strategy for fighting viral disease not only against COVID-19 but possibly against newly viral strains with pandemic potential,” said Connolly.

“Everyone has been working around the clock trying to come up with new solutions,” added Qi, whose preprint paper was recently peer-reviewed and [published in the journal Cell](#). “It’s very rewarding to combine expertise and test new ideas across institutions in these difficult times.”

Hospital Experiment Reveals Just How Fast Viral Matter Can Spread Through Wards

Source: <https://www.sciencealert.com/surprising-study-shows-just-how-fast-viral-material-can-spread-through-a-hospital-ward>

June 11 – From what we know so far, [SARS-CoV-2](#) is most commonly spread person to person. But if there’s anything the [pandemic](#) has taught us, it’s to pay close attention to [potential transmission from surfaces](#) and other objects.

Microbiologists from University College London (UCL) have now

found that even in hospital rooms designed for containment of [COVID-19](#) risks, [viruses](#) can easily be transferred to other areas.

When viral DNA - one harmless to humans - was left on a hospital bed rail within a highly contained unit, it took fewer than ten hours to spread to nearly half the ward, sticking around for at least five days at these sites.

And that’s only when one bed rail was the source. A patient infected with a [coronavirus](#) is very likely to cough, sneeze and spread the virus through touch to various surfaces and inanimate objects, putting others who touch these surfaces at potential risk.

“Our study shows the important role that surfaces play in the transmission of a virus and how critical it is to adhere to good hand hygiene and cleaning,” [says](#) microbiologist Lena Ciric from UCL.

“Our surrogate [virus] was inoculated once to a single site, and was spread through the touching of surfaces by staff, patients and visitors.”

It’s important to note this experiment was not done to measure infection rates - only how quickly a virus can potentially spread if it is not cleaned from a surface, even in a high-containment area.

The plant-infecting virus used for this research can be easily removed by disinfecting a surface or by washing your hands, which is also true for the coronavirus that causes COVID-19. In fact, a single alcohol wipe can remove 98.88–99.84 percent of the surrogate virus the researchers used.

In this particular case, viral material was spread across a number of surfaces in an otherwise well maintained ward, highlighting a potential weakness in hygiene policies.

“As a high-risk area, the isolation room where the bed rail was inoculated had a different cleaning regimen to the rest of the ward,” the authors [write](#).

“However, its wide dissemination indicates cleaning failure. As the surrogate is removed readily with good hand hygiene, this also indicated hand hygiene failure.”

Diluting the viral DNA of their harmless surrogate in water, researchers carefully dropped the material on the handrail of a bed in an isolation room reserved for the most infected. Each evening for the next five days, the team sampled 44 sites across the ward to see how far the sample had travelled.



After a mere ten hours, the surrogate genetic material had spread to 41 percent of sites, including bed rails, door handles, arm rests, and children's toys and books.

After three days, the number of sites contaminated peaked at 52 percent, falling to 41 percent two days later. Even by the end of the sampling period, the virus persisted.

The rooms closest to the original infection were the most contaminated. On day three, 86 percent of all clinical areas tested positive, and on day four, 60 percent of sites in the immediate bedspace area tested positive.

The authors argue the results imply a combination of poor cleaning, patients moving around, and a lack of proper hygiene from carers.

"People can become infected with COVID-19 through respiratory droplets produced during coughing or sneezing," [says](#) healthcare scientist Elaine Cloutman-Green from UCL.

"Equally, if these droplets land on a surface, a person may become infected after coming into contact with the surface and then touching their eyes, nose or mouth."

This situation is certainly possible, but how often it actually happens is still unclear. While previous [research](#) suggests the COVID-19 virus can stick around on cardboard for up to a day and on plastic and steel for up to 72 hours, there's [little data](#) on how large these viral loads are, or how dangerous.

The United States' Centers for Disease Control and Prevention (CDC) [emphasises](#) that it may be possible someone could contract the coronavirus from touching a contaminated surface, but it's thought to not be the most common form of transmission.

That said, it's still essential for healthcare workers to keep washing their hands and wiping down surfaces consistently to limit transmission as much as possible, especially since it's a relatively easy thing to do.

Unfortunately, however, these findings suggest that even in hospitals with rigid hygiene practices, a virus can slip right past the defences. As the authors say in the title of their paper, we can't forget the surfaces.

►► The findings were published as a letter to the editor in the [Journal of Hospital Infection](#).

What if The Lockdown Never Happened? New Study Examines a Terrible Alternative

Source: <https://www.sciencealert.com/scientists-estimate-lockdowns-stopped-at-least-60-million-infections-in-the-us>

June 10 – Suppose the world had never instituted lockdowns in response to the [coronavirus pandemic](#): There's a strong chance that hundreds of millions more people would have already gotten [COVID-19](#).

That's according to new research from the Global Policy Laboratory at the University of California at Berkeley. In [a study published Monday](#), the lab examined the effects of more than 1,700 coronavirus-prevention measures across six countries: the US, China, South Korea, Italy, France, and Iran.

The restrictions included travel bans, school closings, suspended religious services, event cancellations, and shelter-in-place orders. Without any limits to people's movement and interaction in the US, they estimated, the number of infections would have nearly doubled every two days from March 3 to April 6. That means about 60 million more people could have been infected. (The US has so far reported 1.9 million cases.)

Lockdowns were even more successful in China, according to the study. The researchers found that policies implemented from January 16 to March 5 in China saved about 285 million people from getting sick. The nation has [reported only about 84,000 cases](#) thus far.

China's earliest restrictions were implemented in Wuhan, where the outbreak originated. A [March study](#) found that Wuhan's lockdown on January 23 prevented tens of thousands of infections throughout the Hubei province. Without the lockdown, cases in Hubei would have been 65 percent higher, the research estimated.

Lockdown measures also prevented an estimated 54 million infections in Iran, 49 million in Italy, 45 million in France, and 38 million in South Korea, according to the study.

"The deployment of anti-contagion policies in all six countries significantly and substantially slowed the pandemic," the researchers wrote.

But they added that "seemingly small delays in policy deployment likely produced dramatically different health outcomes."

In other words, nations like China benefited from locking down early, while delays in the US and Italy may have resulted in preventable deaths. Indeed, disease modelers from Columbia



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University recently estimated that the US could have [prevented 645,000 infections and 36,000 deaths](#) by locking down one to two weeks earlier.

Europe's lockdowns may have prevented millions of deaths

Lockdowns also were found to have limited coronavirus-related hospitalizations and deaths in Europe. A team of researchers in Italy recently [determined that the country's lockdown](#) prevented about 200,000 hospitalizations between February 21 (when Italy's first case was reported) and March 25.

Another study from Imperial College London, [published Monday](#), estimated that lockdown restrictions averted 3.1 million deaths across 11 European countries from the time these measures were implemented in March until May 4.

Italy avoided an estimated 630,000 deaths during that period, according to the study. France, meanwhile, prevented an estimated 690,000 deaths – the most out of the 11 countries.

While less than 1 percent of Germany's population has contracted the [virus](#), the nation averted about 560,000 deaths from March to May, the study estimated. By contrast, Spain and the UK – where more than 5 percent of the population has been infected – were thought to have averted more than 400,000 deaths.

Nordic nations avoided the fewest deaths: an estimated 34,000 in Denmark, 26,000 in Sweden, and 12,000 in Norway. About 3 percent of Sweden's population is infected, compared with 1 percent in Denmark and less than 0.5 percent in Norway.

Overall, the researchers determined that lockdowns had a "large impact on transmission." In all 11 countries, the current reproduction number (the number of other people one sick person infects, on average) was significantly below 1.

That means, on average, a person with COVID-19 passes the virus to just one or fewer people – a sign that [an outbreak is contained](#). "We cannot say for certain that the current measures will continue to control the [epidemic](#) in Europe," the researchers wrote. "However, if current trends continue, there is reason for optimism."

▶▶ This article was originally published by [Business Insider](#).

Assessing North Korea's Covid-19 containment and Kim Jong-Un's political challenges

By Benjamin Katzeff Silberstein

Source: <https://www.fpri.org/article/2020/05/assessing-north-korea-covid19-containment/>



May 29 – To contain COVID-19's spread, North Korea has virtually shut the country's borders, save for some limited trade. Unlike most other countries, North Korea is able to do so thanks to its normally tight border control and limited interaction with the outside world. The regime does in fact have a number of advantages when it comes to imposing anti-COVID-19 measures, such as the system's rigid social control and strict suppression of the freedom of movement of the population.

On balance, however, the consequences of the country's COVID-19 measures pose a major challenge to the regime, and meanwhile, any significant outbreak would be extremely challenging for the government to handle given the poor state of the country's healthcare system. Throughout his tenure, Kim Jong-un has staked much of his credibility on improving the people's living standards. Suppose, theoretically, that North Korea does successfully



avoid an outbreak of significant proportion. Even so, anti-virus measures, combined with already crippling sanctions, are having a devastating impact on the country's already dismal economy.

These two factors have, at least for the time being, put Kim Jong-un's vision for economic growth and improvement of people's living standards on hold. Only time will tell whether this situation metastasizes into a domestic political challenge.

North Korea's COVID-19 Situation: What We Know, What We Don't, and the Government's Public Response

Images both from official and unofficial sources show citizens wearing masks around North Korea, and a [video](#) smuggled out of the country shows that quarantine facilities exist. The video—uploaded by a South Korean church group in early March 2020 and filmed (secretly) in Hyesan, in the northern part of the country—shows a door clearly marked off for “quarantine.” In the background, loudspeakers are broadcasting announcements admonishing citizens to keep their distance and maintain hygiene caution.

At this time of writing, the government continues to claim that no cases of COVID-19 exist in the country. In all likelihood, however, North Korea has had an unknown, but not insignificant, number of cases, but lacks both the capacity to test and diagnose them. According to NK Pro's COVID-19 tracker, 11,500 tests had been pledged to North Korea by donors as of May 24. Still, no information suggests that any significant number of tests have been conducted in the country. Thus, there technically are zero *confirmed* cases in the country, making for a good statistical representation in the government's favor, but likely with little bearing on reality. Grassroots reporting by indispensable outlets such as [Daily NK](#), with sources inside North Korea, have reported several instances of fever-related deaths around the country after symptoms seemingly similar to COVID-19. The outlet [reported](#) in April 2020, for example, that a large-scale outbreak of fever had occurred in Ryanggang province bordering China. One North Korean defector in China [reportedly](#) tested positive for the disease in late April, suggesting that the same person had likely infected several others before entering China.

Another complicating factor is that several of the areas in China that have seen [cases resurfacing](#) over the past few months, such as the Heilongjiang province, border North Korea. Although the government has imposed an almost total border closure, [promising to shoot violators](#) whether from the Chinese or North Korean sides, it is unlikely that it has managed to fully keep the border so tightly closed that not a single unauthorized person would get through. In normal times, the border is rife with smuggling operations, which the government often turns a blind eye to, not least thanks to systemic corruption. Most of this activity may have ceased—we simply don't know for sure—but most likely not all of it.

Without proper testing or professional medical diagnosing, there is no way to confirm whether such reported instances truly constitute cases of COVID-19. [All schools in the country are set to re-open on June 1 after a prolonged closure](#), with some already having opened in late April. In late May, the government eased restrictions on the freedom of movement of foreigners, primarily diplomats, which it previously imposed as a containment measure. According to official sources, close to 25,000 people have been in quarantine so far, with all but a few hundred released.^[1]

It is not exactly clear why North Korea has chosen to consistently claim zero cases of COVID-19, an extreme figure by any measure. North Korea is not the only country to claim unrealistically low numbers. Cambodia, another impoverished country run by an autocratic government, also claims zero deaths, a figure called into question by many, [but it never claimed](#), like North Korea does, to have had zero infections. Most general information about conditions inside North Korea not published by the regime is treated as a matter of national security. Market prices, for example, have to be reported clandestinely to contacts in South Korea and elsewhere, usually via Chinese cell phones smuggled into the country. Smuggling out a North Korean phone book is punishable by death, since such information is also considered a matter of the gravest national security. The government does not want signs of domestic weakness visible to the outside world, particularly not at a time of crippling international sanctions.

The country's propaganda apparatus has seized the moment. To the domestic audience, it [claims](#), for example, that South Korean activists sending balloons to North Korea with rice and propaganda leaflets are using this as a cover to send coronavirus into the country. Its delegation to the World Health Organization (WHO) recently made a statement against other countries—implicitly, the United States—for their “irresponsibility” in criticizing the WHO's anti-virus work. The Twitter account “@coldnoodlefan,” almost certainly run by someone affiliated with the North Korean regime, has made [several posts](#) claiming through video clips and pictures that North Korea remains virus-free with no economic instability whatsoever, in stark contrast to much of the rest of the world.

A Rigid System of Social Control

Because of abysmal socio-economic conditions that prevail in most of the country, many outside observers are under the impression that the North Korean system is generally weak. This is true in many ways, but when it comes to social control and suppression of the freedom of movement—something that most countries combatting COVID-19 use in some fashion—the North Korean system has several advantages.



For many other countries, simply closing the border like North Korea did in late January this year would be almost impossible. North Korea, however, has practiced isolation for so long that the anti-COVID-19 measures essentially entail strengthening already existing frameworks and rules rather than, as in other countries, creating new ones. In a normal week, only a handful of flights leave or arrive in North Korea, and almost exclusively to and from China and, on the rarer occasion, Russia. The aforementioned promise to shoot any border crossers to and from China is a good example: even in normal times, unauthorized exits and entries into North Korean territory is strictly forbidden and would in many cases anyway result in the violator, often a North Korea refugee attempting to make it to China, getting shot.

Much illegal border crossing, whether for smuggling or other purposes, is possible for anyone who can pay border guards to look the other way. A significant proportion of the economy is even sustained by illegal and semi-legal cross-border trade. The current regulations, however, have likely made the danger and cost of violating them prohibitively high for most. We don't know precisely how much smuggling has gone down (or, for that matter, how large the flows are in normal times), but reports suggest it has dwindled significantly.

North Korea also limits and controls domestic freedom of movement for its citizens, perhaps more than any other country in the world today. In theory, every citizen^[2] belongs to an administrative People's Unit (*inminban*) made up of a number of households, usually between ten and twenty, monitored by one person in charge (*inminbanjang*), who stays in regular contact with state and public security agencies. Should a person want to travel overnight to another city, they need to ask their People's Unit head and apply for permission from the local authorities to travel. If they get such permission, they need to report to the People's Unit head at their destination. People's Unit heads are regularly tasked with inspecting the homes of their People's Unit members to make sure that no unauthorized visitors are sleeping over. All of this is ostensibly done for the purpose of national security, although an equally important purpose is to control the population enough to contain any signs of domestic dissent or political disobedience.

Since the North Korean economy broke down in the early 1990s, corruption has become so pervasive and institutionalized that most who can pay their way can now travel around the country as they wish. Many do so for business and trading on the country's markets, and a whole [sector of private transportation](#) has arisen in the country over the past few decades to meet such needs. Nevertheless, domestic travel remains much less common in North Korea than in most other countries, and at times when the state needs to do so, it can clamp down and tighten restrictions relatively easily. Some information [suggests](#) that the state has already done so to contain COVID-19.

In other words, the North Korean state has a fairly robust system already set up to limit the freedom of movement of the population. In normal times, it fills the function of monitoring the citizens to keep any socially or politically threatening tendencies at bay, but in times like these, it may come to prove very useful should the government need to contain a major outbreak.

A Crumbled Medical System

While the country's medical system has some advantages that may make it well-equipped to handle a COVID-19 outbreak, its overall quality and level of resources are extremely low. For example, North Korea has a [high proportion of educated medical doctors](#), albeit not with the same general level of education as those in middle- or high-income countries, but [still with enough skills to treat the most common diseases and health problems](#). Tracking patients, moreover, could be done relatively easily given the rigid system for social control.

Nonetheless, for actual cases of COVID-19, the prognosis looks grim. No information is publicly available, but the country most likely has extremely few or no ventilators available for the general public. North Korea has dedicated significant attention to medical equipment manufacturing over the past few years, but little that would be meaningful during a COVID-19 crisis. In mid-April, the Party's main newspaper, *Rodong Sinmun*, [reported](#) that a medical oxygen factory had been inaugurated in North Hamgyong province, and in context, this may be a measure to prepare for a growing need for the use of ventilators. Still, even if the measure is related to COVID-19 containment, the country still lacks the necessary treatment equipment.

While there are signs that healthcare is a somewhat growing priority for the regime, the system still [remains woefully inadequate](#), and there are no tangible signs that access to healthcare will improve for the general public in the near future. Most healthcare facilities only have the most basic equipment. [According to UNICEF](#), for example, an estimated half of all healthcare facilities lack even basic water and sanitation facilities. In reality, the figure may well be significantly higher. Theoretically, all North Koreans have a right to free basic healthcare. In practice, members of the general public have to privately pay doctors hefty fees for appointments, and then purchase their medication themselves either from the country's markets or China. The Pyongyang General Hospital [currently under rapid construction](#) most likely will not be open for patients from any geographical location or socio-economic class, but mainly will be reserved for the elites. [China has offered support to North Korea to help fight COVID-19](#), but so far, nothing is publicly known about precisely what support has been given.



Economic Impacts: From Bad to Worse

North Korea's foreign trade flows are very small even in normal years, almost all of it with China. Its exports totaled only around \$2.7 billion in 2016, the year before the U.S. policy of "maximum pressure" through sanctions was imposed. Nonetheless, what little trade it has is crucial, imports perhaps more so than exports, since it needs to import items, such as spare parts, for its industries. North Korea's trade with China was already heavily decimated from sanctions. Due to the anti-COVID-19-measures, things have gone from bad to worse. Officially, reported trade dropped from already abysmal levels [by another 24 percent in January and February](#), compared to the year before. Moreover, in mid-April, the government [issued a general ban against all non-essential imports](#), as a further anti-COVID-19 preventative measure. Trade is already very difficult because of the extra scrutiny and disinfection measures imposed, leading to a backlog of reportedly thousands of containers by the border and in ports.

As logic would dictate, prices have risen, and at least in Pyongyang, citizens have reportedly been [hoarding imported products](#). The import stop and added difficulties in conducting trade will likely leave North Korea at an [even greater shortage](#) of fertilizers and other essential agricultural products than usual during the upcoming planting season, which could possibly lead to a food shortage come the fall harvest. There are strong signs that the regime faces an increasingly serious shortage of foreign currency. The shortage may lead to more [severe oppressive economic policies](#), as the regime pressures the population for cash through measures, such as forcing "loyalty contributions" or mandating entrepreneurs to purchase the recently issued government bonds.

What makes the COVID-19 situation different from sanctions is that had sanctions been *all* North Korea had to grapple with, then countries that oppose sanctions may have eased up in their implementation, particularly as they perceive the U.S. as the inflexible party. One can easily imagine a scenario in which China would, first under the radar but increasingly more openly, increase trade in sanctioned goods. It would do so not least to benefit its own provinces that border North Korea, which have suffered from the drastic fall in trade with the country. Over the past few months, [several firms involved in import-export with North Korea](#) have [received employment subsidies to cope](#). Under the current anti-virus measures, both China and North Korea themselves are the parties taking the measures to seal the border, unlike before, when the main party pushing for it through the United Nations was the United States.

Whither Kim Jong-un's Ambitions?

The impact of North Korea's anti-COVID-19 measures, coupled with continued sanctions, is potentially greater than short-term economic devastation. When Kim Jong-un came to power, he vowed that the people would ["never have to tighten their belt again."](#) He followed up this promise through most of his tenure by building massive white elephants, such as the Masikryong Ski Resort and refurbished and renovated entire neighborhoods in Pyongyang and Samjiyon, in the northernmost part of the country. Such construction sent a message that the country, overall, was reaching toward a higher socio-economic level and that even those far from the capital city, in North Korea's more remote provinces, would also see their living standards rise with time. Much of the country already did, not thanks to state investments in grand-scale infrastructure projects, but because Kim Jong-un [allowed for market mechanisms](#) to play an [increasingly greater role in economic management](#). Unlike his father Kim Jong-il, Kim Jong-un never really clamped down on the country's market system as a whole, and many of the economic improvements under the younger Kim can be explained by the state simply staying away [\(although this may be changing\)](#).

Over the past few months, however, the tone of state rhetoric has changed. While before it breathed optimism, North Korean state propaganda now speaks much more—and more realistically—about [problems and obstacles to economic development](#) and about the old themes of autarky and economic self-reliance. For the time being, any plans to lift North Korea to a higher plane of economic development have largely been put on hold.

What does this mean politically for Kim Jong-un, who staked much of his credibility on delivering economic progress? The truth is that no one really knows. On the one hand, North Korea is perhaps the harshest dictatorship in the world, and the regime crushes even the slightest hint of dissent with an uncompromising iron fist. Over 100,000 people are estimated to be imprisoned in labor camps, many for crimes of political nature (or "speaking mistakes" as the Korean term goes), some for life. Kim Jong-un was in fact absent not just for one period of several weeks—the initial one that drew so much international attention—but for two different periods, and only appeared in North Korean [media four times in all of April and May](#). Kim may be recovering from a medical procedure, but his absence may also be caused by caution against COVID-19. He may simply not want to conduct public visits or meeting sessions due to the risk of infection. In a system where so much power is centered around one single leader, his health is a top priority for national security in the eyes of the state, and will always be strongly guarded.

On the other hand, no dictatorship can truly function sustainably without any sense of at least tacit support from part of the population, such as the privileged, political core class. Kim has catered to this class in North Korea by overseeing their access to an essentially Western upper-middle class lifestyle in many respects, such as [luxury department stores](#) and a [water park](#). The provinces have seen little of this development, and the massive and growing



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cleavage between the capital city and everywhere else is another long-term problem for the regime. Even so, life in the countryside has improved overall, albeit more marginally, thanks to the growth of the market system.

What happens when, over the course of a longer period of time, things not only cease to improve, but become markedly more difficult? The general public may heed the state's call to get ready for some difficult times ahead for a while, but in the longer run, it may lead to widespread discontent. What that will mean for the North Korean regime, which has already survived challenges that seemed impossible, only time will tell.

Notes

[1] As compiled by the NK Pro Covid-19 Tracker.

[2] It is not entirely clear whether the system also exists in the countryside and on collective farms, or if *inminban* only exist in the cities. Some sources claim that a different institution exists outside of urban environments, but nevertheless, its functions are the same.

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Why Some Nursing Homes Are Better than Others at Protecting Residents and Staff from COVID-19

Source: <https://theconversation.com/why-some-nursing-homes-are-better-than-others-at-protecting-residents-and-staff-from-covid-19-138703>

June 10 – The coronavirus pandemic [has posed a serious threat](#) to the U.S. long-term care industry. A [third of all deaths](#) have been nursing home residents or workers – in some states it's more than half. Anna Amirkhanyan, Austin McCrea, and Kenneth J Meier write in *The Conversation* that, yet, some long-term care facilities have managed to keep the virus at bay. For example, [veterans' homes in California](#) have seen only a handful of cases among roughly 2,100 residents. And preliminary results of our research on COVID-19 cases and deaths in nursing homes also support the idea that some homes are doing better than others at protecting clients and staff from COVID-19. Why might this be?

Covid-19 antibody tests are raising as many questions as they answer

Source: <https://cen.acs.org/analytical-chemistry/diagnostics/COVID-19-antibody-tests-are-raising-as-many-questions-as-they-answer/98/i22>

Racism, the public health crisis we can no longer ignore

By Delan Devakumar, Sujitha Selvarajah, Geordan Shannon, et al. (June 11, 2020)

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31371-4/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31371-4/fulltext)

COVID response failure: Getting what we paid for with public health

By Drs. Art Papie and Paritosh Prasad

Source: <https://thehill.com/opinion/healthcare/502449-covid-response-failure-getting-what-we-paid-for-with-public-health>



June 12 – We are in the midst of an unprecedented global health crisis that is laying bare serious shortcomings in the American health system. With one of the [largest numbers of infected citizens](#) of any nation, our public health defenses have been overrun and we have fallen back on our front-line healthcare staff, nurses, doctors and emergency providers working tirelessly to blunt the deadly impact of the COVID-19 pandemic while running short of essential equipment and facing overwhelming odds.

As a nation, we will spend a staggering [\\$7.9 trillion](#) in response to this epidemic and incur a similarly stunning loss in GDP. But history, common sense, and the examples of many other first-world nations make one thing crystal clear: it did not have to be like this. **With a very**



small investment relative to other federal agencies and a tiny fraction of current spending on the pandemic response, we could have had a well-developed, evidence-based pandemic plan with experts trained and ready to execute it efficiently and effectively to save American lives.

One reason we have struggled and suffered so much more than most of our first-world peers is we have lost sight of our national faith in public health. Breathing new life into our nation's public health system is not just possible, it's critical for making our country much better prepared for the next public health crisis.

In the days following the 9/11 attacks, President Bush turned to public health legend [Dr. Donald A. Henderson](#) to drive HHS and CDC bioterrorism preparedness. Dr. Henderson called on our team at that time to develop the CDC's smallpox adverse reactions website and database, starting us on a decade-long journey that gave us a first-hand perspective on the inattention to public health and infectious disease preparedness.

Dr. Henderson started his career in epidemiology and public health during the height of the polio epidemic. Later in the '60s and '70s, he led the WHO campaign to eliminate smallpox, the first complete eradication of the disease in the human population. By the time we started working with him and others in 2001, attitudes toward public health had shifted dramatically, and federal funding for public health was on life support.

Over the course of our six-year public health initiative, we witnessed the level of resources going to the pharmaceutical industry soar, as faith and funding in public health plummeted. As of 2019, revenue from [single psoriasis and arthritis drug](#) was nearly 60 percent higher than [the entire CDC budget](#) for that same year.

Free-market capitalism often spurs creativity and has driven tremendous growth and innovation in every industry, including healthcare, but market forces do not always align with the public good. The successful government-led responses to polio, smallpox and other diseases showed that as a nation we could successfully invest to fill gaps where markets fail. Pharma will continue to play a major role in delivering therapeutics and vaccines, but our lack of pandemic preparedness demonstrates that profit motive alone does not always drive appropriate investment for meeting critical public needs.

This crisis is illuminating the failures of politicians and voters to prioritize public health. While spending tax dollars on government-led projects is often scrutinized and considered wasteful, it is possible to get very high-value returns for our tax dollars. The FAA's sizeable budget, for example, is money well-spent given the undeniable safety of the U.S. aviation system and its criticality to U.S. commerce and leisure. For reference, last year's FAA's budget was [\\$17.5B](#) — 45 percent higher than that of the CDC. We have prioritized airline safety and have extremely safe air travel to show for it, but we have de-prioritized public health and due to COVID [the daily death rates](#) are averaging the equivalent of seven [737s](#) crashing every day.

The largest reveal in this crisis has been the folly of prioritizing individual medical treatments while ignoring the critical importance of population-based science and public health. We reward expensive medications and procedures while underfunding vaccine development, surveillance and prevention.

Imagine if we chose to spend as much on the CDC and public health preparedness as we do on airline safety. How many masks, ventilators, isolation wards, and more would that extra \$5.4B have covered? Imagine the kind of robust public health surveillance and early containment that would be possible for high-risk infectious diseases and public health programs for vaccine research, nutrition, neonatal and infant health, addiction services, mental health, violence prevention, and more.

Perhaps in the wake of COVID, public health will forever be connected to survival and death avoidance, but the fundamental shift in understanding and support for public health needs to come from us — the citizens, activists, and voters.

It is up to each of us to make our voices known by calling our representatives, voting for candidates who support public health and talking and writing every chance we get in support of this vital function. We have gotten what we paid for. We need to spend more, and we must do better.

Art Papier, M.D., is CEO of VisualDx, a University of Rochester affiliated medical informatics company.

Paritosh Prasad, M.D., is an infectious disease and critical care medicine specialist, who leads the Strong Memorial Hospital ICU response to COVID-19.

What's the Impact of Turkmenistan's COVID Delusion?

By Catherine Putz

Source: <https://thediplomat.com/2020/06/whats-the-impact-of-turkmenistans-covid-delusion/>

June 01 – The Turkmen government maintains that it has detected no cases of the novel coronavirus that emerged from China in late December. In six months, the virus has infected more than 6.1 million people around the world; more than 372,000 have died. Turkmenistan



maintains an “authoritarian fantasy” that includes the unbelievable fiction that the virus has not arrived within its borders, a delusion which experts say has served to exacerbate existing social and economic difficulties in the country.

In a [virtual event](#) on March 28, the Daniel Morgan Graduate School (DMGS) gathered a panel of regional experts to discuss the state of affairs: Turkmenistan’s COVID delusion. Moderated by Edward Lemon of DMGS and Muhammad Tahir of RFE/RL, Crude Accountability’s executive director Kate Watters, RFE/RL’s Turkmen Service director Farruh Yusupov, and Luca Anceschi of the University of Glasgow spoke regarding the situation in Turkmenistan.

Turkmenistan is a notoriously opaque state, purposefully isolated by an authoritarian regime led since 2007 by Gurbanguly Berdimuhamedov. Traditional independent media in the country is virtually nonexistent and reporting about it from outside is difficult, hamstrung by an inability to access reliable information (and confirm that information) about conditions and policies. The result is the creation of separate realities on a spectrum from what outlets like RFE/RL report via their sources in the country to the glory days professed by Turkmen authorities.

“Turkmen authorities and the president likes to believe that everything is okay in Turkmenistan, everything is wonderful because they live in the era of might and happiness — even natural disasters cannot happen,” Yusupov commented, referring to what many have dubbed a [hurricane](#) that

ripped through eastern Turkmenistan’s Lebap and Mary provinces in early May.

Sources inside the country depict a troubled state of affairs, from rising food prices to a spike in pneumonia deaths since the start of the year. There have been reports of individuals arrested for discussing the pandemic in public or wearing masks; at the same time the authorities closed the country’s borders.

In his remarks, Yusupov commented that the Turkmen government is emboldened in its line of denial by the tacit support of those international organizations that are still present in the country.

Last month, a World Health Organization mission dispatched from Europe initially planned to visit Turkmenistan, after stopping in [Tajikistan](#), but the visit was called off on account of Ashgabat not issuing an official invitation to the organization. As RFE/RL’s [Bruce Pannier](#) noted at the time, without an official invitation, the WHO is left on stand-by but without any authority to enter the country. It may be pertinent to note that Tajikistan denied having any COVID-19 cases until immediately before the WHO mission arrived. In just one month Tajikistan’s case load soared from [zero](#) to over 4,000 (with the caveat that Dushanbe’s data is arguably suspect). It’s a side-effect of diplomacy: international organizations that are able to operate only at the behest of a host government don’t often call their hosts out for being liars.

In her remarks, Watters addressed the role of international institutions and their complicity, via silence, in maintaining the Turkmen government’s chosen fiction. She commented that the WHO and UN have taken “a very bureaucratic stance” in repeating, uncritically, government-provided data.

As Pannier reported in early May, the WHO’s on-site representative in Turkmenistan, Paulina Karwowska, after visiting quarantine zones in Lebap said, “We rely on Turkmenistan’s health-care bodies to report about confirmed cases, and up until now we have not been informed about any cases.”

And thus, Turkmenistan marches on, COVID-19 free; but the virus, analysis say, is impacting the country whether Ashgabat admits its presence or not.

Anceschi in his remarks noted that “COVID seems to be the catalyst that is amplifying Turkmenistan’s current progress.”

Existing social, political, and economic issues have been exacerbated by the virus. Anceschi focused his remarks on economic matters and Turkmenistan’s political isolation, and later in the discussion Watters highlighted this same effect on human rights issues. On the economic front, COVID-19 has prompted a new stage in the deterioration of the Turkmen economy, which began in 2009 with the Central Asia-China gas pipeline. That reoriented Turkmenistan’s gas market to serve a single major customer: China. Not only has volume of trade in energy plummeted because of the pandemic, but prices have tanked too — meaning if Ashgabat *could* find new customers, it won’t help much.

Turkmenistan’s isolation, Anceschi noted, has also been enhanced by the COVID-19 crisis at the same time that pressure on what social contract existed between the people at the state has been heightened.



Aneschi summed the situation concisely: “Unfortunately, the victim in all of this is the population, who’s having their rights to health disregarded by the government to create an authoritarian fantasy.”

Catherine Putz is managing editor of The Diplomat.

MUST READ

How Data Became One of the Most Powerful Tools to Fight an Epidemic

As public-health experts have known since the 19th century, information can be the best medicine. What new data streams could help quell future outbreaks?

By Steven Johnson

June 10, 2020

Source: <https://www.nytimes.com/interactive/2020/06/10/magazine/covid-data.html>

Steven Johnson is the author of twelve books, including his account of the 1854 cholera epidemic, “The Ghost Map,” and most recently, “Enemy of All Mankind: A True Story of Piracy, Power, and History’s First Global Manhunt.”



Smart thermometer and app

Source: <https://www.kinsahealth.co/products/>

Coronavirus: Damage from Covid-19 leaving lungs unrecognisable among deceased victims, says expert

Source: <https://www.independent.co.uk/news/health/coronavirus-autopsies-damage-dead-lungs-unrecognisable-covid-19-a9567936.html>

June 16 – Autopsies of deceased [Covid-19](#) patients are showing that the disease can damage their lungs to the point of being unrecognisable, a professor of cardiovascular science has said.

Professor Mauro Giacca, of [King’s College London](#), told a parliamentary Science and Technology Committee on Monday that he had examined the lungs, and other organs, of patients in Italy who had died after up to 40 days in intensive care.

A **“complete disruption of the lung architecture”** and fused cells with a high concentration of the virus were found, said Prof Giacca, who also warned that Covid-19 had the potential to create “real problems” for survivors of the illness.



“This information is largely missing in the literature because there have not been autopsies around the world,” he said.

“And what you can find in the lungs of people who have stayed with the disease for over a month before dying is something that is completely different from normal pneumonia, influenza, or even Sars-CoV-1.

“You see massive thrombosis. There is a complete disruption of the lung architecture – in some lights you can’t even distinguish that it used to be a lung.”

“There are large numbers of very big fused cells which are virus positive with as many as 10, 15 nuclei. I am convinced this explains the unique pathology of Covid-19. This is not a disease caused by a virus which kills cells, which had profound implications for therapy.”

He added that anti-viral therapy might work in the early phases of the diseased but admitted it was unlikely to provide

a cure for Covid-19 patients.

Prof Giacca gave his evidence to the [House of Lords](#) committee alongside a number of other leading academics investigating Covid-19 and its effects.



Sir John Bell, a professor of medicine at [Oxford University](#) who serves on the government's [coronavirus](#) taskforce, told peers he would be "very surprised" if the UK avoided a second wave of cases in the coming months.

"I think it is possible that we might not have a second wave," he said. "But I think given the fact that the lockdown has now been largely released, we're now back in action, and we have still, pretty rapidly declining, but a pretty reasonable level of infections in the community, I would be very surprised if we avoided the second wave.

"I think the real question is are we going to have a number of outbursts and then a second wave or are we just going to get a second wave."

Sir John also revealed that additional trials for Oxford University's vaccine candidate were set to be conducted in Africa, saying that the continent was likely to reach its peak infections in July according to the current available data.

Africa has yet to record the same number of cases and fatalities reported in Europe and the Americas, but Sir John said there are "bad things still to come". He added: "I'd like to think there aren't, but I worry about it".

The committee also heard from Prof Adrian Hayday, the chair of the department of immunobiology at King's College London, who said that the disproportionate effects of Covid-19 among black and minority ethnic communities in the UK could be linked to socio-economic factor.

"In studies of patients in London hospitals, black, African, Asian and minority groups show higher rates of admission to hospital, which shows they are more likely to have become infected under conditions where the virus dose is maybe high," he said.

"But once they are in hospital they do just as well as anybody. The hypothesis is they are disproportionately suffering from socioeconomic factors that make them more likely to receive high-frequency, high doses of infection. That is not to say the hypothesis is correct, but it is perfectly valid until proven otherwise."

Self-swabbing tests for COVID-19 accurate and safe, Stanford study reports

Source: <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2767065?resultClick=1>

June 12 – Test samples collected by people who swabbed their own nasal passages yielded results for the COVID-19 virus that were as accurate as samples collected by a health care worker, according to a small study by researchers at the Stanford University School of Medicine.

The study was published June 12 in the *Journal of the American Medical Association*.

The 30 study participants, who previously had tested positive for COVID-19, collected their own samples at a drive-through testing site after watching a short video animation and reading a one-page document instructing them how to perform the swab. The nasal swab for the study is more comfortable to use than the long nasopharyngeal swab currently used to collect samples from the back of the nasal cavity.

Allowing people who suspect they may have COVID-19 to collect their own sample has many advantages. Sample-collection kits could be widely distributed, allowing more people to be tested. Those using the kit wouldn't have to travel to a testing site, negating the risk of transmission to health care workers and others with whom they interact in transit. Self-collection would also conserve supplies of personal protective equipment used by health care workers.

Implementation of an Elastomeric Mask Program as a Strategy to Eliminate Disposable N95 Mask Use and Resterilization: Results from a Large Academic Medical Center

By Sricharan Chalikonda, Hope Waltenbaugh, Sara Angelilli, et al.

JACS; Sept 2020

Source: [https://www.journalacs.org/article/S1072-7515\(20\)30471-3/fulltext](https://www.journalacs.org/article/S1072-7515(20)30471-3/fulltext)

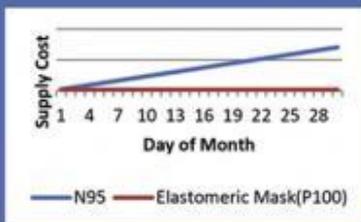
A cost-effective strategy for health care systems to offset N95 mask shortages due to the Coronavirus Disease 2019 (COVID-19) pandemic is to switch to reusable elastomeric respirator masks, according to new study results. These long-lasting masks, often used in industry and construction, cost at least 10 times less per month than disinfecting and reusing N95 masks meant to be for single use, say authors of the study, published as an ["article in press"](#) on the *Journal of the American College of Surgeons* website in advance of print.



Among nearly 2,000 health care providers receiving fit testing for an elastomeric mask (as required for any mask to make sure no unfiltered air penetrates it), 94 percent could wear one, the investigators reported. The small number of workers without a proper fit received an alternate type of respirator mask.

Implementation of an Elastomeric Mask Program as a Strategy to Eliminate Disposable N95 Mask use and Resterilization: Results from a Large Academic Medical Center

Lower Cost



10x cheaper than disposable N95s after one month of use



Operational Efficiency



94% successful in fit testing
Multiple users with single mask

Sustainability



No limit to number of uses.
Ready for next surge.

Chalikonda et al. J Am Coll Surg, September 2020



After a month of use, no one wearing an elastomeric mask chose to return to an N95 mask, according to the authors. Regarding the elastomeric masks, Dr. Chalikonda said, "Our clinicians were very comfortable with the fit, knowing it was an equivalent if not superior amount of protection, and that these masks were intended to be reused."

Furthermore, patients were receptive to their care providers wearing this type of respirator, he noted.

Although the elastomeric mask costs about \$20 and the filter costs \$10 compared with only \$3 at that time for an N95 mask, the research team found the elastomeric masks were "conservatively" 10 times less expensive.

Asymptomatic and presymptomatic transmission of SARS-CoV-2: A systematic review

By Christina Savvides and Robert Siegel

Source: <https://www.medrxiv.org/content/10.1101/2020.06.11.20129072v1.full.pdf>

Many of the statutes comprising the shelter-in-place and phased-reopening orders are centered around minimizing asymptomatic and presymptomatic transmission. Assumptions about the presence and relative importance of asymptomatic and presymptomatic transmission are based on case reports, the failing of quarantine measures aimed at sequestering ill patients, viral dynamic studies suggesting SARS-CoV-2 production peaks before symptoms appear, and modeling evidence that calculates serial interval between successive generations of infection. In aggregate, these data offer compelling evidence of presymptomatic and asymptomatic transmission, but individually these studies have notable shortcomings that undermine their conclusions. Conducting high quality studies with the aim of understanding the relative role



of presymptomatic and asymptomatic transmission is instrumental to developing the most informed policies on reopening our cities, states, and countries. To that end, the purpose of this systemic review is to discuss the literature of asymptomatic and presymptomatic transmission, highlight limitations of recent studies, and propose experiments that, if conducted, would provide a more definitive analysis of the relative role of presymptomatic and asymptomatic transmission in the ongoing SARS-CoV-2 pandemic.

COVID-19 Is a Deadly Reminder We Don't Understand Immune System Sex Differences

By Adam Moeser

Source: <https://www.sciencealert.com/covid-19-is-a-deadly-reminder-we-don-t-know-enough-about-human-immune-systems>

June 14 – When it comes to surviving critical cases of [COVID-19](#), it appears that men draw the short straw. Initial reports from China revealed the early evidence of increased male mortality associated with COVID. According to the [Global Health 50/50 research initiative](#), nearly every country is now reporting significantly higher COVID-19-related mortality rates in males than in females as of June 4.

Yet, current data suggest similar infection rates for men and women.

In other words, while men and women are being infected with COVID-19 at similar rates, a significantly higher proportion of men succumb to the disease than women, across groups of similar age.

Why is it then that more men are dying from COVID-19? Or rather, should we be asking why are more women surviving?

[I am an immunologist](#), and [I explore how stress and biological sex can impact a person's vulnerability to immune-mediated disease](#). I study a specific immune cell called the mast cell.

Mast cells play a pivotal role in our immune systems as they act as first responders to pathogens and orchestrate immune responses that help clear the invading pathogens.

Our research shows that [mast cells from females are able to initiate a more active immune response](#), which may help females fight off infectious diseases better than men.

But the trade-off may be that [women are at higher risk for allergic and inflammatory diseases](#). Recent evidence indicates that mast cells are activated by [SARS-CoV-2](#) which causes COVID-19.

Some clues to why females have higher survival rates may be found in our current understanding of differences in the [immune systems of men versus women](#).

Could sex differences in immune system play a role?

In general, females have a more robust immune response than men which may help females fight off infections better than males. This could be a result of genetic factors or sex hormones such as estrogen and testosterone.

Biological females have two copies of the X chromosome, which contains more immune genes.

While the genes on one X chromosome are mostly inactive, some immune genes can escape this inactivation, leading to double the number of immune-related genes and thus double the quantity of certain immune proteins compared with biological men who have only one X chromosome.

Sex hormones such as estrogen and testosterone can also impact the immune response. In one study, researchers showed that [activating the estrogen receptor in female mice provided them protection](#) against SARS-CoV. And there is an approved clinical trial that will examine the effects of [estrogen patches on the severity of COVID-19 symptoms](#).

It is, however, interesting that the current data showing that women have better survival rates than men applies to even men and women in the 80-plus age group, when hormone levels in both sexes equalize.

This suggests that factors other than adult sex hormone levels are contributing to sex differences in COVID-19 mortality.

Androgens, a group of hormones - including testosterone - that are best known to stimulate the development of male characteristics and can cause hair loss, have also received recent attention as a risk factor for COVID-19 in males. In a study conducted in Italy, prostate cancer diagnosis increased the risk for COVID-19.

However, prostate cancer patients who were receiving androgen-deprivation therapy (ADT), a treatment that suppresses the production of androgens which fuels prostate cancer cell growth, [had a significantly lower risk for SARS-CoV-2 infection](#). This suggests that blocking androgens in men was protective against SARS-CoV-2 infection.

It is unknown how ADT works to reduce infection rates in men and whether this has been shown in other countries has yet to be determined.



Testosterone, which is an androgen hormone has immune-suppressive effects so one explanation could be that ADT might boost the immune system to combat SARS-CoV-2 infection.

There is also evidence that males and females have different quantities of certain receptors that recognize pathogens or that serve as an invasion point for [viruses](#) like SARS-CoV-2.

One example is the quantity of [angiotensin converting enzyme 2 \(ACE2\) receptors](#), which SARS-CoV-2 binds to in order to infect cells. While there is currently no conclusive evidence for a role of ACE2 receptors impacting sex differences and the severity of COVID-19 disease, it remains a potential contributing factor.

Gender, sex, and COVID-19 risk

A number of factors can interact with biological sex to increase or decrease one's susceptibility to COVID-19.

Another major factor is gender, which refers to social behaviors or cultural norms that society deems appropriate.

[Males may be at increased risk for severe disease](#), because in general, they tend to smoke and drink more, wash their hands less frequently and often delay seeking medical attention.

All of these gender specific behaviors may put men at higher risk. While there is no current data yet on how gender plays a role in COVID-19, it will be a critically important factor to account for in order to understand sex differences in mortality.

Age, psychological stress level, coexisting conditions such as obesity, [diabetes](#) and cardiovascular disease can also interact with biological sex to increase disease.

While COVID-19 highlights the importance of biological sex in disease risk, sex biases in disease in general is not a new concept. COVID-19 is just another example of a disease that will be added to the growing list of diseases for which males or females are at increased risk.

A history of male-biased research

You might be wondering that if biological sex is so important, then why don't we know what is causing disparities in disease prevalence between the sexes and why are there no sex-specific therapies?

One major reason is when it comes to being included in scientific research, it is mostly males who have been studied.

This disparity between biological sex differences in research has only recently been remedied. It has only been in the last five years that the National Institutes of Health [has required sex difference data to be collected](#) for all newly funded preclinical research grants.

While there may be several reasons for choosing one sex over the other in research, the huge disparity that now exists is likely a major reason why we still know relatively little about sex differences in immunity, including the current COVID-19 [pandemic](#).

This has clearly hindered advancement of women's health, but also has negative consequences for men's health. For example, given the biological differences between the sexes, it is very possible that drugs and therapies will have different effects in females than males.

Biological sex is clearly a major factor determining disease outcomes in COVID-19. Precisely how your biological sex makes you more or less resilient to diseases such as COVID-19 remains to be elucidated.

Future basic research with animals and [clinical trials](#) in people need to consider biological sex as well as interactions with gender as an important variable.

Adam Moeser, Matilda R. Wilson Endowed Chair, Associate Professor of Large Animal Clinical Sciences, Michigan State University.

New COVID-19 Antibody Test Targets Unique Region of Spike Protein

Source: <https://www.genengnews.com/news/new-covid-19-antibody-test-targets-unique-region-of-spike-protein/>

June 15 – A reliable antibody test for COVID-19 is critical to identify any and all individuals who have been infected with SARS-CoV-2, regardless of clinical symptoms. This serological test is urgently needed to conduct surveillance, gain a better understanding of infection rates—especially the number of infections in people with mild or no symptoms who can still be carriers—and implement strategies to contain spread.

Scientists at the UNC School of Medicine have developed a new antibody test that includes a simplified experimental assay that could be ramped up to test thousands of blood samples at labs that do not have the resources of commercial labs and large academic medical centers.



The work is published in *Science Immunology* in the paper, “The receptor-binding domain of the viral spike protein is an immunodominant and highly specific target of antibodies in SARS-CoV-2 patients.”

The antibody test is based on the receptor-binding domain (RBD) of the spike protein. The RBD-based antibody test measures the levels of that domain, which the authors found correlate to the levels of neutralizing antibodies.

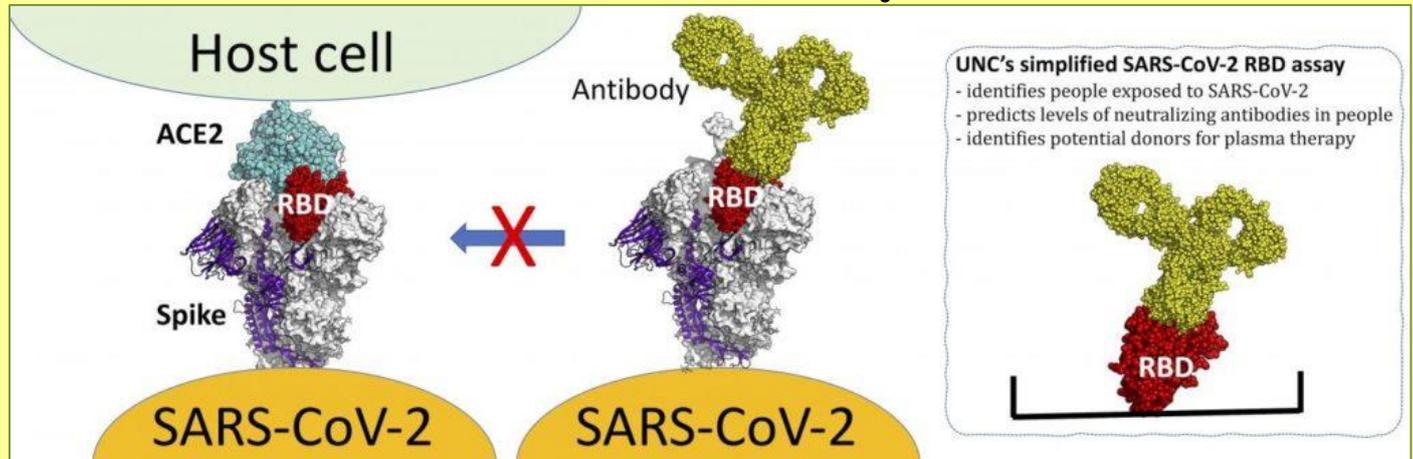


Illustration of the human antibody latching onto the receptor-binding domain (RBD) of the spike protein of SARS-CoV-2. [UNC School of Medicine].

The RBD of the spike protein in SARS-CoV-2 is not shared among other known human or animal coronaviruses. Therefore, antibodies against this domain are likely to be highly specific to SARS-CoV-2, and so these antibodies reveal if an individual has been exposed to the virus that can cause COVID-19.

Given that, it “represents a promising antigen for detecting CoV-specific antibodies in people.”

Indeed, when the researchers tested blood collected from people exposed to other coronaviruses, none had antibodies to the RBD of SARS-CoV-2.

They used a large panel of human sera (63 SARS-CoV-2 patients and 71 control subjects) and hyperimmune sera from animals exposed to zoonotic CoVs to evaluate RBD’s performance as an antigen for reliable detection of SARS-CoV-2-specific antibodies.

“Our assay is extremely specific for antibodies to the virus that causes COVID-19, which is not the case for some currently available antibody tests,” said co-senior author Aravinda de Silva, PhD, professor of microbiology and immunology at UNC. “Our results strongly support the use of RBD-based antibody assays for population-level surveillance and as a correlate of the neutralizing antibody levels in people who have recovered from SARS-CoV-2 infections.”

By day 9 after the onset of symptoms, the authors wrote that “the recombinant SARS-CoV-2 RBD antigen was highly sensitive (98%) and specific (100%) for antibodies induced by SARS-CoVs.” They noted that they observed a strong correlation “between levels of RBD binding antibodies and SARS-CoV-2 neutralizing antibodies in patients.”

Their results, they wrote, which reveal the early kinetics of SARS-CoV-2 antibody responses, “support using the RBD antigen in serological diagnostic assays and RBD-specific antibody levels as a correlate of SARS-CoV-2 neutralizing antibodies in people.”

First author Prem Lakshmanane, PhD, assistant professor of microbiology and immunology at UNC, said, “We are now further streamlining our test into an inexpensive assay, so that instead of the test taking four to five hours to complete, our assay could be completed in about 70 minutes without compromising quality.”

The de Silva Lab collaborated with David Martinez, PhD, in the laboratory of world-renowned coronavirus expert Ralph Baric, PhD, to test if the RBD-based antibody levels in patients correlated with levels of neutralizing antibodies found in a similar assay developed in the Baric lab.

“We observed a robust correlation between levels of RBD-binding antibodies and SARS-CoV-2 neutralizing antibodies in individual samples,” Lakshmanane said. “This means our assay not only identifies people exposed to SARS-CoV-2, but it can also be used to predict levels of neutralizing antibodies and to identify potential donors for plasma therapy.”

“We don’t see our research as a means to replace commercial tests,” said de Silva. “Commercial tests are critical, especially for making decisions about the clinical management of individual patients. But it’s too early in the pandemic to know if the commercial assays are suitable for identifying people who experienced very mild or no disease after infection or if the assays tell us anything about protective immunity, as researchers are still learning about this virus.”

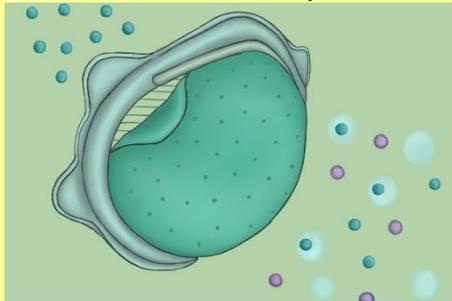


He added, “It’s important for researchers to stay engaged, to monitor antibody responses and other biological details, and to fine-tune assays to meet the different needs of individual patients, the public health community, and vaccine developers.”

Peel-off membrane could allow N95 masks to be reused many times

Source: <https://newatlas.com/good-thinking/peel-off-membrane-n95-masks/>

June 15 – Although N95 face masks are quite effective at blocking transmission of the COVID-19-causing SARS-CoV-2 virus, they’re also intended to be used only a few times at most. A new removable membrane, however, could make them much more reusable.



Led by Prof. Muhammad Mustafa Hussain, a team at Saudi Arabia’s King Abdullah University of Science and Technology (KAUST) started with a thin film of a polymer known as polyimide. After a porous silicon template was placed over that film, a process called [reactive ion etching](#) was used to create an array of tiny pores within it.

The size of the pores ranged from 5 to 55 nanometers (nm) – this is considerably smaller than individual SARS-CoV-2 viruses, which range from 65 to 125 nm in width. In order to allow for sufficient breathability, those pores were placed no farther than 330 nm apart from one another.

The resulting membrane was shown to be highly effective at blocking the virus while still allowing the user to breath comfortably, adding to the protection already offered by the N95 mask itself. It’s simply applied to the surface of the mask before each use, then just peeled off and disposed of afterwards.



Polyimide thin layer coated on a 4-in silicon wafer and cured (left). Polyimide-based nanoporous membrane during the release from the wafer (right).

And as an added bonus, because the membrane is hydrophobic (water-repelling), it causes droplets and other contaminants to roll off instead of clinging to its surface and clogging its pores.

There’s currently no word on when the membrane may be commercially available.

►► A paper on the research was recently published in the journal [ACS Nano](#).

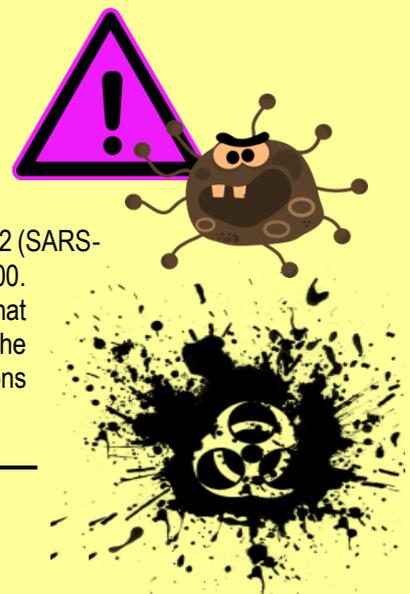
COVID -19: a global threat to the nervous system

By Igor. J Koralnik and Kenneth L. Tyler

Annals of Neurology

Source: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/ana.25807>

June 07 – In less than 6 months, the severe acute respiratory syndrome-coronavirus type 2 (SARS-CoV-2) has spread worldwide infecting nearly 6 million people and killing over 350,000. Initially thought to be restricted to the respiratory system, we now understand that coronavirus disease 2019 (COVID-19) also involves multiple other organs including the central and peripheral nervous system. The number of recognized neurologic manifestations



of SARS-CoV-2 infection is rapidly accumulating. These may result from a variety of mechanisms including virus-induced hyper-inflammatory and hypercoagulable states, direct virus infection of the CNS, and post-infectious immune mediated processes. Example of COVID-19 CNS disease include **encephalopathy, encephalitis, acute disseminated encephalomyelitis, meningitis, ischemic and hemorrhagic stroke, venous sinus thrombosis and endothelialitis. In the peripheral nervous system COVID-19 is associated with dysfunction of smell and taste, muscle injury, the Guillain-Barre syndrome and its variants.** Due to its worldwide distribution and multifactorial pathogenic mechanisms, COVID-19 poses a global threat to the entire nervous system. While our understanding of SARS-CoV-2 neuropathogenesis is still incomplete and our knowledge is evolving rapidly, we hope that this review will provide a useful framework and help neurologists in understanding the many neurologic facets of COVID-19.

This Disastrous Lockdown Can Never Be Repeated, Even If the Virus Returns

Source: <http://www.homelandsecuritynewswire.com/dr20200616-this-disastrous-lockdown-can-never-be-repeated-even-if-the-virus-returns>

June 16 – Three months after we entered lockdown, as we tiptoe out to non-essential stores and meet a lonely relative, we can begin to benefit from something previously unavailable – experience. William Hague writes in [The Telegraph](#) that instead of having to rely entirely on widely varying mathematical models and fight an unknown virus in a fog of uncertainty, governments can start to see what has actually worked in different places around the world.

There are many more things we know now about the coronavirus and its effects that we did not know three months ago, Hague writes. Chief among them is this: We can also begin to discern the true cost of a national lockdown, not just in economic but in human terms.

The unemployment figures about to be released represent a personal catastrophe for hundreds of thousands of people. Large rounds of corporate redundancies mean worse is to come. For many individuals, lockdown is going to mean depression, family breakdown and despair.

On top of this, we can now be sure that there will be tens of thousands of undetected cancers. Evidence is mounting that domestic abuse is rising, and mental health deteriorating. Dental standards will have dropped sharply, with lasting consequences. Above all, the education and development of millions of young people has been severely damaged, and they will carry the scars of that for the rest of their long lives.

We now know therefore that a lockdown is not a temporary blip or a paid holiday, but a disaster for our society. It is increasing inequality, social tension, and unaffordable debt. Globally, the World Bank has estimated that up to 60 million people will be pushed into extreme poverty. Such a disaster cannot under any circumstances be repeated. There can be no second lockdown.

....

We have seen enough to know that a [lockdown is so destructive](#) that it can only ever be allowed once. That is why we should get out of it as soon as that can safely be done. But it is also why we should prepare, invest and organize to avoid it ever being contemplated again.

Can Mouthwash Douse the Spread of COVID-19?

By Michael Vlessides

Source: <https://www.medscape.com/viewarticle/932214>

June 12 – Can oral rinses help stop the spread of COVID-19? After reviewing evidence from more than 100 articles, researchers have concluded that some oral rinses may help curb the spread of SARS-CoV-2, but more research is "desperately" needed.

Although investigators recognize the role that such products might play in curtailing the pandemic, they are calling for more research to help shed some much-needed light on the subject.

It is possible that dampening down the levels of shed virus, even transiently, may have an impact on transmission of disease to vulnerable people or to healthcare professionals who routine work in the upper airway, such as ear, nose, and throat surgeons, anesthesiologists, and dentists



If Scientists Are Wrong about COVID, They Must Be Held to Account

Source: <http://www.homelandsecuritynewswire.com/dr20200616-if-scientists-are-wrong-about-covid-they-must-be-held-to-account>

June 16 – The world has panicked, and the British government has panicked worse than most. We scared ourselves and our fellow citizens out of rational thought. Matthew Parris writes in [The Times](#) that by losing our sense of proportion I submit we have crashed our economy, crashed our education system, our performing arts, our tourist and travel industry, and blighted the life chances of a whole generation. Before too long, commentators, politicians and scientists may be blushing at the mess we made of our national response to the coronavirus pandemic. Commentators will duck. Politicians will be blamed for everything, and who can doubt that political leadership has been a shamble? **But how about “the science”, those men and women, academics, doctors and mathematical modelers, in whose expertise ministers once placed their trust?**

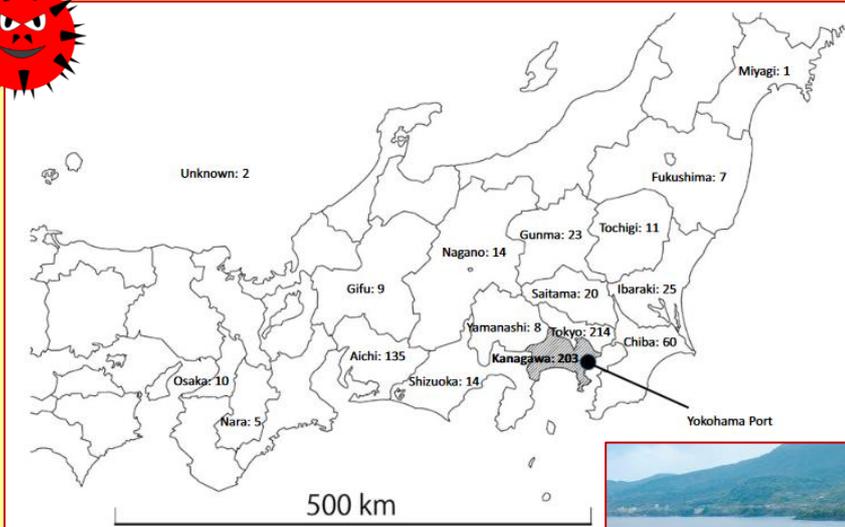
New bio-ink could be used to 3D-print body parts inside the patient

Source: <https://newatlas.com/3d-printing/bio-ink-3d-print-body-parts/>

Medical Transport for 769 COVID-19 Patients on a Cruise Ship by Japan Disaster Medical Assistance Team

By Hideaki Anan, MD PhD, Hisayoshi Kondo, MD PhD, and Ichiro Takeuchi, MD PhD; et al.

Source: [here](#)



The Diamond Princess cruise ship, carrying **3711 passengers and crew members**, docked at Yokohama Port in Japan on February 3, 2020. A quarantine was immediately instituted because 1 passenger who had disembarked in Hong Kong was confirmed to have tested positive for coronavirus disease 2019 (COVID-19).

After the quarantine began, all passengers and crew were tested using the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) polymerase chain reaction assay on the ship, **696 of whom tested positive.**



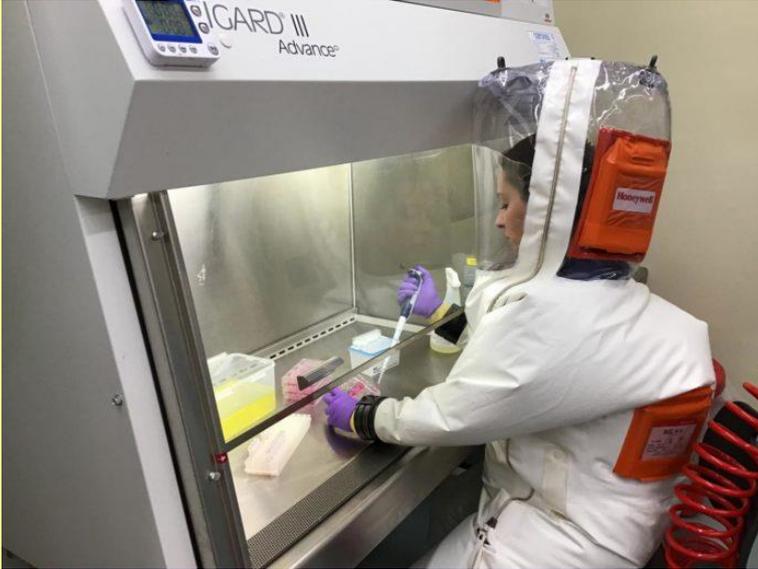
In total, 769 patients, including 696 with COVID-19, required transport to a hospital. The Japan Disaster Medical Assistance Team (DMAT) successfully picked up and safely transported the COVID-19 patients using a novel classification system to prioritize patients.

The Japan DMAT transported 203 patients to hospitals in Kanagawa and another 566 patients to hospitals in 15 different prefectures.



Coronavirus Latches on to Membrane-Wrapped Nanosponges, Dramatically Reducing Infectivity

Source: <https://www.genengnews.com/news/coronavirus-latches-on-to-membrane-wrapped-nanosponges-dramatically-reducing-infectivity/>



Researcher Anna Honko prepares the assay in the BSL-4 in the National Emerging Infectious Diseases Laboratories (NEIDL). [Courtesy of the Griffiths lab at Boston University's National Emerging Infectious Diseases Laboratories (NEIDL)]

June 18 – Researchers at the University of California, San Diego (UCSD) have developed “nanosponges” that can attract and neutralize SARS-CoV-2 in cell culture, causing the virus to lose its ability to hijack host cells and reproduce. Cloaked in the cell membranes from either human lung cells or human immune cells, the nanoparticles are designed to protect the healthy cells that the virus invades, rather than targeting the virus itself. The approach effectively uses nanoparticles to soak up harmful pathogens and toxins, hence the name nanosponges. When tested by researchers at Boston University, both the lung cell and immune cell types of nanosponge caused the

SARS-CoV-2 virus to lose nearly 90% of its viral infectivity in a dose-dependent manner. Viral infectivity is a measure of the ability of the virus to enter the host cell and exploit its resources to replicate and produce additional infectious viral particles. “Traditionally, drug developers for infectious diseases dive deep on the details of the pathogen in order to find druggable targets,” said Liangfang Zhang, PhD, a nanoengineering professor at the UCSD Jacobs School of Engineering. “Our approach is different. We only need to know what the target cells are. And then we aim to protect the targets by creating biomimetic decoys.”

Zhang and colleagues reported on their technology in *Nano Letters*, in a paper titled, [“Cellular Nanosponges Inhibit SARS-CoV-2 Infectivity.”](#)

Nanoparticles cloaked in human lung cell membranes and human immune cell membranes can attract and neutralize the SARS-CoV-2 virus in cell culture, causing the virus to lose its ability to hijack host cells and reproduce. The UCSD researchers call their nano-scale particles “nanosponges” because they soak up harmful pathogens and toxins. [David Baillot/University of California San Diego]

Scientists searching for new antiviral drugs need to understand the molecular mechanisms of viral infection, but this is a particular challenge with emerging viruses such as SARS-CoV-2, the authors noted. Moreover, antiviral medicines often target a single viral species, and so aren’t applicable to other viral species or families, and they may also become ineffective as the target virus mutates. “Therefore, an effective therapeutic agent to inhibit SARS-CoV-2 infectivity, as well as its potential mutated species, would be a significant game-changer in the battle against this public health crisis,” they continued.

An alternative approach to antiviral drug development would be to focus on affected host cells instead of targeting the causative agent. Zhang’s team developed the cellular nanosponges as a medical countermeasure to the coronavirus, in light of the fact that the infectivity of SARS-CoV-2 relies on its binding with protein receptors—either known or unknown—on the target host cells.

The biomimetic nanosponge platform was first developed by the Zhang lab more than a decade ago, and is being harnessed for a wide range of applications. With the emergence of SARS-CoV-2, the idea of using the nanosponge platform to fight the new virus came to Zhang “almost immediately,” he said.

SARS-CoV-2 commonly infects lung epithelial cells as the first step in COVID-19 infection, so Zhang and his colleagues reasoned that it would make sense to cloak a nanoparticle in fragments of the outer membranes of lung epithelial cells. Because “... the nanosponges display the same receptors that the viruses depend on for cellular entry,” the investigators wrote, the goal was to see if the virus could be tricked into latching on to the membrane proteins on the nanoparticles instead of attaching to the lung cells.



Each COVID-19 nanosponge consists of a polymer core coated in cell membranes extracted from either lung epithelial type II cells or macrophage cells. The researchers hypothesized that by binding to the nanosponges, each of which is a thousand times smaller than the width of a human hair, the coronavirus particles would then be unable to infect their usual cellular targets. Macrophages—which are white blood cells that play a major role in inflammation—are also very active in the lung during the course of a COVID-19, so Zhang and colleagues created a second nanosponge cloaked in macrophage membrane.

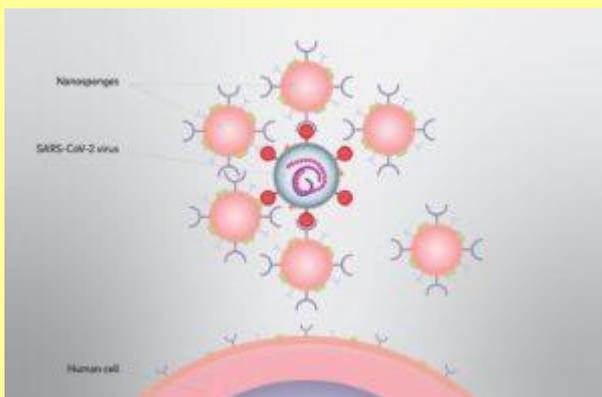
“Based upon the current knowledge of SARS-CoV-2, we fabricated two types of cellular nanosponges, human lung epithelial type II cell nanosponge (denoted “Epithelial-NS”) and human macrophage nanosponge (denoted “MΦ-NS”).” The membranes cover the sponges with all the same protein receptors as the cells they impersonate—and this inherently includes whatever receptors SARS-CoV-2 uses to enter cells in the body.

The researchers prepared several different concentrations of nanosponges in solution to test against SARS-CoV-2. They then collaborated with a team at Boston University’s National Emerging Infectious Diseases Laboratories (NEIDL) to perform independent tests that would assess the ability of the nanosponges to block viral infectivity. Scientists at the level 4 biosafety labs, led by Anthony Griffiths, PhD, associate professor of microbiology at Boston University School of Medicine, tested the ability of various concentrations of each nanosponge type to reduce the infectivity of the same strains of SARS-CoV-2 that are being used in other COVID-19 therapeutic and vaccine research.

The results showed that at a concentration of 5 mg/mL, the lung cell membrane-cloaked sponges inhibited 93% of the viral infectivity of SARS-CoV-2. The macrophage-cloaked sponges inhibited 88% of the viral infectivity of SARS-CoV-2. “From the perspective of an immunologist and virologist, the nanosponge platform was immediately appealing as a potential antiviral because of its ability to work against viruses of any kind,” said Anna Honko, PhD, a co-first author on the paper and a research associate professor of microbiology at NEIDL. “This means that as opposed to a drug or antibody that might very specifically block SARS-CoV-2 infection or replication, these cell membrane nanosponges might function in a more holistic manner in treating a broad spectrum of viral infectious diseases. I was optimistically skeptical initially that it would work, and then thrilled once I saw the results and it sunk in what this could mean for therapeutic development as a whole.”

A therapeutic dose of nanosponges might flood the lung with a trillion or more tiny nanosponges that could draw the virus away from healthy cells. Once the virus binds with a nanosponge, “it loses its viability and is not infective anymore, and will be taken up by our own immune cells and digested,” said Zhang.

In addition to the encouraging data on neutralizing the virus in cell culture, the researchers noted that nanosponges cloaked with fragments of the outer membranes of macrophages could also quiet cytokine storms in COVID-19 patients by soaking up inflammatory cytokine proteins that are implicated in some of the most dangerous repercussions of COVID-19, which are driven by the immune response to the infection. “For the treatment of COVID-19, MΦ-NS may have some significant advantages over Epithelial-NS,” the researchers wrote. “The clinical manifestation of COVID-19 is partially driven by direct viral damage but primarily by the immune response to the infection ... Specific to COVID-19, MΦ-NS can neutralize the viral activity not only early on to reduce the viral load in the body but also even late in the disease, and it will be able to address the fulminant inflammation associated with COVID-19.” Zhang further commented, “We will see if the macrophage nanosponges can neutralize the excessive amount of these cytokines as well as neutralize the virus.”



In lab experiments, both the lung cell and immune cell types of nanosponges caused the SARS-CoV-2 virus to lose nearly 90% of its “viral infectivity” in a dose-dependent manner. Viral infectivity is a measure of the ability of the virus to enter the host cell and exploit its resources to replicate and produce additional infectious viral particles. [David Baillot/University of California San Diego] - [YouTube](#)

The hope is that the nanosponges may also remain effective against mutated strains of the virus. “Another interesting aspect of our approach is that even as SARS-CoV-2 mutates, as long as the virus can still invade the cells we are mimicking, our nanosponge approach should still work. I’m not sure this can be said for some of the vaccines and therapeutics that are currently being developed,” Zhang continued. The researchers envisage that the nanosponges would in addition be effective against any new coronavirus or even other respiratory viruses, including whatever virus might trigger the next respiratory pandemic.



“The nanosponge platform offers a unique benefit over other therapies currently in development for COVID-19 in that the nanosponges are mutation and potentially virus agnostic,” they wrote. “In principle, as long as the target of the virus remains the identified host cell, the nanosponges will be able to neutralize the infection, providing a broad-acting countermeasure resistant to mutations and protection against this and other emerging coronaviruses.”

The UCSD researchers and collaborators aim to evaluate efficacy of the nanosponges in animal models, in the next few months. The team has already shown short-term safety in the respiratory tracts and lungs of mice.

Using macrophage cell fragments as cloaks builds on years of work to develop therapies for sepsis using macrophage nanosponges. In work reported in 2017, Zhang and a team of researchers at UCSD showed that macrophage nanosponges can safely neutralize both endotoxins and proinflammatory cytokines in the bloodstream of mice. Zhang co-founded a San Diego biotechnology company, Cellics Therapeutics, which is working to translate this macrophage nanosponge work into the clinic.

There will be a significant amount of research to be completed before scientists know whether the COVID-19 nanosponge platform would be a safe and effective therapy against the virus in humans, Zhang cautioned. “The utility of the cellular nanosponges for the treatment of SARS-CoV-2 infection requires further validation in appropriate animal models, which is currently underway, and this will pave the way for human clinical trials in the future,” the investigators noted. But if the sponges do reach the clinical trial stage, there are multiple potential ways of delivering the therapy, including direct delivery into the lung for intubated patients, via an inhaler like for asthmatic patients, or intravenously, especially for treating the complications of cytokine storm.

There’s also the potential to use the approach prophylactically. “I see potential for a preventive treatment, for a therapeutic that could be given early because once the nanosponges get in the lung, they can stay in the lung for some time,” Zhang said. “If a virus comes, it could be blocked if there are nanosponges waiting for it.”

The first of nanosponges created by Zhang’s lab were cloaked with fragments of red blood cell membranes. These nanosponges are being developed to treat bacterial pneumonia and have undergone all stages of preclinical testing by Cellics Therapeutics, which is currently in the process of submitting an IND application to the FDA for their lead red blood cell nanosponges for the treatment of methicillin-resistant staphylococcus aureus (MRSA) pneumonia. The company estimates the first patients in a clinical trial will be dosed next year. The UCSD researchers have also shown that nanosponges can deliver drugs to a wound site, sop up bacterial toxins that trigger sepsis, and intercept HIV before it can infect human T cells.

The basic construction for each of these nanosponges is the same: a biodegradable, FDA-approved polymer core is coated in a specific type of cell membrane, so that it might be disguised as a red blood cell, an immune T cell or a platelet cell. The cloaking keeps the immune system from spotting and attacking the particles as dangerous invaders. “I think of the cell membrane fragments as the active ingredients. This is a different way of looking at drug development,” said Zhang. “For COVID-19, I hope other teams come up with safe and effective therapies and vaccines as soon as possible. At the same time, we are working and planning as if the world is counting on us.”

Coronavirus: 5 technologies inspired by the pandemic

Source: <https://www.thenational.ae/uae/science/coronavirus-5-technologies-inspired-by-the-pandemic-1.1036287>

June 20 – The outbreak of the virus had led to a series of new or repurposed innovations

A touchless keypad that UAE University has developed can be used in lifts. Courtesy: UAE University

The coronavirus pandemic has led to an urgent focus on medical research to develop a vaccine or a cure for the deadly pathogen. But it has also sparked innovation in other areas of technology, as companies and universities have sought to develop products that can help contain the spread of the infection.

While some inventions have been created from scratch, others have stemmed from adapting existing technology.

Here are five examples, developed in the UAE and around the world, that have been inspired by the Covid-19 outbreak.

1. A touchless keypad

Contact with contaminated objects can spread the coronavirus, so researchers at UAE University have developed a touchless keypad for elevators.

Already deployed at Abu Dhabi International Airport, the technology uses infra-red sensors to detect fingers when they are 3cm away. The user simply puts his or her finger close to the button without touching it.





"We went through different approaches, mainly for selecting the best sensors," said Dr Fady Al Najjar, co-founder of Meta Touch, the company at UAE University's Science and Innovation Park that developed the keypad.

A touchless keypad that UAE University has developed. Courtesy: UAE University "It took about one-and-a-half months. We were working intensively because of the requirement to do this as soon as possible.

"We came up with three or four prototypes until we got the current prototype, but it's not actually finished. We're trying to develop different types and to enhance it."

The hope is that the system will continue to be deployed after the pandemic, helping to prevent the spread of future infections.

2. Social distancing alarms

With governments recommending the public to stay at least one metre, or in some cases two metres, apart, inventors have created alarm systems that activate when individuals get too close.

Meta Touch at UAE University's Science and Innovation Park has developed a system that uses thermal cameras to detect where people are. The cameras do not record details of faces, so privacy is safeguarded.

"It will be just a reminder, like an alarm, that beeps when people get very close to each other," said Dr Al Najjar of Meta Touch. "It will beep to remind people to keep their distance."

New systems have also been developed that can utilise existing cameras, including CCTV networks.

Scylla, a US and Armenian firm, uses artificial intelligence software to interpret surveillance camera footage and alert controllers if people get too close to one another.

"If they're congregating too much, maybe the tannoy announcer can say, 'Please be mindful of social distancing and keep two metres apart,'" said Elliot Zissman, a regional director for the firm.

3. Temperature sensors

Temperature sensors are not a perfect way to identify those infected with coronavirus, since some people can be asymptomatic. Nevertheless, they are able to identify a proportion of individuals with Covid-19 and are widely deployed at borders, schools and other venues.

When vast numbers of people need to be tested, however, scanning a crowd with cameras can become more efficient.

Scylla's system does just that by using a thermal camera and artificial intelligence to identify people's foreheads and pinpoint individuals with a high temperature.

"As people walk across the field of vision of the camera, it's taking multiple measurements," said Mr Zissman of Scylla.

"What the software allows is to look at all these people walking past and spot the outlier. All of this can be done in less than half a second."



4. The hygiene hook

While the coronavirus has led to many high-tech innovations, some are remarkably simple.

None more so than the hygiene hook, a hand-held hook that can open and close doors, eliminating the need to touch them with hands.

Some versions have a small flat surface on the end of them so that they can also be used to push buttons on lifts or punch the keys of an ATM machine.

While these hooks existed before the pandemic, designers, including British firm DDB, have been releasing versions in response to what they expect to be an increase in demand.

The hooks can easily be washed as they are typically made of non-porous materials such as plastic or metal.





Prices range widely, starting at about \$1 for the most basic types and going up to about \$15 for larger models.

5. The Immunotouch wristband

Wristbands are being promoted for their ability to reduce the spread of the coronavirus. One such device is Immunotouch, developed by a company based in Seattle, United States, called Slightly Robot.

Using an algorithm to interpret data from a gravity sensor or gravimeter, the wristband can determine if a person's hand is approaching his or her face and activate a buzzer.

The mouth, nose and eyes are all potential points where the new coronavirus can enter the body, so people can infect themselves if their hands are contaminated.

Immunotouch, a wristband that gives off an alarm when a person moves their hand close to their face. Courtesy: Slightly Robot

Originally developed to discourage habits such as nail-biting and hair-pulling, the Immunotouch has found renewed use since the coronavirus emerged.

Other forms of wristband are used to promote social distancing, with built-in alarms set off when the wearer steps too close to another person wearing another device. The carmaker Ford has been trialling their use to keep factory workers apart.

Fit testing for N-95 FFP2/P3 masks

Source: https://www.3m.co.uk/3M/en_GB/worker-health-safety-uk/safety-solutions/respiratory-protection-centre/respirator-fit-testing/



EDITOR'S COMMENT: Mask fit testing for gas masks have a logic because they are standard issues given to a first responder. In fact, you do not replace the mask unless exposed to chemical warfare agents (rare to none possibility) and even then, you can change the filters/canisters before disposing the mask. With N95 masks is quite the opposite. You change the mask everyday; sometimes 2-3 times per day. It is not ergonomic to repeat the test everytime you wear a new N95! On the other hand, the procedure is good for training purposes in order to make personnel understand the importance of wearing PPE by the book.

Estimated Airborne Decay of SARS-CoV-2 (virus that causes COVID-19) under a range of temperatures, relative humidity, and UV index

Source: <https://www.dhs.gov/science-and-technology/sars-airborne-calculator>

Use the sliders to select the UV index, temperature and relative humidity of interest. Information on how long SARS-CoV-2 would be expected to remain stable in aerosols



SARS-CoV-2 Airborne Decay Calculator

UV Index:

1 10

Temperature:

50 86

Relative Humidity:

20 70

COVID Stability:

% Virus Decay

Minutes

Hours

50% (half-life):

10.21

0.17

90%:

33.92

0.57

99%:

67.83

1.13

SARS-CoV-2 Airborne Decay Calculator

UV Index:

1 10

Temperature:

50 86

Relative Humidity:

20 70

COVID Stability:

% Virus Decay

Minutes

Hours

50% (half-life):

4.33

0.07

90%:

14.38

0.24

99%:

28.76

0.48

(airborne) will be displayed in the table below. Users can find the environmental conditions for a specific location by accessing general weather resources online.

▶▶ See also: [Surface decay calculator](#)

DHS S&T Develops DIY Method to Decontaminate Masks with a Multicooker

Source: <https://www.dhs.gov/science-and-technology/news/2020/06/19/news-release-st-develops-diy-method-decontaminate-masks>

June 19 — A household appliance, which may be sitting inside your kitchen cabinet, can now be used as a powerful tool in the fight to control COVID-19. Researchers with the Department of Homeland Security (DHS) [Science and Technology Directorate](#) (S&T) developed a do-it-yourself solution to decontaminate personal protective equipment (PPE) using a programmable multicooker.

“S&T is thinking creatively during this nationwide crisis,” said William N. Bryan, DHS Senior Official Performing the Duties of the Under Secretary for Science & Technology. “We understand that PPE is not always readily available and are working tirelessly to provide Americans with simple methods to extend the life of this important equipment.” Personal protective equipment, specifically respiratory protection such as N95 masks, are an effective way to reduce exposure to airborne SARS-CoV-2, the coronavirus that causes COVID-19. With high demand resulting in limited supply, S&T focused efforts on finding affordable and easy methods that allow masks to safely be reused.

Evaluating common household devices, researchers identified programmable multicookers as a readily accessible and effective means to decontaminate masks, using moist heat, one of three methods recommended by the [Centers for Disease Control and Prevention](#) (CDC).

Moist heat decontamination is achieved by treating masks with 149°F steam for 30 minutes. Key steps include placing the mask(s) in a paper bag, filling the multicooker with a half inch of water and setting the bag on a rack inside of it. S&T verified these conditions inactivate



the virus below detectable limits in culture media and simulated saliva, while the masks still meet performance specifications after five treatments. Further research will determine if the virus is also inactivated in lung fluid, and whether this process is effective for additional treatments.

“Given the significance of this outbreak and importance of respiratory protection for first responders and medical professionals, we’re investigating simple, low-cost means to sanitize potentially contaminated N95 respirators,” said General Biological Scientist Dr. Lloyd Hough, and lead for S&T’s [Hazard Awareness & Characterization Technology Center](#). “We hope front line personnel who need to use them can take advantage of this approach to extend the life of their limited supply of this critical piece of PPE.”

[Full instructions, a video, fact sheet and FAQ](#) about the process are available on the S&T website. The list of tested equipment is not to be suggested as an official endorsement of any particular brands or models but represent examples of the capabilities needed to achieve the desired results. If using another brand, it is important to verify that it can operate at 149°F, as different times or temperatures may not kill the virus or could damage the mask.

S&T is continuing its laboratory research. Among other efforts in the battle against COVID-19, S&T produces the [Master Questions List](#) (MQL), which summarizes scientific research to determine what is known about the virus and what additional information is needed, and has produced two decay calculators that can help determine the lifespan of the virus on surfaces and in the air under varied environmental conditions. These resources are being produced as part of S&T’s [Probabilistic Analysis for National Threats Hazards and Risks](#) (PANTHR) program and are updated regularly as additional data become available.

What is the secretive institute that found an antibody to the coronavirus?

By Anna Ahronheim

Source: <https://www.jpost.com/health-science/what-is-the-secretive-institute-that-found-an-antibody-to-the-coronavirus-627133>

May 06 – Late on Monday night after Prime Minister Benjamin Netanyahu told Israelis the country would slowly reopen after close to two months, the Defense Ministry announced the Israel Institute for Biological Research had completed a groundbreaking scientific development, identifying an [antibody](#) that neutralizes the coronavirus.

The Institute for Biological Research ([IIBR](#)) has been playing a key role in the fight against the deadly virus since early February after being asked by Netanyahu. Last month, it announced it had begun testing a COVID-19 vaccine prototype on rodents.



But what is the IIBR? Like Israel’s nuclear facility in Dimona, the IIBR operates under the auspices of the Prime Minister’s Office and works closely with the Defense Ministry.

Most of the work carried out by the secretive institute is a heavily guarded secret reinforced by military censorship. But its history began before the founding of the State of Israel.

In 1948, a Science Corps, known by its Hebrew acronym HEMED, was established within the IDF. A unit devoted to biological warfare was established under the name HEMED BEIT. It was housed in a single building in a remote orange grove outside Ness Ziona, dozens of kilometers south of Tel Aviv.

Everything regarding the unit was kept a closely

guarded secret from the start. And while it was controversial to many senior officials at the time, scientists as well as Prime Minister David Ben-Gurion were adamant that Israel know how to defend itself against nonconventional attacks.

According to reports, HEMED BEIT was accused of being involved in several operations that targeted the Arab population prior to the establishment of the state in an attempt to drive them from their villages.

Avner Cohen, in a 2001 article entitled “Israel and Chemical/Biological Weapons: History, Deterrence, and Arms Control,” wrote that the scientists involved in HEMED BEIT “firmly believed” that “if microbiology could help in providing the means to establish the Jewish State, so be it.”



In 1993, one of the scientists involved in HEMED BEIT, Ephraim Katzir, was interviewed by Israel's Hadashot news and was quoted by Cohen in his report as saying: "We planned various activities to get a sense of what Chemical Biological Weapons (CBW) is and how we could build potential in this area. We needed to know how to defend against such weapons. We knew that in surrounding countries others were developing biological weapons. We believed that scientists should contribute to the strengthening of the State of Israel."

Ernst David Bergmann is best known as the father of Israel's nuclear program. He founded the Israel Atomic Energy Commission in 1952. But his contribution to Israel's chemical/biological capabilities was crucial.

During the War of Independence, Bergmann used the Weizmann Institute of Science (known then as the Seiff Institute) as a research base for HEMED. Bergmann, who in 1951 was appointed by Ben-Gurion as chief of research at the Defense Ministry and scientific adviser to the prime minister, then set up government-sponsored research centers that focused on nuclear and chemical-biological science.

The IIBR, a continuation of HEMED BEIT, was formally established in 1952 in the same Ness Ziona orange grove by a group of scientists from the IDF Science Corps and from academic organizations. Like its predecessor, from the start it was regarded as a highly classified research center.

"Given the climate of the times, it is doubtful that Bergmann and his IIBR colleagues made a distinction between defensive and offensive research development," Cohen wrote. "In those days, national CBW programs were not illegal or even at odds with international norms."

But unlike HEMED BEIT, Bergmann wanted the IIBR to have a civilian identity. Therefore, it did not focus solely on military CBW programs, but rather a broad range of scientific research projects that would help the young state.

Over the years, the IIBR has been involved in a series of groundbreaking scientific research, including a project to develop a vaccine against polio, developing kits for detecting explosive materials, a drug to treat Sjogren's syndrome and more.

Still located in Ness Ziona, the IIBR is surrounded by a large wall with a gate that blocks its entrance. But it is no longer housed in a small building, but rather in a spacious building that once belonged to an Arab effendi and a large modern research complex that contains dozens of laboratories.

Prof. Shmuel C. Shapira, an anesthesiologist by training, has headed it since 2013. The IIBR employs some 350 people, including about 160 scientists with doctorates in biology, biochemistry, biotechnology, analytical chemistry, organic chemistry, physical chemistry, pharmacology, mathematics, physics and environmental science. There are another 160 technicians and administrative staff.

It continues to be viewed by the defense establishment as one of the country's most secretive defense installations. The public rarely knows what goes on behind the highly guarded walls of the institute.

Though it has expanded its research, according to foreign publications, the institute is still involved in developing biological and chemical weapons.

It has also had its fair share of controversies.

In 1983, the deputy director of the IIBR, Marcus Klingberg, was arrested along with his wife for passing the institute's secrets to the Soviets. Klingberg, who was regarded as one of the world's most-respected epidemiologists and an expert on top-secret biological and chemical research, was one of the founding members of the IIBR after he served in HEMED BEIT.

During his 30 years at the institute, he was questioned twice by security officials (in 1965 and 1976) but was only arrested close to a decade later. His arrest was kept secret until 1993. He was sentenced to 20 years in prison, including 10 years in solitary confinement, before he was released in 2003. He died in 2015 in Paris.

While the majority of the case remains classified, according to foreign reports, it is believed that he gave the Soviets some of Israel's most sensitive military secrets in the field of CBW.

In 1992, an El Al transport plane carrying some 189 liters of dimethyl methylphosphonate (DMMP), a dual-use chemical used in the production of Sarin nerve gas, crashed in Amsterdam, killing more than 40 people. The DMMP was designated for the IIBR, according to *The New York Times*.

"Since 1995, the institute has operated as a government-affiliated unit that researches all areas of defense against chemical and biological weapons, including the operation of national laboratories for detection and identification of such threats," the institute says on its website.

During the "Omer-2" project, some 760 soldiers served as guinea pigs over the course of eight years in the 1990s as the country worked to develop a vaccine against anthrax. The project, headed by Dr. Avigdor Shafferman (who later became the director general of the IIBR), was carried out in cooperation with the Defense Ministry and the IDF Medical Corps.



Troops were injected with up to seven doses of the vaccine but were not informed of the risks of being infected with the deadly disease.

In 2007, dozens of soldiers were interviewed by Israel's Uvda television show. They suffered from medical conditions such as skin tumors, intestinal and digestive issues, severe lung infections, serious migraines, bronchitis, epilepsy and feelings of constant tiredness and weakness.

According to a 2011 report in Haaretz, the soldiers from the military's elite Unit 8200, paratroopers and others "participated in these experiments, in complete contravention of the Helsinki Accords, which established rules for medical experiments on human subjects." While the exposure of the project sparked a massive public uproar and saw army regulations for conducting trials on human subjects tightened, Shafferman and others involved were not prosecuted, Haaretz reported.

The institute also was reported to be behind the poison injected into senior Hamas official Khaled Mashaal in Amman, Jordan, in 1997. Israel admitted to the failed assassination attempt and provided the serum that saved his life in return for the Mossad agents who had been captured. The antidote, which was originally meant for Israeli operatives should they come into contact with the poison, was allegedly developed at the IIBR.

But despite the controversies, the IIBR continues to carry out dozens of civilian research projects and works on pharmaceuticals, vaccines, treatments and antibodies to protect Israeli civilians from CBWs.

According to open sources, in addition to its defense-related research, scientists at the center are also involved in developing means for diagnosing contagious diseases, solutions for environmental problems and medications.

The IIBR was also involved in trying to develop a vaccine for the SARS disease when the outbreak occurred in 2003, but it never panned out.

Close to two decades later, the scientists at the IIBR, surrounded by orange groves in Ness Ziona, may be the ones to bring the coronavirus to its knees.

Anna Ahronheim is the military reporter for 'The Jerusalem Post.' She grew up in Montreal, Canada and received her BA in Criminology and Criminal Justice with a focus in Law from Carleton University in Ottawa, Canada. With a keen interest in the Middle-East, terrorism and terror groups, she moved to Israel and received her MA in Counter-Terrorism and Homeland Security at the Interdisciplinary Center of Herzilya, Israel.

COVID-19 Might Not Change Cities as Much as Previous Pandemics

Source: <http://www.homelandsecuritynewswire.com/dr20200620-covid19-might-not-change-cities-as-much-as-previous-pandemics>
 June 20 – Plague, cholera and tuberculosis have all left marks on urban architecture. The [Economist](#) writes that this may not be the case with the current epidemic. If covid-19 can be run to ground in a couple of years, the urban fabric might not change much. Plague, cholera and tuberculosis worked on cities slowly. They forced change because people believed they would return or never leave. By contrast, many people hope that coronavirus will be defeated fairly quickly. In the first country it attacked, some urban adaptations have already been undone. In China many apartment blocks acquired shelves where delivery drivers could leave food and other goods. Almost as soon as the lockdowns lifted, they were taken down.

How Safe Is Flying in the Age of Coronavirus?

By Charlotte Ryan and Naomi Kresge (Bloomberg)

Source: https://www.washingtonpost.com/business/how-safe-is-flying-in-the-age-of-coronavirus/2020/06/19/391742d6-b1e4-11ea-98b5-279a6479a1e4_story.html

June 19 – With many governments loosening travel restrictions to restart economies, airlines have begun restoring flights that were put on hold as the coronavirus pandemic spread. Business is slow, as would-be passengers worry about being stuck in a cabin for an extended time with possibly infectious strangers. The record shows the risks aren't negligible.

1. Has coronavirus spread on airplanes?

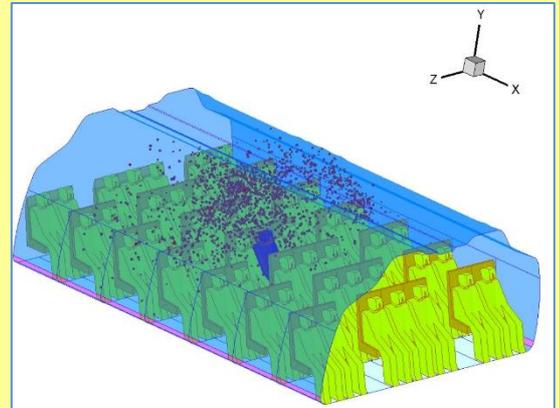
Yes. While there is still relatively little published research on the spread of the virus on airlines, an investigation into a March 2 flight from the U.K. to Vietnam suggested that one passenger transmitted the virus to as many as 14 others and a crew member. Twelve of these passengers were sitting close to the suspected first case, which matches the expected spread of this and other coronaviruses. The International Air Transport Association, the trade



group for the world's airlines, said that aside from this case, an informal survey of 18 major airlines identified four episodes in the first three months of the year of suspected in-flight transmission from passengers to crew, and a further four where one pilot appeared to give the virus to another. This group of airlines represented 14% of global air traffic in that period, according to IATA.

2. Have similar viruses spread on planes?

Yes, viruses including SARS, influenza and smallpox, which like the novel coronavirus are transmitted through the coughing, sneezing and breathing of those who are infected, have spread on aircraft. During the 2003 outbreak of SARS, which is also caused by a coronavirus, 40 flights were found to have carried probable cases of the SARS virus and resulted in spread to other passengers. Studies have found that the greatest risk comes from sitting within two rows of a contagious passenger for a flight longer than 8 hours. Still, in a case in which 20 people developed the virus from exposure to an infected passenger on an Air China flight from Hong Kong to Beijing, fewer than half were sitting within two rows of the original case. And more infections were seen in passengers sitting on the opposite side of the center aisle.



3. What can make flying risky?

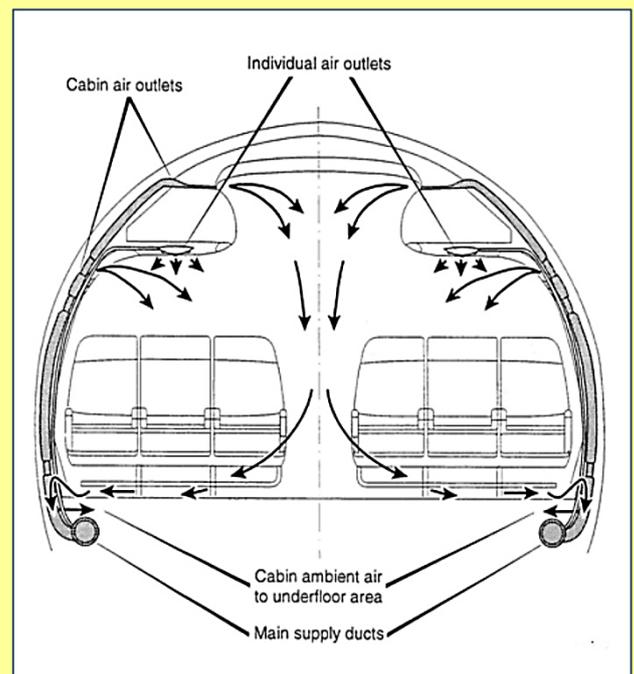
People infected with the novel coronavirus emit virus-containing droplets from their noses and mouths, which can be transferred directly to someone in close proximity or by touching a contaminated surface and then the mouth, nose or eyes. What makes flying risky is the same as other forms of transport: close proximity to other people and common touch areas. The airport can also be a risk as passengers wait in queues, check in for flights, visit food vendors, and use facilities such as bathrooms.

4. What about airborne transmission?

It's also possible that the coronavirus can be transmitted via smaller particles that people emit from their noses and mouths known as aerosols, which can float for a time through the air and be inhaled. The aerospace industry says modern aircraft ventilation should mitigate the risk of this sort of spread. The air on a plane is generally a 50-50 mix of sterile outside air and recirculated cabin air that's been filtered.

According to Airbus SE and Boeing Co., all their aircraft are fitted with HEPA filters, which capture particles as small as the virus.

Airflow goes from ceiling to floor rather than front to back and is compartmentalized into sections throughout the cabin, which should limit the movement of particles along the length of the plane. **Even so, modeling suggests this airflow can be influenced by factors such as seat and cabin layout and how full the aircraft is.** Also, these ventilation systems may not be fully operational when planes are parked at the gate. ► An influenza outbreak in 1979 resulted from passengers being kept on board a grounded aircraft with the ventilation turned off. Airlines are now telling passengers to wear face masks throughout their journeys, which could reduce risks, though it's not clear how thoroughly the rule will be enforced.



5. What else are airlines doing to mitigate risks?

Airlines are cleaning aircraft more frequently and thoroughly, and going cashless. They are using online check-in and automated bag drops. Some are no longer serving food and beverages. Passengers are being asked not to queue for the toilet and instead to press the call bell and await permission to answer nature's call. In the U.S., JetBlue Airways Corp. and Delta Air Lines Inc. alone have promised to leave space between passengers, though other carriers are limiting the number of passengers on each flight, when possible. European airlines have largely been reluctant to commit to leaving middle seats empty, saying that the



science is limited on the effectiveness of the practice and that it would make flights too costly to run.

6. What are airports doing?

In London's Heathrow airport, Europe's busiest, passengers and staff will be obligated to wear face masks and will see signage throughout the airport telling people to maintain a safe distance. Hand sanitizer is widely available at over 600 kiosks throughout the airport and temperature screening is being tried out. The United Nation's International Civil Aviation Organization recently issued safe travel guidelines advising airports to go further. Recommendations include introducing contact-free technology at bag drops, boarding gates and retail outlets. The agency said a 1-meter (3-foot) distance should be maintained throughout the airport and boarding processes should be revised to avoid queuing. Bathrooms, it said, should be switched over to touch-free equipment, and dedicated baggage carousels should be in place for arrivals from high-risk areas.

COVID-19 Antibodies Can Disappear After 2-3 Months, Study Shows

Source: <https://www.medscape.com/viewarticle/932671>

June 19 – People who develop antibodies after becoming infected with the coronavirus may not keep them more than a few months, especially if they showed no symptoms to begin with, a Chinese study shows.

Previous studies had found that most people who became infected developed antibodies. Health departments around the world give antibody tests as a way to prove a person has already had the coronavirus.

Scientists in the Wanzhou district of China studied 37 people who became infected with the coronavirus and showed symptoms and 37 people who became infected and showed no symptoms, [according to the study](#) published in the online journal *Nature Medicine*. Eight weeks after recovery, antibody levels fell to undetectable levels in 40% of asymptomatic people and 13% of symptomatic people, *Nature Medicine* said.

The researchers noted that only a small group of people were studied and that the human body can also use T cells to kill the virus and B cells to produce new antibodies, Business Insider reported. Neither T cells nor B cells were measured in the new study.

Business Insider reported that the researchers tested for two types of antibodies: immunoglobulin G (IgG) and immunoglobulin M (IgM). IgG usually develops over a longer time period, meaning it's a better indicator of long-term immunity, Business Insider said. The decrease in detectable antibodies was sharp after 8 weeks, with a 71% median drop for IgG levels in the asymptomatic group and a 76% median drop in the symptomatic group, the study said.

The findings call into question the idea of "immunity passports," which some countries want to issue to people who test positive for antibodies. These people would be allowed to go back to work and travel because they're supposedly immune to the virus.

"Together, these data might indicate the risks of using COVID-19 'immunity passports' and support the prolongation of public health interventions, including social distancing, hygiene, isolation of high-risk groups and widespread testing," the authors wrote.

Italy sewage study suggests COVID-19 was there in December 2019

Source: <https://www.reuters.com/article/us-health-coronavirus-italy-sewage/italy-sewage-study-suggests-covid-19-was-there-in-december-2019-idUSKBN23Q1J9>



June 19 – Scientists in Italy have found traces of the new coronavirus in wastewater collected from Milan and Turin in December 2019 - suggesting COVID-19 was already circulating in northern Italy before China reported the first cases.

The Italian National Institute of Health looked at 40 sewage samples collected from wastewater treatment plants in northern Italy between October 2019 and February 2020. An analysis released on Thursday said samples taken in Milan and Turin on Dec. 18 showed the presence of the SARS-Cov-2 virus.

"This research may help us understand the beginning of virus circulation in Italy," said Giuseppina La Rosa, an expert in environmental wastewater at the Italian National Institute of Health who co-led the research.

A spokeswoman for the institute said the full data and study would

be published next week.



HZS C²BRNE DIARY – June 2020

Research in the Netherlands, France, Australia and elsewhere has found signs that the virus that causes COVID-19 can be detected in sewage, and many countries are beginning to sample wastewater to track the disease.

Scientists said the detection of traces of the virus before the end of 2019 was consistent with evidence in other countries that COVID-19 may have been circulating before China reported the first cases on Dec. 31.

Noel McCarthy, an expert in population evidence and technologies at Britain's Warwick Medical School, said the detection of SARS-Cov-2 genetic material in Italian wastewater in December was "reliable evidence of cases of COVID-19 being present there at that time".

Rowland Kao, an epidemiology and data professor at Scotland's Edinburgh University, agreed it was plausible the disease could have circulating then, but added: "(This finding) does not on its own, however, tell us if that early detection was the source of the very large epidemic in Italy, or if that was due to a later introduction into the country."

A study in May by French scientists found that a man was infected with COVID-19 as early as Dec. 27, nearly a month before France confirmed its first cases.

La Rosa said the presence of the virus in the Italian waste samples did not "automatically imply that the main transmission chains that led to the development of the epidemic in our country originated from these very first cases".

Samples positive for traces of the virus that causes COVID-19 were also found in sewage from Bologna, Milan and Turin in January and February 2020. Samples taken in October and November 2019 tested negative.

The institute said it plans to launch a pilot study in July to monitor wastewater in tourist resorts.

COVID-19 Reveals Need for More Research about Guns

Source: <http://www.homelandsecuritynewswire.com/dr20200619-covid19-reveals-need-for-more-research-about-guns>

June 19 – **Shortages of toilet paper at neighborhood grocery stores have become a symbol of the nation's response to the COVID-19 virus, but recent reports suggest that people also reacted to the pandemic by purchasing firearms and ammunition in massive numbers. Year over year, estimates of gun sales increased 85% in March (PDF), the highest level ever recorded in the United States, followed in April by a 71% increase (PDF).**

Andrew R. Morral and Jeremy Travis write in *USA Today* (republished by [RAND](#)) that eventually, the pandemic will recede, scientific rigor will lead to treatments or a vaccine, and life will start to return to a new normal—but those new firearms aren't going anywhere.

What does this mean for public safety? And what can policymakers do to ensure that a spike in sales doesn't result in more injuries or deaths?

That's a tough question to answer. The topic is divisive. The stakes are high. The constitutional right to bear arms must be respected. And, unfortunately, the body of evidence is thin, which leaves lawmakers with limited objective policy guidance.

But things are starting to change.

Last year, Congress passed and President Donald Trump signed into law the first major federal funding for [gun policy research](#) in more than 20 years. We hope that this one-time \$25 million is just the beginning and that additional funding will become a routine, bipartisan part of federal budgets.

As the nation enters this new generation of research, there's reason to hope we can finally build an evidence base that helps policymakers identify the policies and practices that effectively support public safety.

For example, [RAND's Gun Policy in America](#) has determined that child access prevention laws are likely to reduce both accidental injuries and suicides among young people. These laws impose civil or criminal liability on adults who leave loaded firearms unsecured where children may access them. Today, 19 states and Washington, D.C. have enacted [Child Access Prevention \(CAP\) laws](#) designed to prevent the negligent storage of firearms.



Long-term immunity to COVID-19 questioned in new study

Source: <https://newatlas.com/health-wellbeing/covid19-immunity-antibody-asymptomatic-coronavirus-resistance-duration/>

June 21 – Six months into the COVID-19 global pandemic and many questions still remain unanswered concerning the nature of this novel coronavirus. Perhaps one of the most important unresolved mysteries surrounds human immune responses to the virus and how long a person may be resistant to SARS-CoV-2 following recovery from an initial infection.



HZS C²BRNE DIARY – June 2020

A new study, published in the peer-reviewed journal *Nature Medicine*, has found antibody levels in subjects suffering from asymptomatic infections dropped significantly when measured two months after hospital discharge. While this does not at all mean these subjects are prone to reinfection, the study suggests it does affirm how little we know about long-term antibody-mediated immunity.

The research followed 37 asymptomatic cases of COVID-19, detected in China's Wanzhou District. The cases were compared against a control group of 37 sex-and-age-matched symptomatic cases. The asymptomatic cases were detected through contact tracing methods and quarantined in hospital until their infection passed. All subjects were then tracked for eight weeks following discharge from hospital.

The researchers were evaluating immunity by measuring blood levels of two types of immune system antibodies: Immunoglobulin G (IgG) and neutralizing antibodies.

The study found striking drops in IgG levels for both symptomatic and asymptomatic cases in the eight weeks following hospital discharge. On average, IgG levels dropped 76.2 percent in symptomatic cases, and 71.1 percent in asymptomatic cases.

More significantly, IgG levels were generally higher at all phases of the disease in symptomatic cases compared to asymptomatic cases, and by the eight-week follow-up point 40 percent of asymptomatic cases registered no detectable levels of IgG in their blood. Things looked slightly better on the neutralizing antibody front despite drops in levels detected in both symptomatic and asymptomatic cases. On average, asymptomatic cases saw a 8.3-percent drop in neutralizing antibody levels at the eight-week followup, compared to a 11.7-percent drop in symptomatic patient levels.

As we literally only have a few months of data illustrating how this new virus interacts with the human immune system it is profoundly unclear whether these drops in antibody levels mean a person is more susceptible to reinfection. The study does reference prior work tracking these same antibody levels in SARS and MERS patients, suggesting survivors of those infections did not show this kind of rapid antibody level reduction.

"Previous studies have shown that circulating antibodies against SARS-CoV or MERS-CoV last for at least one year," the researchers write in the study. "Sustained IgG levels were maintained for more than two years after SARS-CoV infection. Antibody responses in individuals with laboratory-confirmed MERS-CoV infection lasted for at least 34 months after the outbreak."

Liam Smeeth, from the London School of Hygiene and Tropical Medicine, says this study is both interesting and important. He suggests larger long-term studies will be crucial before we begin to institute any social policies based on the presumption of long-term immunity.

"This strongly suggests that immunity may well diminish within months of infection for a substantial proportion of people," [says Smeeth](#). "We need larger studies with longer follow-up in more populations, but these findings do suggest that we cannot rely on people having had proven infections nor on antibody testing as strong evidence of long term immunity."

Smeeth is alluding to the recently raised idea of "immunity passports" floated by several governments around the world as a way to allow greater movement around a community to those presumed to be immune. Many concerns have been raised regarding this idea, [both social and practical](#), but perhaps the biggest issue with immunity passports is the basic fact that scientists do not know how long a person may be immune following an initial infection. At the very least this new study does imply our two primary antibody measurements may not reliably indicate COVID-19 immunity.

Eleanor Riley, from the University of Edinburgh, points out this new study furthers another strange COVID-19 mystery – why do some people only present with mild infections while others suffer devastating outcomes? Despite the dramatically waning antibody response reported in asymptomatic cases by this new study, Riley suggests those particular individuals could already have been somewhat resistant to the virus.

"It is not unusual for mild infections (of any cause) to induce a less florid immune response, indeed the immune system is designed to respond in a manner that is proportionate to the severity of the threat," [says Riley](#). "It may be that they are genetically less susceptible to infection or that they have some pre-existing immunity due to prior infection with related seasonal coronaviruses."

►► The new study was published in the journal [Nature Medicine](#).

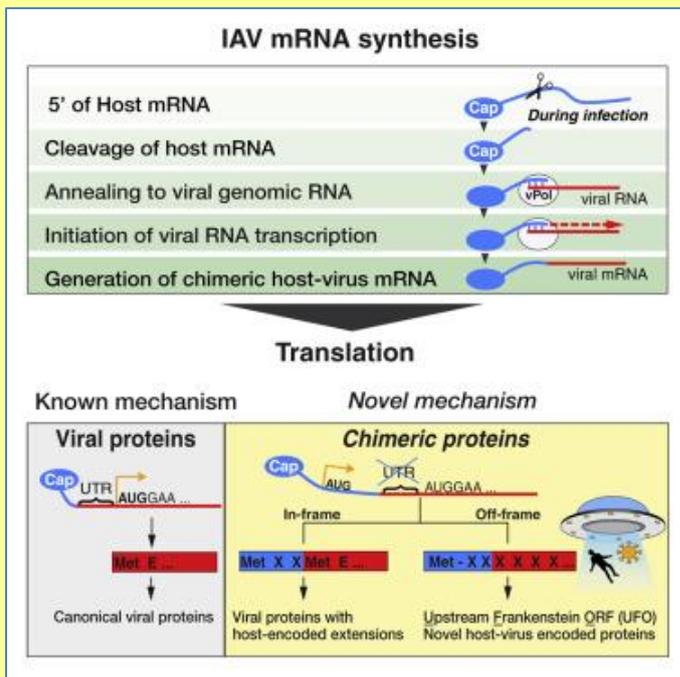
Viruses Can Create Human-Virus Chimeric Proteins

Source: <https://www.genengnews.com/news/viruses-can-create-human-virus-chimeric-proteins/>

June 22 – When a virus enters a host cell, it uses the cell's transcription and translation machinery to produce the proteins necessary to create more viruses. A new paper describes a previously unknown mechanism that can occur during this process wherein the virus steals



genetic signals from their hosts to expand their own genomes. This finding is presented in a study titled, "[Hybrid Gene Origination Creates Human-Virus Chimeric Proteins during Infection](#)," published in *Cell*.



The cross-disciplinary collaborative study was led by researchers at the Icahn School of Medicine at Mount Sinai in New York, and at the MRC-University of Glasgow Centre for Virus Research in the U.K.

The team of virologists worked with segmented negative-strand RNA viruses, which include viruses such as the influenza viruses and Lassa virus (the cause of Lassa fever).

The life cycles of these RNA viruses, the authors wrote, “depends on host mRNA, because viral polymerases cleave 5'-m7G-capped host transcripts to prime viral mRNA synthesis (“cap-snatching”).” The researchers hypothesized that start codons within cap-snatched host transcripts “could generate chimeric human-viral mRNAs with coding potential.”

Their findings suggest that viruses can produce previously undetected proteins by stealing genetic signals from their hosts. The researchers labeled them as UFO (Upstream Frankenstein Open reading frame) proteins, as they are encoded by stitching together the host and viral sequences. These UFO proteins can alter the course of viral infection and could be exploited for vaccine purposes. There was no knowledge of the existence of these kinds of proteins prior to this study.

“The capacity of a pathogen to overcome host barriers and establish infection is based on the expression of pathogen-derived proteins,” said

Ivan Marazzi, PhD, associate professor of microbiology at Icahn School of Medicine and corresponding author on the study. “To understand how a pathogen antagonizes the host and establishes infection, we need to have a clear understanding of what proteins a pathogen encodes, how they function, and the manner in which they contribute to virulence.”

Viruses cannot build their own proteins, so they need to feed suitable instructions to the ribosomes of the host’s cells. Viruses use the process of “cap-snatching,” in which they cut the end from one of the cell’s own mRNAs to make their own mRNA look like a message the host cell would normally translate.

“For decades we thought that by the time the body encounters the signal to start translating that message into protein (a ‘start codon’) it is reading a message provided to it solely by the virus. Our work shows that the host sequence is not silent,” said Marazzi.

The researchers report the existence of a mechanism of gene origination, which they named “start-snatching.” Depending on the reading frame, they wrote, “start-snatching allows the translation of host and viral ‘untranslated regions’ (UTRs) to create N-terminally extended viral proteins or entirely novel polypeptides by genetic overprinting.”

This makes it possible to translate previously unsuspected proteins from the hybrid host-virus sequences. They further showed that these novel genes are expressed by influenza viruses and potentially a vast number of other viruses.

The product of these hybrid genes can be visible to the immune system, generate T cell responses, and contribute to virulence. Further studies are needed to understand this new class of proteins and what the implications are of their pervasive expression by many of the RNA viruses that cause epidemics and pandemics.

Ed Hutchinson, PhD, corresponding author and a research fellow at MRC-University of Glasgow Centre for Virus Research, said, “Viruses take over their host at the molecular level, and this work identifies a new way in which some viruses can wring every last bit of potential out of the molecular machinery they are exploiting. While the work done here focusses on influenza viruses, it implies that a huge number of viral species can make previously unsuspected genes.”

Researchers say the next step in their work is to understand the distinct roles the unsuspected genes play. “Now we know they exist, we can study them and use the knowledge to help disease eradication,” said Marazzi. “A large global effort is required to stop viral epidemics and pandemics, and these new insights may lead to identifying novel ways to stop infection.”

EDITOR’S COMMENT: Perhaps we should start looking for a “brain region” in all viruses. All their offensive and defensive actions and measures discovered (see also article below) cannot be taken by accident! There has to be a brain hidden somewhere inside the virus unit! Amazing!



Doctors Warn COVID-19 May Trigger Diabetes in Otherwise Healthy People

By Julian Hamilton-Shield

Source: <https://www.sciencealert.com/covid-19-might-be-triggering-diabetes-in-healthy-people>



June 22 – Recent studies from England and other countries have suggested that adults with both types 1 and 2 [diabetes](#) have an [increased risk of death](#) if they catch [COVID-19](#), especially if they have poor glucose control.

The weight of evidence is building up to support this theory. And when the dust settles, a more critical analysis of the data will probably confirm this increased risk.

But in early June, several well respected academics from around the world [wrote a letter](#) to the *New England Journal of Medicine* (NEJM) suggesting that COVID-19 is not just a risk for people with diabetes – it may actually cause diabetes.

There are two main types of diabetes. Type 1, caused by the body's own immune system attacking the islet cells in the pancreas that produce insulin, a so-called autoimmune disease.

Eventually, there are no islets left and hence no insulin can be made to control blood glucose levels. We don't know what starts this autoimmunity, but viral infections have been suggested as a possible trigger.

Type 2 diabetes happens when the islet cells have to produce vast amounts of insulin because the main target organs (liver, muscle, fat) do not respond as well as they should to insulin's message. Finally, the islet cells become exhausted and die.

We have known for many years that viral infections may be linked to the first time a patient has diabetes symptoms. (Type 1 diabetes [presents in a seasonal fashion](#), a fact often seen with viral infections.) And viral infections may also trigger the destruction of the insulin-producing islet cell "factories" in the pancreas, setting up a chronic autoimmune response.

There are recorded cases of acute diabetes developing during mumps and enterovirus infections. And there is [significant evidence](#) linking one particular enterovirus, Coxsackie-B1, with classical autoimmune type 1 diabetes.

In addition, The Environmental Determinants of Diabetes in the Young (TEDDY) study from the US and Europe documented an increased risk of developing signs of islet cell autoimmunity after respiratory infections caught in the winter months.

There's something about coronaviruses

What about COVID-19? There has been [a case report](#) from China of a young man of previous good health presenting with new-onset, severe diabetes, termed keto-acidosis, after contracting COVID-19.

Before the COVID-19 [pandemic](#), east Asia experienced the SARS outbreak (2002-04), which was also caused by a [coronavirus](#). There were documented cases of acute onset diabetes in people with SARS [pneumonia](#), which was not seen in those with pneumonia of other causes. In most cases, the diabetes resolved after three years, but it [persisted in 10 percent of patients](#).

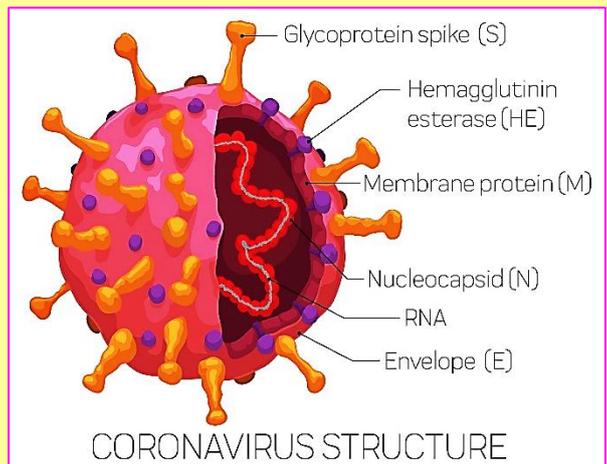
The coronaviruses responsible for the current and previous outbreaks share a similar way of getting into cells. The now-familiar protein spikes on the surface of the [virus](#) attach to ACE2 receptors that are abundant in lung, kidney and islet cells in the pancreas. It is proposed that once in islets, COVID-19 disrupts normal cell function leading to abnormalities in the pathways that maintain blood glucose through insulin secretion. It is also possible that cell invasion leads to acute inflammation that kills islet cells.

So does COVID-19 cause diabetes? The answer is, we don't know, and the *NEJM* letter makes it clear that a lot of this is still conjecture. COVID-19 may trigger type 1 or type 2 diabetes. This might even be a new form of diabetes.

Unlike the wealth of data presented on the risk of death with known diabetes, severe obesity, high blood pressure and ethnicity, there is little data on COVID-19 and newly diagnosed diabetes. To address this, the authors of the *NEJM* letter have [developed a register](#) to record all COVID-related diabetes cases.

A register is essential to gather enough data to start unravelling the mystery of any direct link between COVID-19 and diabetes. And if such a link is found, it will be equally important to determine how COVID-19 causes the damage to best identify treatments, given that COVID-19 may be around for quite some time yet.

Julian Hamilton-Shield, Professor in Diabetes and Metabolic Endocrinology, University of Bristol.



How to Prepare for the Coronavirus's Impact on Terrorism

By Nikita Malik

Source: <https://nationalinterest.org/feature/how-prepare-coronavirus%E2%80%99s-impact-terrorism-163074>

June 21 – Following 9/11, President George W. Bush [framed](#) the challenge facing the United States as thus: “Our nation has been put on notice: We are not immune from attack.” Over a decade and a half later, in 2017, then-UK foreign secretary Boris Johnson [described](#) the global effort against radical Islam as “a fight not against a military opponent but against a disease or psychosis.” As these two examples show, the use of medicinal language to describe the war against [terrorism](#) has been a common theme in speeches of leaders in the United States and the UK.

Yet recent [statistics](#) produced by New York City health officials have revealed that the number of people dying because of the [coronavirus](#) in NYC has already surpassed the number who were killed in the 9/11 terrorist attacks. Both [terrorist attacks](#) and [pandemics](#) are high-impact events that have the ability to disrupt lives. Perhaps one of the most interesting ways to examine this disruption is the effect such events have on our data.

In a March 2020 Pew Research Center survey, the American public [named](#) the spread of infectious diseases as the greatest threat to the country. **For the first time, this surpassed the threat of terrorism: 79 percent of Americans named outbreaks of disease as a major threat to the country, compared to 73 percent of Americans who saw terrorism as a major threat.** Counterterrorism measures nonetheless provide an important context for examining the trade-offs between reduced civil liberties and increased security. Following high-impact events such as terrorist attacks, public concerns regarding government intrusions on privacy tend to decrease. After the terrorist attacks in Paris, France, and San Bernardino, California, in 2015, for example, a national survey by Pew Research Center found that the American public was less concerned that anti-terrorism policies restricted civil liberties: such concerns fell to their lowest level in five years (to 28 percent), with twice as many people (56 percent) [stating](#) that their greater concern was that policies had not gone far enough to adequately protect the country.

Similarly, following the 7/7 bombings in the UK in 2005, a Guardian/ICM poll [illustrated](#) that **73 percent of Britons would trade civil liberties for security, with only 17 percent rejecting it outright. A more recent survey by YouGov in May 2018 found that Britons would still be willing to trade civil liberties for the purposes of countering terrorism: 67 percent were in favor of monitoring all public spaces in the UK with CCTV cameras, 63 percent were in favor of making it compulsory for every person in the UK to carry an ID card, 64 percent supported keeping a record of every British citizen's fingerprints, and 59 percent supported a DNA database.**

Where does our data go, and what is it used for? Data mining, the process of extracting trends from large amounts of data using techniques such as pattern recognition and machine learning, has been used to understand and prevent terrorist activity and fraudulent behavior, often as part of a broader knowledge discovery process. A 2002 [op-ed](#) published by The New York Times detailed new plans for a program within the Defense Advanced Research Project Agency (DARPA) to create a centralized database containing information on citizens that could be used to data-mine for various purposes, including security concerns. The article led to the creation of a blue-ribbon committee around privacy concerns, the Technology and Privacy Advisory Committee, and the eventual [cancellation](#) of the program.

Similar concerns have been raised in the UK around data retention following the introduction of blanket emergency legislation. Part eleven of the UK Anti-Terrorism, Crime and Security Act 2001, for example, allows for the automated surveillance of the private lives of a proportion of the population by analyzing patterns within their communications. Powers introduced following national crises can, therefore, be deliberately broad, and oversight mechanisms are necessary to protect against their exercise being extended from terrorist investigations to matters involving the wider population. In the UK, some of these concerns have been alleviated by data privacy rules under the European Union's (EU's) General Data Protection Regulation. However, [exceptions](#) exist for ‘vital interests’ (where processing is necessary to protect someone's life).

As countries ease lockdown restrictions imposed in response to the coronavirus, a trade-off for the liberty of free movement may be greater accessibility of civilian data. In at least twenty-three countries, dozens of ‘digital contact tracing’ apps have been downloaded more than fifty million times. Authorities in the UK and other countries, meanwhile, have deployed [drones](#) with video equipment and temperature sensors to track those who have broken lockdown restrictions by being outside their homes. In the United States, a task [force](#) of data mining start-ups and technology companies is currently working with the White House to develop a range of tracking and surveillance technologies to fight the coronavirus. Other [ideas](#) being considered include geolocation tracking of people using data from their phones, and facial recognition systems to determine who has come into contact with individuals later tested positive for the virus.



Such methods have raised concerns around “surveillance creep,” where intrusive powers are expanded or data is used to prosecute for a range of crimes. Data used to build predictive or preventative computer models around the coronavirus outbreak, therefore, comes with various issues, the most important of which surround privacy and accuracy. Here, **past experiences with the collection of data around the prevention of terrorism can offer some lessons learned.**

The **first lesson** is about privacy. An essential aspect of the UK Coronavirus Act 2020, for example, focuses on containing and slowing the virus by reducing unnecessary social contact. The measures it introduces to achieve this represent an erosion of safeguards placed on important and potentially intrusive investigatory powers. One example of data being used to prevent terrorism, which is relevant to privacy concerns around data sharing for the coronavirus, is aviation security. The United States, for instance, uses the Automated Targeted System (ATS), which assesses the comparative risks of arriving passengers. Knowledge discovery techniques within this system have been employed to create risk assessments and to target investigative resources. [One](#) example of such data being used to flag a subject of interest—suicide bomber Raed al Banna—who was denied entry to the United States, but whose biometrics and fingerprints were used to later identify him as part of a bomb attack in Iraq. Unlike other data collection methods, however, when it comes to terrorism, data collection often occurs without the knowledge or consent of the data subject.

The **second lesson** is around accuracy. Unlike arrests that happen in person, artificial algorithms that use large forms of surveillance lack context for the data collected, which may [lead](#) to inaccurate inferences. Such potential for false positives and false negatives carries greater risks in the realm of disease control and terrorism prevention than, say, in identifying a shopper’s preferences. For example, one way to test for a disease that is able to accurately detect the disease 99 percent of the time, and inaccurately predicts it 1 percent of the time (a false positive). If 0.1 percent of the population has the disease (and the only way to confirm the presence of the disease is with a biopsy) in a population of three hundred million people, three hundred thousand people would have the disease, but ten times that number (nearly three million people) would have to undergo an unnecessary biopsy. In his book *The Naked Crowd*, George Washington University Professor Jeffrey Rosen discusses false-positive rates in a system that might have been designed to identify the nineteen hijackers involved in the 9/11 attacks. Assuming a 99 percent accuracy rate, searching a population of nearly three hundred million (the U.S. population in 2001 was 285 million) would mean approximately three million people would be identified as potential terrorists.

The **final lesson** is on collaboration. In the future, similar data collection techniques may be employed in the sharing of information between countries on potential individuals who are carrying disease, or who may be at risk due to their travel. Unlike in the context of terrorism, where countries are working to share information against a foreign entity or actor (under United Nations Security Council Resolution 2396, for example), countries will be required to collaborate in order to contain the spread of disease. Concerns around the accuracy of data shared by China and other countries in the early stages of the pandemic, however, raise issues around this initiative, and a new international body may need to ensure that some countries avoid the temptation to coast while hoping that other countries will pick up the slack. It would also be useful for countries who have employed surveillance techniques to sign a code of practice to ensure that data analysis has sufficient oversight.

Nikita Malik is the Director of the Centre on Radicalisation and Terrorism at The Henry Jackson Society, a think tank based in Westminster, London.

ISIS ‘Lockdown’ Magazine Urges Using Kids to Spread COVID-19, Attacks with Scissors

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/isis-lockdown-magazine-urges-using-kids-to-spread-covid-19-attacks-with-scissors/>

June 23 – A “lockdown special” edition of a magazine published by ISIS supporters encouraged steps to “annihilate the disbelievers” including stabbing people with scissors and expending “less effort” by spreading deadly coronavirus.

“**The Voice of Hind**,” an English-language magazine published and distributed online by ISIS supporters in India, published its **fifth** edition Monday and its fourth edition in May. Between those two releases, the authors released the 17-page “lockdown special” online, declaring on the cover featuring photos of surgical-masked individuals and a temperature check that “it’s time for kuffar [disbelievers] to fall.”

The first issue of “The Voice of Hind” was released in late February to coincide with President Trump’s visit to India.



The special edition declares that it's now a "diseased world" in which ISIS supporters should "stay firm and ready to launch a severe attack on the enemies of Allah's religion who are embroiled in a fight against the disease brought about by Allah's rage against them."



"COVID 19 has plagued the disbelievers and it is time to make it worse... believers can wreak havoc on disbelievers by spreading the disease among them so that they are forced to bow down before Allah's rule before they are wiped out from the earth," the article continues, adding that "every brother and sister, even children, can contribute to Allah's cause by becoming the carriers of this disease and striking the colonies of the disbelievers, wherever they find them." They claimed that "no disease can harm even a hair of a believer."

The article continues for two more pages of trying to goad followers into spreading coronavirus, calling it "a weapon far greater than stones" and adding, "What better chance can you get to kill the disbelievers in multitudes than COVID 19?"

"They have hampered our efforts of establishing the Caliphate of Allah and now is the time to extract revenge," the magazine states.

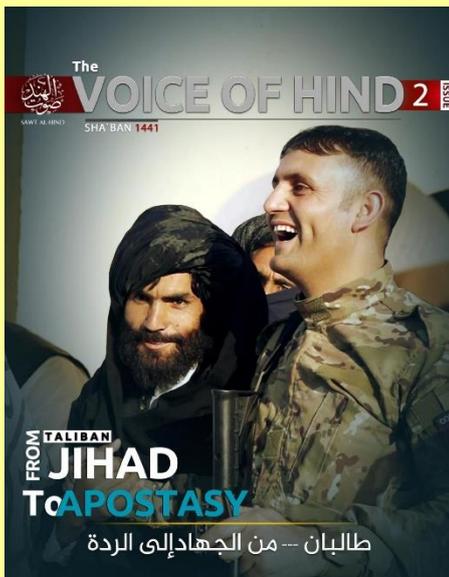
The issue reprints an Abu Bakr al-Baghdadi message from the late ISIS leader delivered in 2015, urging would-be jihadists to come join "the war of every Muslim in every place."

The second-to-last page offers tips on ways to "annihilate the disbelievers" including keeping oneself "armed at all times to never miss a chance to kill as many Kuffar as you can. Even a knife can be a convenient object to keep with oneself."

"Keep chains, ropes and wires ready to choke them or beat them to death," the list continues. "Tools like scissors and hammers can come in useful to kill the Kuffar. Any sharp object like glass will kill easily. Any long cloth can be used to choke them to death."

And, listed at No. 6, "Spread COVID virus among as many Kuffar as possible to take them down easily and with less effort."

The second issue of "Voice of Hind," released in March, encouraged attacks using simple weapons and tactics specifically targeting military and police officers who "have been deployed in their streets and alleys, thus making them an easy target" during the chaos of the coronavirus pandemic.



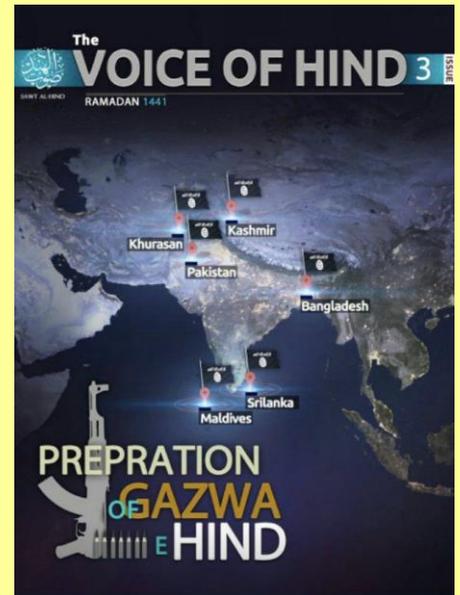
That issue also listed some ways to "annihilate the disbelievers," including vehicle attacks, knife and ax attacks, arson, and poisoning food and drink.

ISIS stressed in a late March [editorial](#) on the coronavirus pandemic that countries' security distraction in trying to control and respond to the spread of the virus left an opening for jihadists to exploit.

While countries have been "striving to reduce the likelihood of the mujahideen launching attacks," said the full-page article in ISIS' *al-Naba* newsletter, the coronavirus represents "additional pressure and burden" on governments including price hikes, product shortages and "a great retreat in the economy and incomes" that reduces the ability of governments to coordinate counterterrorism operations with one another and brings "fears that their other enemies will exploit this critical situation they are all going through in order to make gains at their expense."

"The last thing they want," ISIS continued, is for jihadists to be currently preparing new attacks "similar to the strikes of Paris, London, Brussels and other places."

The terror group has followed the outbreak [from the beginning](#) of this year, regularly including updates in the news briefs section of the newsletter. "A new virus spreads death and terror in China," *al-Naba* reported in January, adding that "communist China is panicking



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after a new virus has spread” and noting how Chinese officials discussed the discovery of person-to-person transmission as well as the lockdown of Wuhan. *Al-Naba* highlighted “growing concern about the spread of the infectious virus,” adding that “this could push the World Health Organization into an emergency.”

Around the same time, ISIS-supporting Quraysh Media, which has been active in its production of online propaganda posters, seized on the outbreak to produce and disseminate a poster with a grainy image of a person in a hazmat suit and respirator. “China: coronavirus,” the poster stated, adding, “A promise is a debt we must not forget.”

As the outbreak spread, perhaps mindful that the global reach of the new coronavirus could also pose a threat to their members or supporters, the Islamic State [turned to criticizing](#) the Chinese government for hiding the scope of coronavirus outbreak.

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. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera, BBC and SiriusXM.



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