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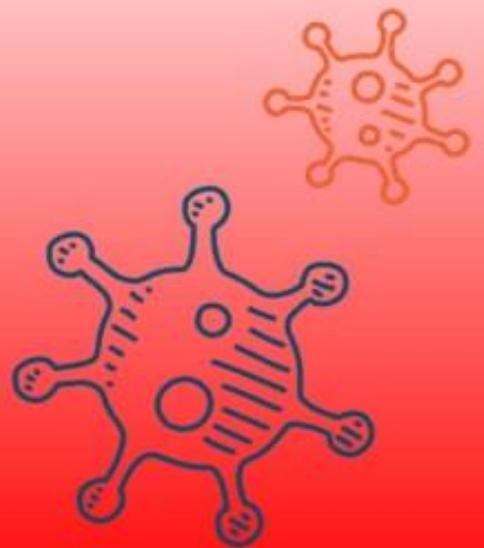
Dedicated to Global
First Responders



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DIARY

November 2020



HZS C²BRNE DIARY– 2020[©]

November 2020

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DIARY**

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EDITOR'S CORNER




Editorial
Brig Gen (ret.) Ioannis Galatas, MD, MSc, MC (Army)
Editor-in-Chief
 HZS C²BRNE Diary

Dear Colleagues,

November 2020,

Perhaps the worst month of the year!

The second wave of the pandemic and lockdowns all over; terrorism in Europe (France and Austria); instability in SE Mediterranean due to Turkish offensive policy; a 6.7R earthquake between Greek islands and Turkish coastline and a parody of elections in the mighty US that still does not know who will be their President next year!

The only good thing was the progress made in expected vaccines. But even then, there is a noble or not so noble “war” between companies ahead – six of them; all good; all Western of course. Nations are now preparing for the moment that products will be available in the markets. The problem is that people were given the impression that when vaccines will be in their healthcare system, pandemic will be magically over. My estimate is that life will be back to normal or whatever this is, around late Spring/early Summer 2022. This means that there will be many waves to overcome and many problems and obstacles to be confronted with. But people do not want to be told the truth. Mainly because they are already planning their Christmas’ parties and festivities as if nothing wrong with that. In the midst of a war, there are many that still believe that the coronavirus is a hoax; that people do not die because of Covid-19; that all that is attributed to something called the New Order of Things or the Great Reset – something that nobody knows exactly what it is so everybody is free to propose their own interpretations! You see, stupidity is as airborne as the coronavirus.

Terrorism in central Europe is not a new phenomenon and there are no immune countries. The problem is that even after the last bloody wave, the EU is unwilling to face the beast in the eyes and take measures surpassing politics and businesses. France was left alone to face the problem with small support of Austria but I am sure that there are many nations that are annoyed because someone is throwing stones in their still waters. During 2020, the EU had many opportunities to prove that the word “Union” is the correct word to use and be proud of. Perhaps it is time to go back to the old name, “Europe” that is enough to geographically define the people residing in this continent. In that respect, each country would be alone to manage terrorism and the clash of civilizations without silly alliances and hypocritical solidarity and other unknown words.

First Responders are in the front-line of this global war, whether it is the pandemic or terrorism, doing their best shielding their societies, their fellow citizens, and families. They are the few and the brave, the modern “heroes” of mass media that will be forgotten tomorrow when their services will be not be further required. But people forget that duty is not an on-off switch but a constant conscious condition and way of life that is not fed by clapping but only by a sense of serving people to walk through life as safely as possible. So, be prepared First Responders especially now that Christmas is just a month away and many will try to destroy what is left of our already injured nirvana.

The Editor-in-Chief


Giant Images of Prophet Mohammed Appear on French Govt Building

Source: <https://www.india.com/news/world/giant-images-of-prophet-mohammed-appear-on-french-govt-building-4182239/>



Oct 22 – A French city defied Islamist terrorism by projecting huge images of Charlie Hebdo caricatures on a local government building on Wednesday as heavily armed police officers stood guard.



The projections, which included caricatures of Prophet Mohammed, came as part of a French national tribute to middle-school teacher Samuel Paty which took place on Wednesday evening.

Paty, a history teacher in the greater Paris area, was murdered on Friday by a refugee Islamist terrorist after Paty showed caricatures of Prophet Mohammed to his students in a class on freedom of speech.

The images were projected onto two town halls in the Occitanie region – Montpellier and Toulouse – for four hours on Wednesday evening.

Regional mayor, Carole Delga, was quoted by FranceBleu, a network of local and regional radio stations in France, and a part of the national public broadcasting group Radio France: "There must be no weakness in the face of the enemies of democracy, facing those who transform religion into a weapon of

war... those who intend to destroy the Republic."

In 2015, Islamist gunmen attacked the offices of Charlie Hebdo and killed most of the paper's editorial board for publishing caricatures of Prophet Muhammad.

The court cases surrounding the killings finally being heard this year led to another attempted attack in September 2020, with a new would-be killer attempting to attack the old offices of the paper again.





The latest attack over the Charlie Hebdo caricatures took place last week when Samuel Paty was beheaded after showing the drawings of Prophet Mohammed to his students in a freedom of speech class.

Paty's beheading has prompted a strong response from the French government, including police raiding individuals and organisations that expressed support for the attack and attacker in the immediate aftermath of the beheading.

A well-known mosque in a northern suburb of Paris was shut down by French authorities as part of their clampdown on Islamist groups and suspected extremists.



Recent (Oct 2020) decapitation threat against the Mayor of Bron (10 km east-southeast of central Lyon)

French President Emmanuel Macron is under pressure to come up with an effective response to the latest in a series of Islamist terror attacks that have rocked France since the 2015 Charlie Hebdo massacre.



More than 240 people have died from Islamist violence since 2015, prompting opposition politicians – particularly on the right – to accuse the government of waging a battle of words rather than taking decisive action.

Has Turkey Gone Too Far?

Source: <https://i-hls.com/archives/104620>



Oct 21 – NATO member Turkey has tested its Russian-made S-400 air defense system. The move was condemned by the United States.



The Turkish television channel A Haber, which is close to the government, said on its website that Turkey's military test-fired the **Russian S-400** in the Black Sea province of Sinop. It based its reports on an amateur video, reportedly filmed in Sinop, showing a contrail shooting into the sky. Other media carried similar reports. Turkish military and defense officials have refused to comment on the reports.

The U.S. State Department said the missile launch is **"incompatible"** with Turkey's responsibilities as a NATO ally and strategic partner" of the U.S.

A Defense Department spokesperson said, according to voanews.com: "We have been clear: an operational S-400 system is **not consistent** with Turkey's commitments as a U.S. and NATO ally. We object to Turkey's purchase of the system and are deeply concerned with reports that Turkey is bringing it into operation."



According to defensenews.com, Washington strongly objected to Turkey's acquisition of the Russian anti-aircraft system and suspended Turkey from its high-tech F-35 fighter jet program, saying the S-400 is a threat to the stealthy aircraft. It has also warned Ankara that it **risks** U.S. sanctions if the S-400 system is activated.

Turkey insists it was forced to purchase the Russian system after Washington refused to sell it the U.S. Patriot system.

Russia delivered the first batch of the Russian defense system last year. Turkey had initially said the S-400 would be operational in April but it has since delayed activating the system.

During a visit to Turkey earlier this month, NATO Secretary-General Jens Stoltenberg reiterated that the S-400 cannot be integrated into the NATO air and missile defense system and **can lead** to sanctions by the United States.

EDITOR'S COMMENT: This is not the right question! Turkey did what it has to be done to serve its ambitions and plans. The right question is "what the NATO and the US will do to deal with the problem"? The question is "will the NATO be a political midget same as the EU" that will tolerate an offensive policy without taking any actions with the only excuse that Turkey is a good customer for our weapons and technology and a key actor to the long-lasting persistent *bras de fer* with Russia? On top of the S-400 test-fire, the US forbidden (!) Greece to upgrade its own S-300 to S-300 PMU-2 level. I really do not know if I am about to cry or laugh regarding the demystification of the term "mighty power". By the way, what if Greece applies for the acquisition of a few S-500s in exchange for a nice naval base in the Island of Lesbos (facing the Dardanelles Strait) or Rhodes (overseeing SE Mediterranean Sea)? What will happen then?



2nd French mayor threatened with **BEHEADING** in the wake of teacher's brutal murder by 'Islamic terrorist'

Source: <https://www.rt.com/news/504475-french-mayor-beheading-threat/>

Oct 24 – A second French mayor has apparently been threatened with "beheading" just days after the gruesome murder of a schoolteacher over cartoons of the Prophet Mohammed. The ominous threat was sprayed on the walls of a school in Lyon.

"*The mayor of the 8th, we'll behead your head [sic].*" the graffiti read, referring to the eighth district of Lyon and its elected official, Olivier Berzane. Unambiguous threats were also made to cut off the heads of teachers and students.

Mayor Berzane said he has already filed a criminal complaint over the offensive messages, vowing to pursue those who wrote them, as "*no one takes these threats lightly.*"





"It is out of the question to let such an act go unpunished. It is necessary to find the perpetrators," Berzane told local media.

These words are disconcertingly stupid and unspeakable. It's pure hatred. Is it an isolated act of someone not knowing what to do with their evening, or a serious threat? Anyway, it's a case of extreme violence.

While the threats might have been, as Berzane suggested, an "isolated act," they came only a day after the mayor of Bron, near Lyon, received a similar warning. The graffiti in that case also threatened the town's elected official with beheading. Mayor Jérémie Bréaud denounced the "violent writing," and France's Interior Minister Gérald Darmanin directed the police to "take legal action and



provide protection."

This series of threats against local politicians comes a week after Samuel Paty, a schoolteacher in the Parisian suburb of Conflans-Sainte-Honorine, was beheaded in the middle of a street. He was slain by a hardline Islamist suspect of Chechen origin, supposedly as a punishment for showing "offensive" cartoons of the Prophet Mohammed during a lesson on free speech. The teenage attacker was apparently born in Moscow, as the media was quick to point out, but his family emigrated to France in the 2000s, and the young man applied for asylum and effectively grew up there.

Greek tanker stowaways: Seven detained off Isle of Wight

Source: <https://www.bbc.com/news/uk-england-hampshire-54684440>

Oct 26 – Seven suspects have been detained after a suspected hijacking involving stowaways on a tanker off the Isle of Wight.

UK special forces completed the operation in nine minutes, BBC Defence Correspondent Jonathan Beale said.

Military assistance had been requested after the stowaways on board the Liberian-registered Nave Andromeda reportedly became violent.



violent.

All 22 crew members, who were locked in the ship's citadel, are safe. The Ministry of Defence called the incident a "suspected hijacking" and said Defence Secretary Ben Wallace and Home Secretary Priti Patel authorised the operation in response to a police request.

Mr Wallace said: "I commend the hard work of the armed forces and police to protect lives and secure the ship.

"In dark skies, and worsening weather, we should all be grateful for our brave personnel. People are safe tonight thanks to their efforts."

Mrs Patel tweeted she was "thankful for the quick and decisive action of our police and armed forces who were able to bring this situation under control, guaranteeing the safety of all those on board".

Mr Beale said the individuals were detained after they were met with "overwhelming force".

Footage of the oil tanker situated off the Isle of Wight He said members of the Special Boat Service based at Poole, in Dorset, were involved in the operation, which also featured six helicopters.

A team of Royal Navy divers were also flown in one of the Royal Navy helicopters in case the vessel had been mined but it had not.



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Concerns over the crew's welfare were raised at 10:04 GMT when the vessel was six miles off Bembridge, police said.

A spokesman said "verbal threats" had been made towards the crew.

A three-mile exclusion zone was put in place around the vessel.

Richard Meade, editor of shipping news journal Lloyd's List, had earlier said there were thought to have been seven stowaways on board. **He said it was believed they had become violent towards the crew after they attempted to detain them in a cabin.**

Paul Clifton, BBC South transport correspondent

The tanker Andromeda, owned by Greek shipping company Navios, was en route from Lagos in Nigeria to Fawley oil refinery on Southampton Water. It had not stopped anywhere else.

According to a source close to the shipping company, the crew were aware of stowaways on board, but the stowaways became violent towards the crew while it was off the Isle of Wight.

The crew retreated to the ship's citadel, a secure area in which they can lock themselves, making it impossible for attackers to get in. This is standard procedure during a terrorist or pirate attack, but there is no suggestion the crew were doing more than protecting themselves from the stowaways.

The crew contacted the coastguard, which then alerted police. Navios are a long-established shipping company with a good reputation.

The 748ft-long (228m) ship is known to have left Lagos in Nigeria on 5 October and was south of the Isle of Wight when the police were called.



Lawyers for the vessel's owners said they had been aware of the stowaways on board for some time.

Tobias Ellwood, chairman of the Commons Defence Committee, said the boarding of the tanker was a "good outcome".

He said: "Seven stowaways on board taking over a ship or causing the ship not to be in full command would have triggered a multi-agency alarm and then well-rehearsed classified protocols were then put into action."

Hampshire police said after the suspects were detained that all 22 crew members of the tanker were safe.

In December 2018, four stowaways were detained after they ran amok on a container ship in the Thames Estuary. The men, from Nigeria and Liberia, waved metal poles and threw faeces and urine after being found hiding on the Grande Tema.

Perspectives on Terrorism

Volume XIV, 2020 – Issue 05

Source: <https://www.universiteit leiden.nl/perspectives-on-terrorism/archives/2020#volume-xiv-issue-5>

The current issue features seven Articles. The opening article by Brigitte Nacos, Robert Y. Shapiro, and Yaeli Bloch-Elkon takes a closer look at the relationship between aggressive rhetoric and political violence, based on a study of U.S. President Trump's Twitter messages and their repercussions in America's polarized society. The second article by Håvard Haugstvedt and Jan Otto Jacobsen provides a systematic analysis of the use of armed



drones by terrorists, based on their study of more than 400 attacks worldwide. The third article by Adesoji Adelaja and Justin George is also quantitative in nature, identifying a positive relationship between high levels of youth unemployment and domestic terrorism. The fourth article by Niyazi Ekici and Huseyin Akdogan, using advanced statistical techniques, looks at the formation of perceptions about terrorism among Turkish students. Next, Shandon Harris-Hogan, Lorne L. Dawson and Amarnath Amarasingam compare the experiences of Australia and Canada with terrorism in the present century and find remarkable parallels. In a sixth article, Michael Shkolnik explores why some militant groups manage to wage sustained insurgencies while other do not, based on regression analyses of 246 militant groups operating between 1970 and 2007. Finally, Anouar Boukhars explores why some extremist groups in Africa target mainly government forces while others show a preference for killing civilians.

These articles are followed by a remarkable Research Note from the hands of Ari Ben-Am and Gabriel Weimann. They show how secular far-right extremists have also begun a cult of martyrs and saints, emulating how religious terrorist groups instrumentalize and glorify murderers to stimulate vulnerable individual actors to follow them in order to achieve some 'holy' status among 'true believers'. Our Resources section open with the CT-Bookshelf wherein our Book Reviews Editor Joshua Sinai provides abbreviated reviews of 19 new publications. This is followed by a detailed review of Aaron Zelin's volume *Your Sons are at Your Service: Tunisia's Missionaries of Jihad* (New York: Columbia University Press, 2020) by Fabio Merone, and Aaron Zelin's review of *The ISIS Reader: Milestone Texts of the Islamic State Movement*, edited by Haroro J. Ingram, Craig Whiteside, and Charlie Winter (Hurst Publishers, 2020).. The section includes an extensive bibliography on Democracy and Terrorism by Information Resources Editor Judith Tinnes, the product of browsing manually more than 200 sources in the field of Terrorism Studies. The reader will also find in this issue the regular overview of new web-based resources on terrorism and related subjects by Associate Editor Berto Jongman as well as a Conference Calendar by Editorial Assistant Olivia Kearney.

The articles and other texts of the current issue of *Perspectives on Terrorism* have been edited by James Forest and Alex Schmid, the journal's principal editors. Associate Editor Aaron Zelin and John Morrison have supervised peer reviews since the previous issue. Editorial Assistant Jodi Moore handled proof-reading, while the technical online launch of the October 2020 issue of our journal has been in the hands of Associate Editor for IT Christine Boelema Robertus.

[Counterterrorism Bookshelf: 19 Books on Terrorism & Counter-Terrorism](#)

Reviewed by Joshua Sinai

[Bibliography: Democracy and Terrorism](#)

Compiled and Selected by Judith Tinnes

[Recent Online Resources for the Analysis of Terrorism and Related Subjects](#)

Compiled and selected by Berto Jongman

Greek Court Orders Neo-Nazi Leaders to Jail

Source: <http://www.homelandsecuritynewswire.com/dr20201026-greek-court-orders-neonazi-leaders-to-jail>

Oct 26 – The leader and founder of Greece's neo-Nazi Golden Dawn party has turned himself in after a court ordered him and other senior members of the party to serve more than **13 years in prison** for acting as a criminal organization under the guise of a political party.

It is a historic decision bound to have ramifications for other far-right parties across Europe.

However, as a three-member criminal court here ordered the leaders of the far-right Golden Dawn party to immediately serve out their prison sentences, many of them emerged defiant.

Nikos Michaloliakos, the leader of Golden Dawn, emerged from his home, vowing to quickly return.

"We will be vindicated!" he shouted. "I am proud to be taken to jail for my ideas, and we will be vindicated by history and the Greek people," he said.

Michaloliakos and six other leading members of Golden Dawn were former members of the Greek parliament. One continues to hold a seat in the European Parliament.

They were convicted earlier this month and sentenced to more than 13 years in prison for leading a violent, decade-long campaign that targeted anyone who was on the political left and not Greek.

Despite their conviction, the defendants battled in court for days seeking to win some sort of leniency or suspended sentences that would allow them to serve their sentences at home.

Even the court's prosecutor recommended the neo-Nazis be kept out of jail on the grounds that they had had no prior criminal record.



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After repeated delays and days of deliberation, though, the judge, Maria Lepenioti, ordered the entire leadership to serve out their sentences behind bars, insisting the order take immediate effect.

Police have already started rounding up Golden Dawn's leaders. They are all expected to appeal their convictions.

After the five-year trial, prosecution attorneys such as Kostas Papadakis emerged elated, punching the air in victory.

This decision is historic, he said, because it debunks the mystique surrounding Golden Dawn.

With a symbol similar to a swastika, and stiff-arm salutes in praise of Adolf Hitler, Golden Dawn is a neo-Nazi party that emerged from obscurity, gaining surprising prominence during Greece's grim economic crisis.

The party went from winning fewer than 20,000 votes in the 2009 general election to more than 7% of the vote and winning 21 parliamentary seats within three years.

It retained that hold through 2019, with 18 lawmakers in Greece's Parliament.

No outright fascist party in Europe managed to make such gains in general elections for years.

What made Golden Dawn different, and potentially more dangerous than all other Nazi groupings in Europe, was that in public many of its members professed respectable politics and community service that put Greeks first.

Many of its members helped escort young women, protecting them at night across the country's crime-infested capital. They came to the aid of senior citizens and brought food and clothes to many of those in need, including the tens of thousands of Greeks who had lost their jobs to the financial crisis.

But they were also seen as the kind of Nazis read about in history books, all driven by profound racism and an admiration for Adolf Hitler, his extremist rhetoric, the torchlit flag-waving rallies, the endless recruitment of young men and the operation of violent hit squads that frequently roamed the streets of the country, targeting immigrants, communist trade unionists, gay people and an antifascist rapper.

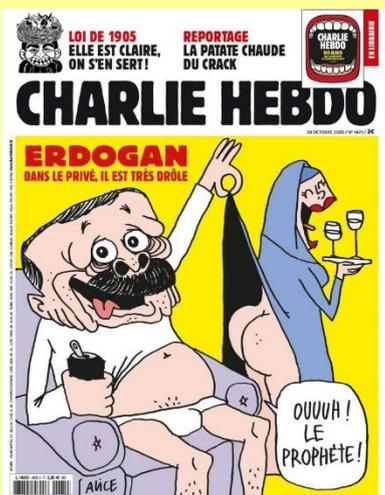
It was this deadly attack in 2013 against Pavlos Fyssas that finally forced authorities to crack down on the violent group and send its leaders to jail.

It remains unclear whether the party can and will remain operative. It is also unclear whether the end of Golden Dawn will stamp out far-right extremism and racist attitudes still strong within Greek society.

Charlie Hebdo sparks Turkish fury with cartoon of Erdogan

Source: <https://www.france24.com/en/live-news/20201027-charlie-hebdo-sparks-turkish-fury-with-cartoon-of-erdogan>

Oct 28 – Turkey on Tuesday accused French satirical weekly Charlie Hebdo of "cultural racism" over a front-page cartoon for its latest edition that mocks President Recep Tayyip Erdogan.



"We condemn this most disgusting effort by this publication to spread its cultural racism and hatred," Erdogan's top press aide, Fahrettin Altun, tweeted.

"French President Macron's anti-Muslim agenda is bearing fruit! Charlie Hebdo just published a series of so-called cartoons full of despicable images purportedly of our President."

The front-page caricature of Wednesday's edition of Charlie Hebdo, released online on Tuesday night, shows Erdogan in t-shirt and underpants, drinking a can of beer and lifting up the skirt of a woman wearing a hijab to reveal her naked bottom. "Ooh, the prophet!" the character says in a speech bubble, while the title proclaims "Erdogan: in private, he's very funny".

Charlie Hebdo's intervention came during an escalating war of words between Erdogan, Macron and other European leaders after the beheading of French schoolteacher Samuel Paty by a suspected Islamist attacker this month.

Macron vowed that France would stick to its secular traditions and laws guaranteeing freedom of speech which allow publications such as the virulently anti-religion Charlie Hebdo to produce cartoons of the Prophet Mohammed.

Some of the weekly's previous work lampooning the prophet was shown by Paty in a class on free speech, leading to an online campaign against him and the grisly murder before the start of school holidays on October 16.

An attack on Charlie Hebdo by jihadists in 2015 left 12 people dead, including some of its most famed cartoonists.



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Macron's defence of Charlie Hebdo, and his recent comment that Islam worldwide is "in crisis", have prompted Erdogan to urge Turks to boycott French products amid a wave of anti-France protests in Muslim-majority countries.



Turkish Minister of Tourism

Legal action

Earlier Tuesday, Dutch Prime Minister Mark Rutte had come to the defence of his country's far-right politician Geert Wilders after Erdogan brought legal action against him. Wilders had shared a cartoon of the Turkish president wearing an Ottoman hat shaped like a bomb with a lit fuse on Twitter.

"I have a message for President Erdogan and that message is simple: In the Netherlands, freedom of expression is one of our highest values," Rutte said.



Previously, European leaders including German Chancellor Angela Merkel had defended Macron after Erdogan suggested he needed "mental checks".

"They are defamatory comments that are completely unacceptable, particularly against the backdrop of the horrific murder of the French teacher Samuel Paty by an Islamist fanatic," German Chancellor Angela Merkel's spokesman Steffen Seibert said.

Erdogan has a track record of using legal action against critics in Europe. He brought a case in 2016 against German TV comic Jan Boehmermann, who read out a deliberately defamatory poem about the Turkish leader during his show as part of a skit designed to illustrate the boundaries of free speech.

The row put Merkel in the awkward position of signing off on criminal proceedings against the comic under an archaic lese-majeste law that was later struck from the German legal code.

EDITOR'S COMMENT: Something big and ugly should be expected in Paris by the end of 2020 – in Germany too.

UPDATE (29/10): Knife attack in Nice; second attack in Montfavet (near Avignon); third attack on Jeddah, S Arabia.

Iran's Top General Warns France to Stop Dangerous Game of Insulting Islam

Source: <https://www.tasnimnews.com/en/news/2020/10/27/2377416/iran-s-top-general-warns-france-to-stop-dangerous-game-of-insulting-islam>



Oct 27 – Iran's highest-ranking military commander condemned the French president's backing for the insults to Prophet Muhammad (PBUH), advising France to stop playing with the sentiments of more than 1.5 billion Muslims in the world.

In remarks on Monday, Chief of Staff of the Iranian Armed Forces Major General Mohammad Hossein Baqeri denounced the "anti-human rights comments" from President of France Emmanuel Macron who has voiced support for the caricatures insulting Prophet Muhammad in the guise of backing the values of secularism. He also called on world intellectuals and elites to advise the French authorities -who blatantly violate human rights and insult divine religions under the guise of politics- to stop such a "dangerous game" and avoid playing with the sentiments of more than 1.5 billion Muslims. It is surprising that the Western governments, including France, which have given

birth to Takfiri and terrorist groups like Daesh (ISIL or ISIS), are attempting to attribute the brutal terrorist activities to Islam, the religion of wisdom and rationalism, the Iranian general said. Earlier this month, Macron pledged to fight "Islamist separatism", which he said was threatening to take control in some Muslim communities around France. He also described Islam as a religion "in crisis" worldwide and said the government would present a bill in December to strengthen a 1905 law that officially separated church and state in France. His comments, in addition to his backing of satirical outlets publishing caricatures of the Prophet Muhammad, have drawn widespread condemnation from Muslims across the world.





Handbook of Terrorism Prevention and Preparedness

International Centre for Counter-Terrorism (ICCT): <https://icct.nl/10years/>

The Handbook will be published and launched by the International Centre for Counter-Terrorism (ICCT). Due to the current pandemic, the launch will be a purely virtual event and is scheduled to take place on November 24th, 2020.

With its 35 chapters, plus Foreword, Postscript and bibliography, the Handbook has grown to ca. 1250 pages. This has led us to the decision to stage the launch of the first of its five parts (chapters 1-6) to coincide with the 10th anniversary of ICCT. **Subsequent chapters will be placed online every week so that by June of 2021 the entire handbook will be freely available online on the website of ICCT.**

Contributors

Foreword

Alexander von Rosenbach

Introduction and Conceptual Issues (chapters 1-2)

Alex P. Schmid

I: Lessons for Terrorism Prevention from the Literature in Related Fields (chapters 3-6):

Kelly A. Berkell, Andreas Schädel & Hans J. Giessmann, Rob de Wijk, Clark McCauley

II: Prevention of Radicalisation (chapters 7-12):

Thomas K. Samuel, Gary Hill, Barbara H. Sude, Asad Ullah Khan & Ifrah Waqar, Nina Käsehage, Sara Zeiger & Joseph Gyte

III: Prevention of Preparatory Acts (chapters 13-19):

Ahmet S. Yayla, Jessica Davis, Sajjan M. Gohel, Mahmut Cengiz, **Ioannis Galatas**,¹ Alex P. Schmid, Branislav Todorovic & Darko Trifunovic

IV: Prevention of, and Preparedness for, Terrorist Attacks (chapters 20-30):

Kenneth Duncan, Joshua Sinai, Annelies Pauwels, Rachel Monaghan & David McIlhatton, Sabrina Magris, Susanne Martin, Brian M. Jenkins, Alex P. Schmid, Anneli Botha, Shashi Jayakumar

V: Preparedness and Consequence Management (chapters 31-35):

Shannon Nash, Juan Merizalde & John D. Colautti & James J.F. Forest, Richard J. Chasdi, Marie Robin, Tom Parker

Conclusion, Postscript and Bibliography:

Alex P. Schmid, Mikkel B. Eriksen, Ishaansh Singh

Eight steps to pull the Lebanese economy back from the brink

Source: <https://www.thenationalnews.com/opinion/comment/eight-steps-to-pull-the-lebanese-economy-back-from-the-brink-1.1100684>

Oct 28 – Lebanon is engulfed in a long list of overlapping and connected problems –fiscal, debt, banking, currency and balance of payments crises – that together have created an economic depression and a humanitarian crisis. People are going hungry: food

¹ Chapter 18: Prevention of CBRN Materials and Substances getting into Terrorist Hands



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poverty has affected some 25 per cent of Lebanon's own population. But the fiscal and monetary instability has caused [more than just a shortage of bread](#).

Confidence in the banking system has collapsed. The Lebanese pound has depreciated by 80 per cent over the past year.

Inflation is at 120 per cent and hyperinflation – a runaway increase in prices – is on the horizon.

Unemployment has risen to 50 per cent, leading to mass emigration and depleting Lebanon of its main asset: its human capital.

The [explosion at the Port of Beirut](#), combined with the Covid-19 lockdown, created an apocalyptic landscape.

It aggravated the country's economic crises. **The cost of rebuilding alone exceeds \$10 billion – more than 35 per cent of this year's GDP – which Lebanon is incapable of financing.**



A statue of a woman made out of glass and rubble that resulted from the Beirut port mega explosion August 4, is placed opposite to the site of the blast. AFP

Prospects for an economic recovery in Lebanon are dismal. The new government must recognise the economy's large fiscal and monetary gaps and implement a comprehensive, credible and consistent reform programme.

The immediate priorities are economic stabilisation and rebuilding trust in the banking and financial system.

Lebanon desperately needs a recovery programme – akin to the Marshall Plan that helped rebuild Europe after the Second World War – of about \$30-35bn, in addition to the funds to rebuild Beirut's port and city centre.

To achieve this, the new government will have to implement rapidly an agreement with the International Monetary Fund, based on a national consensus. The confidence-building policy reform measures over the next six months must include:

A credible capital controls act to protect deposits, restore confidence and encourage the return of remittances and capital back into the country. Credit, liquidity and access to foreign exchange are critical for private sector activity, which is the main engine of growth and employment.

The restructuring of public, domestic and foreign debt to reach a sustainable ratio of debt to GDP. Given the exposure of the banking system to the debt of the government and central bank (known by its French acronym, BDL), public debt restructuring would involve a restructuring of the banking sector, too.

A bank recapitalisation process that includes a process of merging smaller banks into larger banks. Bank recapitalisation requires a bail-in of the banks and their shareholders (through a cash injection and the sale of foreign subsidiaries and assets) of some \$25bn, to minimise a haircut on deposits. This will require passage of a modern insolvency law.



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Monetary policy reform is needed to unify the country's multiple exchange rates, move to inflation targeting – that is, price stability – and shift to greater exchange rate flexibility. Multiple rates create market distortions and incentivise more corruption. The BDL will have to stop all quasi-fiscal operations and government lending. Credible reform requires a strong and politically independent banking regulator and monetary policymaker.

Without the immediate implementation of these comprehensive reforms, Lebanon is heading for a lost decade

Reform the Electricite du Liban (EDL), the country's largest utility, and appoint a new board to improve governance and efficiency.

Reform the inefficient subsidies regime that covers electricity, fuel, wheat and medication. These generalised subsidies do not fulfil their purpose – only 20 per cent goes to the poor.

All that the subsidies do is benefit rich traders and middlemen and they are the basis of large-scale smuggling into sanctions-ridden Syria. Subsidies reform should be part of a social safety net to provide support for the elderly and vulnerable.

Pass a modern government procurement act. This would help prevent corruption, nepotism and cronyism.

Restructure and downsize the public sector. Start by removing the 20 per cent of public sector "ghost workers" – people on payrolls who don't actually work for the government – and establish a National Wealth Fund, a professional holding company that would independently manage public assets. These include basic public utilities like water, electricity, public ports and airports, Lebanon's carrier Middle East Airlines, the telecom company Ogero, the Casino du Liban, the state-run tobacco monopoly and others, in addition to public commercial lands.

These assets are non-performing, over-staffed by political cronies and suffer from nepotism. In most cases, they are a drain on the treasury.

A comprehensive IMF programme that includes structural reforms is necessary. It is the way to restore trust in the economy and win back the trust of the private sector, the Lebanese diaspora, foreign investors and aid providers. This would then attract funding from international financial institutions and [Cedre Conference](#) participants, including the EU and the GCC.

Such measures, if properly executed, would translate into financing for reconstruction and access to liquidity. They would also stabilise and revive private sector economic activity. Without the immediate implementation of these comprehensive reforms, Lebanon is heading for a lost decade.

Nasser Saidi is a former Lebanese economy minister and first vice-governor of the Central Bank of Lebanon.

EDITOR'S COMMENT: The electricity issue is very important – can you imagine a country where the state provides electricity for a few hours every day and citizens have to pay the "electricity mafia" present in every neighborhood in order to have electricity for the rest of the day! Apart from the measures proposed above there is an additional obstacle that is "armed and dangerous". Lebanon will never have a normal government if this obstacle is still involved in governance and if corruption – in all levels – is allowed to exist.

The New Age of Police Reform – Part 2

Building Community Trust Through an Inclusive Police Workforce

By Joseph W. Trindal & Lynn Holland

During the years leading up to 2020, the policing profession has faced many challenges attracting talent and retaining experience, particularly among sworn officers. A robust national economy, as evidenced by exceptionally low unemployment, had been one contributing factor to diminished applicant interest in the police profession. In 2017 and 2019, both the International Association of Chiefs of Police (IACP) and the Police Executive Research Forum (PERF) characterized police recruiting and staffing as in "crisis."

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

Joseph W. Trindal, PPS, is founder and president of Direct Action Resilience LLC, where he leads a team of retired federal, state, and local criminal justice officials providing consulting and training services to public and private sector organizations enhancing leadership, risk management, preparedness, and police services.



Lynn Holland, international programs director at Direct Action Resilience, LLC, was chosen as the first female officer from the U.S. to attend specialized training at the Metropolitan Police (Met), New Scotland Yard after building a distinguished law enforcement leadership career as a city, county, and state officer in Oklahoma and Texas. She became the first woman to serve on the executive management team for the DOJ, ICITAP for the Haitian National Police Initiative.

▶▶ Part I is also available at source's URL.

Muslims 'have the right to kill millions of French people', Malaysia's former prime minister says after church terror attack in Nice

Source: <https://www.dailymail.co.uk/news/article-8895055/Scott-Morrison-slams-ex-Malaysia-PM-saying-Muslims-right-kill-Nice-terror-attack.html>



Oct 29 – The slaughter in Nice happened two weeks after a schoolteacher, Samuel Paty, was beheaded in Paris for showing cartoons of the Prophet to his class in a lesson on free speech.

In a series of tweets, ex-Malaysian PM Mahathir, who lost power in February this year, had tweeted that freedom of expression does not include 'insulting other people'.

The 95-year-old politician said he did not approve of the beheading of a French school teacher for sharing caricatures of the Prophet, but said: 'Irrespective of the religion professed, angry people kill'.

'The French in the course of their history [have] killed millions of people. Many were Muslims,' he said in a tweet which has since been removed for violating the website's rules.

Mahathir, who has drawn controversy for comments about Jews and LGBT people in the past,



Dr Mahathir Mohamad  @chedetofficial · 4h 

But irrespective of the religion professed, angry people kill. The French in the course of their history has killed millions of people. Many were Muslims.

 334

 500

 1.3K



This Tweet violated the Twitter Rules. [Learn more](#)



Dr Mahathir Mohamad  @chedetofficial · 4h 

But by and large the Muslims have not applied the "eye for an eye" law. Muslims don't. The French shouldn't. Instead the French should teach their people to respect other people's feelings.

went on: 'Muslims have a right to be angry and to kill millions of French people for the massacres of the past.'

The Malaysian politician said that 'by and large', Muslims have not applied the principle of 'eye for an eye': 'Muslims don't. The French shouldn't. Instead the French should teach their people to respect other people's feelings'.

Mahathir, who served as Malaysian premier twice for a total of 24 years, said President Macron was 'very primitive' and 'not showing that he is civilised'.

France's digital minister demanded that Twitter also ban Mahathir from its platform, with Cedric O saying he told the managing director of the social media giant in France that his account 'must be immediately suspended.'



EDITOR'S COMMENT: This statement reminds me similar ugly statements relevant to weapons of mass destruction. In 1988, Osama bin Laden said "acquisition of WMD is a religious task"; in 2003, South Arabian cleric Nasser bin Hamad al-Fahd issues a fatwa advising that "the use of WMDs in order to kill millions is legal" while in 2011, the ideologist of Al Qaeda Anwar al-Awlaki quoted "you can use poisons and other WMDs in densely populated areas". The fact is, that just a step before his biological death, he remains a fanatic and there is nothing worse than this.

America Should Not Sell F-35 Fighter Planes to the Qatari Regime

By Jonathan Spyer and Benjamin Weinthal

Source: <https://www.meforum.org/61703/america-should-not-sell-f-35-to-qatar>

Jonathan Spyer is director of the Middle East Center for Reporting and Analysis and a Ginsburg/Milstein Writing Fellow at the Middle East Forum.

Benjamin Weinthal is a research fellow for the Foundation for Defense of Democracies.

France Decides to Fight Islamism with ... Islamists

By Martha Lee

Source: <https://www.meforum.org/61701/france-decides-to-fight-islamism-with-islamists>

Martha Lee is the research fellow of Islamist Watch, a project of the Middle East Forum.

"Was known to the authorities" is often the limit of counter-terrorism

Source: <https://www.thebigsmoke.com.au/2020/10/30/was-known-to-the-authorities-is-often-the-limit-of-counter-terrorism/>

Oct 30 – In recent years, following bloody terrorist attacks in Europe, the United States and Australia, we frequently hear that "the perpetrator was known to the authorities".

It has practically become *de rigueur*, a statement typically appearing 12-24 hours after an attack. Authorities disclose such statements through various media outlets, indicating there was neither a blunder nor negligence in play, rather, that "watchful eyes" already knew of the perpetrator and very often, the person of interest remained on their radar for quite some time.

"It is [France](#) that is under attack," Emmanuel Macron said in the wake of the attack. "Three of our compatriots died at the basilica in Nice today and at the same time a French consular site was attacked in Saudi Arabia.

"I want to express, first and foremost, the nation's support for the Catholics of France and elsewhere. After 2016, with the killing of Father Hamel, it is the Catholics of our country attacked once more, and just before All Saints' Day. We are at their side in order that religion can be freely exercised in our country. People can believe or not believe, all religions can be practised, but today the nation is beside our Catholic compatriots.

"My second message is to Nice and the people of Nice who have already suffered as a result of the Islamist terrorist folly. This is the third time terrorism has struck your city and you have the support and solidarity of the nation.

"If we have been attacked once again, it is because of our values, our taste for freedom; the freedom to believe freely and not give in to any terror. We will give in to nothing. Today we have increased our security to deal with the terrorist threat."

In June, MI5 confirmed that the suspect in the Reading stabbings, Khairi Saadallah, was on their radar in the year that predated the attack. According to *The Guardian*, "He was under investigation as a person who might travel abroad 'for extremist reasons', but sources indicated that the inquiry was closed relatively quickly without any action taken as no genuine threat or immediate risk was identified. Intelligence agencies believe Saadallah had mental health problems, the sources said."

At the time of writing, no connection between Islamic State or al-Qaida has been found, but Saadallah was initially arrested on suspicion of murder, with police not treating the incident as terrorism, but he has now been rearrested under Section 41 of the Terrorism Act 2000, giving police greater powers of detention.

In a pre-recorded statement, Boris Johnson said: "If there are lessons that we need to learn about how we handle such cases, how we handle the events leading up to such cases, we will learn those lessons, and we will not hesitate to take action where necessary."



He added: “If there are changes that need to be made to our legal system to stop such events happening again, we will not hesitate to take that action – as we have before, you will recall, over the automatic early release of terrorist offenders.”

Realities in the field

Owing to the frequency of terrorist attacks, it is important to analyse and understand the intent behind this pattern of communication—a disconcerting array of obstacles that impair the work of criminal and counterterrorism authorities and legal experts.

[According](#) to one study, 57% of perpetrators who brushed shoulders with the law through more conventional offences such as robberies, street fights or selling narcotics, were imprisoned. It is important to note that, in recent years, European and US prisons have become incubators of radicalisation, rather than rehabilitation. Petty criminals, under the influence of charismatic inmates, are sometimes drawn to radical ideologies. The authorities are quite aware of this increasing reality, but the alternative—separating influencers from the easily influenced—is a costly and complicated procedure, so there is little they can do about it.

More worrisome is the fact that upon release from incarceration, there is no real system in place to evaluate whether an inmate has taken on radical ideologies. The second problem to emerge is who is responsible for “following up” and maintaining tabs on suspect individuals. Which authority should be responsible for tracking the individual and do they have the manpower and resources to do so?

Of course, the hope is that former inmates will be rehabilitated and become productive members of society. Unfortunately, economic realities and challenges in society frequently mean a potential return to criminal activity, or even a move into other nefarious activities. Currently, an integrator that can assemble or evaluate data, which can then be gathered by police or intelligence services within its own domains, is nonexistent. All too often, individuals become subject to law enforcement evaluation only after direct contact or support of an extremist group (or activity). Additionally, the recent disclosure concerning female ISIS members highlights the need to focus on both genders.

Unless hard evidence exists, it is unlikely that the suspect will become a high priority, considering the overwhelming volume of tasks facing enforcement authorities compounded by limited available resources. Suspects are placed on a so-called [watch list](#), which is limited to periodical monitoring of social media and digital communications. This monitoring depends on the authorities’ capacity and the sophistication of the target’s electronic devices.

Police, intelligence and security monitoring systems are imperfect; they can process vast amounts of data, but do not have the resources to monitor all suspects around the clock. The heinous acts perpetrated in Paris 2015 by Said and Cherif Kouachi and Amedy Coulibaly are evidence of this unfortunate reality.

Now, let us assume that at some point, the suspect catches the attention of the law, prompting some degree of surveillance.

A logical first step might be to initiate contact with the suspect’s family or engage through his/her community. If the family and community leaders are powerless and admit that they have very little control or influence over the suspect’s behaviour, then the individual may be summoned for a “frank” discussion with one of the agencies (e.g.; local police, a special branch officer in the police headquarters or the Ministry of Interior) aiming to temper his/her manner and perhaps, instil fear. Parallel to that, authorities may intensify monitoring activities, including tracking and analysing digital communications. Though these steps may seem practical, they are often neglected.

The decision to adopt these steps described above typically occurs when a counter-terrorism expert has the right instinct—not necessarily the evidence—that the individual in question should be considered a high-priority target.

On those occasions where more tangible though not incriminating data is gathered, the suspect may be detained by the police. At this point, another reality may unfold: [human rights activists and professionals may interject](#) on behalf of the individual citing their civil rights against persecution or inconclusive evidence.

The authorities have no choice but to either release him or present him in front of a judge to prolong his detention. Those who are acquainted with the organisational culture of the security authorities in **democratic** societies may recall their frequent frustration with [existing anti-terrorism legislation](#).

Given the prospect of a suspect walking away free under these circumstances, security authorities may decide to continue surveillance without detention or arrest in the hope that further incriminating evidence will emerge in due course. However, the suspect may go underground and exist beyond detection and in the worst-case scenario, resurface and conduct yet another terrorist attack.

Legislative concerns

While terrorism has adapted itself into the new age of technology and changed its *modus operandi*, the legislative systems in our democratic societies have not evolved as quickly.



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One such measure is the reactivation or re-introduction of [administrative detention](#), which means arrest without a trial for a limited period with the necessary adjustments to 21st-century requirements.

Another possibility is to follow the [Japanese anti-terrorist bill](#), passed in preparation of the 2020 Tokyo Olympics. Although the bill draws criticism for its harshness, adopting certain parts—including the creation of a new offence of conspiracy to commit a serious crime, which allows the police to arrest terrorists before they attack (a similar provision [exists](#) in UK anti-terror law)—is certainly worth considering.

[Despite criticism](#) from human rights groups, the United Kingdom's [Investigatory Powers Act of 2016](#), setting out the legal parameters for the UK Intelligence Community and police's surveillance activities, may also serve as a blueprint for future legislation across many governments.

Despite labour and resources shortages, counter-terrorism organisations are actively adapting themselves to these new realities as much as possible. Equally important, the cherished legal systems, which until now have successfully protected and helped to maintain our democratic values and way of life, must also adjust to the ever-changing circumstances.

It is a process, but recognising the issues and assessing the existing parameters and limitations may allow us to move past “known to the authorities” to a more effective system of addressing the conditions fuelling extremism and preventing terrorist activity.

EDITOR'S COMMENT: We often watch in the movies a character that visits a police department complaining that there is a specific person who threatens his/her life. The usual reply is “there is nothing we can do right now. If he/she does something more concrete, here is my card; feel free to call me anytime!” In the next, 5-10 min the character is dead and the police officer starts to collect evidence about who did it and so on! Almost all modern terrorists belong to a specific community where habitually families are living together – sometimes in the same building. Future terrorists should be aware that if arrested alive they and their parents and brothers/sisters and first-degree relatives will be immediately deported to their country of origin regardless of passports, nationalities, etc. This will make them collectively responsible for the criminal actions of their own and they will share consequences altogether. No more “was known to the authorities!” Citizens' lives are more valuable than the civil rights of terrorists and supporters.

A timeline of recent terrorist attacks in France (2015-2020)

- ❖ **November 2020:** Knife attack in (French-speaking) Quebec, Canada by man dressed in medieval dress – 2 dead; 5 injured
- ❖ **October 2020:** (1) French teacher Samuel Paty is beheaded outside a school in a suburb of Paris. (2) Three people have died in a knife attack at a church in Nice – one elderly victim was “virtually beheaded”. Police sources named the suspect as Brahim Aioussaoui, a 21-year-old Tunisian who arrived by boat on the Italian island of Lampedusa in September. He was placed in coronavirus quarantine there before being released and told to leave Italy. He arrived in France earlier this month. Terrorist was shot and detained. (3) A man was shot dead in Montfavet near the southern French city of Avignon after threatening police with a handgun. (4) A guard was attacked outside the French consulate in Jeddah in Saudi Arabia. A suspect was arrested and the guard taken to hospital. (5) Police in Paris tasered a man and shot him with rubber bullets as he tried to attack two officers with knives. The officers intervened after police received a call reporting that a man armed with a knife was knocking on his neighbours door in a southwestern district of the city. (6) Orthodox priest shot twice in a Greek church (@ St-Lazare Str.) in Lyon – terrorist flees.
- ❖ **September 2020:** Two people are stabbed and seriously hurt in Paris near the former offices of Charlie Hebdo, where Islamist militants carried out a deadly attack in 2015
- ❖ **October 2019:** Radicalised police computer operator Mickaël Harpon is shot dead after stabbing to death three officers and a civilian worker at Paris police headquarters
- ❖ **July 2016:** Two attackers kill a priest, Jacques Hamel, and seriously wound another hostage after storming a church in a suburb of Rouen in northern France.
- ❖ **July 2016:** A gunman drives a large lorry into a crowd celebrating Bastille Day in Nice, killing 86 people in an attack claimed by the Islamic State (IS) group.
- ❖ **November 2015:** Gunmen and suicide bombers launch multiple co-ordinated attacks on the Bataclan concert hall, a major stadium, restaurants and bars in Paris, leaving 130 people dead and hundreds wounded.
- ❖ **January 2015:** Two Islamist militant gunmen force their way into Charlie Hebdo's offices and shoot dead 12 people.



Vienna “Terror” Attack: Police Launch Massive Manhunt

Source: <http://www.homelandsecuritynewswire.com/vienna-terror-attack-police-launch-massive-manhunt>

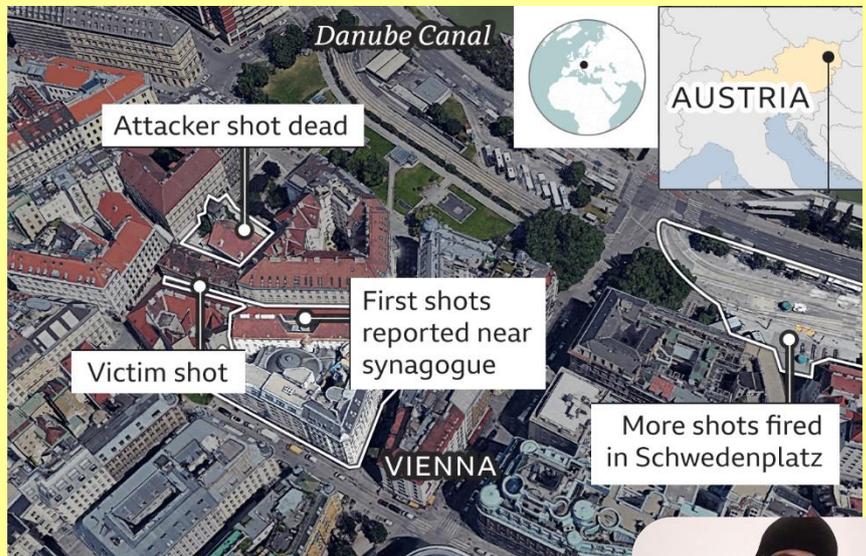
Mov 03 – Hundreds of police have been deployed across Vienna to search for suspects after [gunmen opened fire at multiple locations](#) in the city, killing at least four people and injuring 17.

The shootings came as many people were out and about enjoying the last evening before a nationwide coronavirus lockdown was due to come into force.

One suspected attacker, who was armed with an assault rifle and wearing a fake suicide vest, was shot dead by police.

Interior Minister Karl Nehammer told an early morning press conference on Tuesday that investigations indicated the man was a sympathizer of the extremist group “Islamic State.” He added that more perpetrators may be on the run and urged citizens to stay home if possible.

Two men and two women have been confirmed dead. Health authorities cited by Austria’s APA news agency also said seven victims of the attack were in a critical, life-threatening condition in hospital.



What We Know So Far

- ✓ Gunfire erupted outside Vienna’s main synagogue at around 8 p.m. local time (1900 GMT/UTC) on Monday
- ✓ Authorities said there were shootings at six different locations in the city center
- ✓ Witnesses described men firing dozens of rounds into crowds at bars and restaurants with automatic rifles
- ✓ It is unclear how many attackers were involved
- ✓ At least 1,000 officers have been deployed in the search for potential suspects



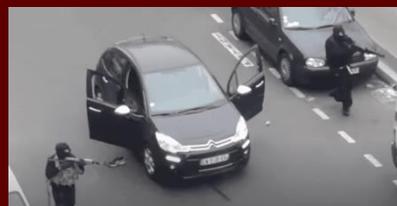
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- ✓ Neighboring countries, including Germany and the Czech Republic, have stepped up border checks
- ▶ **UPDATE:** 4 civilians dead; 1 terrorist dead; 21 civilians + 1 police man injured; 7 critical

What We Know about the Gunmen

- ✓ Authorities said one attacker shot dead by police appeared to have an Islamist motive
- ✓ The deceased suspect was 20-years-old and held dual citizenship in Austria and North Macedonia
- ✓ Interior Minister Karl Nehammer said the man was convicted in April 2019 because he had tried to travel to Syria to join the extremist "Islamic State" group
- ✓ He had also allegedly posted photos of himself on Instagram with weapons he was believed to have used in the attack
- ✓ Police used explosives to blast their way into the 20-year-old suspect's apartment
- ✓ They have also carried out searches of at least 18 other properties and made at least 14 arrests

EDITOR'S COMMENT: What if the man (or woman) recording the video from his/her balcony/window had a legal rifle and shoot the terrorist? What if the poor pedestrian had a handgun and shoot first? The terrorist had no special training or combat experience; he just took advantage of the elements of surprise and victims' immobilizing terror since he was well aware that only armed police could fight back but he only needed a few minutes to evoke havoc. We cannot expect everything from police. We live in dubious times and life is so precious to devote time into peaceful talks and humanitarian debates. What if citizens from their apartments or offices shoot back the terrorists escaping from the Charlie Hebdo offices? Remember the execution scene in the street of the security officer? All those opposing the idea of armed citizens based on the example of Israel, do they have something better or more practical to propose? People get bored to be the shooting ducks. It is time for ducks to shoot back! If not, prepare for another round of flowers, candles on the street, official morning days and angry statements from scared politicians what repeat the "let it be the last blood ever!" – until next time in a neighborhood next to you!



The Fatal Fear of Being Accused of Racism

By Daniel Pipes

Source: <https://www.meforum.org/61737/the-fatal-fear-of-being-accused-of-racism>



Nov 03 – Recent evidence suggests that a major act of violence could have been averted had a security guard not feared being called a "racist." This incident raises questions about the West's ability to protect itself from jihadi attacks.

That act of violence was the bombing of a concert by U.S. singer Ariana Grande at England's Manchester Arena on May 22, 2017, killing 22 and wounding over 800. The bomber, [Salman Ramadan Abedi](#), 22, was born in Manchester to refugee Islamist parents just arrived from Libya. Those who knew him described him as being very religious and none too bright.

An Al-Qaeda sympathizer, Abedi constructed a home-made bomb with thousands of nuts and bolts, placed it in a large rucksack, and made his roundabout way by foot to the arena. There he awaited the conclusion of Grande's "Dangerous Woman" performance while sitting on steps in the public foyer. At 10:31 p.m., he stood up, crossed the foyer toward the audience exiting the hall, and detonated his device.

The Home Secretary Priti Patel established the [Manchester Arena Inquiry](#) "to find out exactly what happened" and "make recommendations to try to prevent what has gone wrong from happening again." The inquiry revealed important information about the security that evening provided by the private firm Showsec.

The account starts with [Christopher Wild](#) as he waited for a child attending the concert. He noticed a dubious-looking Abedi about 10.15 p.m. and reported his concern to a Showsec guard, Mohammed Ali Agha, 19. Wild described Abedi as "dodgy" and "dangerous-looking" and pointed out his "massive rucksack."

Agha asked a colleague, [Kyle Lawler](#), 18, to keep an eye on Abedi. Lawler approached within 10-15 feet of Abedi and found him "fidgety and sweaty." Lawler testified that he had "a bad feeling about him but did not have anything to justify that." He admitted to some panic even as he felt "conflicted" because he sensed something awry but also saw him as "just an Asian male sitting amongst a group of white people."

As Lawler told the inquiry, "I felt unsure about what to do. It's very difficult to define a terrorist. For all I knew, he might have been an innocent young Asian male sitting on the steps. I did not want people to think that I was stereotyping him because of his race. ... I was scared of



being wrong and being branded a racist. If I got it wrong, then I would have got into trouble. It made me hesitant about what to do. I wanted to get it right and not to mess up by overreacting or judging someone by their race.”

Although Lawler admits to "a guilty feeling" and placing "a lot of blame on myself," when asked if he still worries about being branded a racist, he replied "Yes."



[Kyle Lawler on Oct. 27, 2020, testifying at the Manchester Arena Inquiry](#)

What to make of this incident? Note this key sentence: "I was scared of being wrong and being branded a racist." In one sense, this sentiment is entirely familiar; it is, for example, why the police in Rotherham and other British cities did not crack down on Pakistani rape gangs over a period of up to sixteen years.

In another way, it is startling. For a security guard not to follow up on his suspicions out of fear of "being branded a racist" points to a crisis. Unless the suspect is a jihadi planning a murderous rampage – something not at all likely – whoever voices worries potentially opens himself to being sanctioned, being fired, press outrage, lawsuits, and even riots. Slogans like

"[If you see something, say something](#)" turn out to be fraudulent. Recalling how many jihadis have been caught in the course of [routine traffic stops](#) or by [suspicious neighbors](#), this is a major problem.

Fear of the charge of racism has the counterintuitive consequence that a person who has darker skin or appears to be Muslim could [get a free pass](#); the vigilant can afford to be wrong about a blond but not about a hijabi. Even stranger is the implication that someone intending to engage in mischief could find advantage in adopting a Muslim appearance.

Effective protection requires latitude for errors. Airline captains, police on the beat, even specialists on Islam must have the freedom to express their worries without fear of press defamation, losing their jobs, or facing legal retribution.

Unless these necessary changes take place, expect more jihadi violence.

Daniel Pipes is president of the Middle East Forum.

EDITOR'S COMMENT: Age of security guards 18 to 19 yo. What exactly people and companies expect from these boys? To be engaged in close combat situations? To counter aggressive individuals? To have the mindset to discriminate racism from duty? To realize that bad guys can be white, black, yellow, green, whatever? And on top of immaturity is the lack of training for a minimum wage. Were they ever taught how to be human screeners? Do they know how to spot suspects? Of course not! Police officers with 20 or 30 yrs in service are not always successful in that and we expect young boys to do this the right way. Of course, they could always notify a senior officer from their company; something they did not. And for sure, "freedom of expression" as Daniel Pipes writes is mandatory for an effective defense. If security people always think "what if my feeling is wrong" then the game is over – expect more jihadi violence.

Moscow says terrorists are trying to use COVID-19 Pandemic to increase their influence

Source: <https://goachronicle.com/moscow-says-terrorists-are-trying-to-use-covid-19-pandemic-to-increase-their-influence/>

Oct 30 – Russian Deputy Foreign Minister Oleg Syromolotov expressed the belief, in his interview with Sputnik that terrorist organizations were trying to use the COVID-19 pandemic to strengthen their influence and recruit new supporters among those rejecting their governments' crisis response.

The pandemic has revealed the unpreparedness of some national healthcare systems to quickly react to crises, it has exposed some countries' vulnerability to terrorism threats, even though the coronavirus itself is not a bioterrorism-related phenomenon, the Russian diplomat noted.

"In some regions of the world, we see that terrorist structures seek using the situation that emerged in light of the pandemic to strengthen their influence, to promote misanthropic ideology and recruit new supporters, chiefly among those who disagree with governments' actions against the crisis," Syromolotov said.



Moscow is firmly convinced in the need to outline specific efficient measures to prevent “biological agents use for illegal purposes,” the deputy foreign minister added, pointing to Russia’s 2016 initiative to draft an international convention for suppressing acts of chemical and biological terrorism.

The Terrorist Threat from the Fractured Far Right

Source: <http://www.homelandsecuritynewswire.com/dr20201103-the-terrorist-threat-from-the-fractured-far-right>

Nov 03 – In November 2019, Seamus Hughes and Devorah Margolin of the George Washington University’s Program on Extremism argued in [Lawfare](#) that the jihadist threat to the West has splintered. “It is clear that the jihadist threat has become fractured, with new and old hazards facing the United States concurrently,” they reasoned, before presenting the multiple different groups—including homegrown jihadists, returnees from conflicts abroad, and those recently released from prison—that have diversified the threat beyond the traditional conceptualization of hierarchical, bureaucratic, foreign-based terrorist organizations that send foreign fighters abroad, à la al-Qaeda in September 2001. They are right, but this atomization of terrorism is not confined to the jihadist threat.

Bruce Hoffman and Jacob Ware write in [Lawfare](#) that over the past few years, and especially the past few months, the far-right extremist movement has fractured, too. It now presents a more disparate, amorphous and, arguably, dangerous threat than before.

The challenges to law enforcement and intelligence agencies tracking this diverse and evolving movement are formidable, particularly their efforts to preempt and interdict attacks from so wide an array of adversaries. Between the ongoing challenges of monitoring al-Qaeda and Islamic State attack planning in the United States, coupled with mounting instances of anarchist and other left-wing violence, authorities face an unprecedented deluge of threat information and intelligence. The threat has been complicated further by this critical moment in U.S. history, which has included a global pandemic and rolling, nationwide protests against police brutality.

Until recently, Western states faced primarily white supremacist threats from lone actors—as displayed to heartbreaking effect from Norway to New Zealand. But a heterogeneous collection of extremist actors within the same broad ideological community has now emerged, all seeking to press their own unique agendas and independently pursue their own strategies to undermine and eventually destroy the Western liberal state system.

Most worryingly, it is now almost impossible to deduce which group or networked individual poses the most pressing threat, which communities are in imminent danger, and against whom counterterrorism resources should be arrayed most urgently.

Hoffman and Ware write that until a few months ago, far-right violence was mostly predictable. Instances tended to be tragic but otherwise largely contained shootings randomly perpetrated by lone-actor white supremacists against soft targets—typically places of worship or shopping centers—along with sporadic militia or sovereign citizen attacks on law enforcement.

We now face a cacophony of violence, growing louder and perpetrated by multiple collectives or groups of actors that are similar in their ideologies and strategies, but just distinct enough in their differing approaches and targeting to complicate counterterrorism efforts.

Although these groups have so far inflicted a [limited number of fatalities](#), their violence has the potential to escalate suddenly. And there seems to be no clearly articulated strategy from either the federal government or law enforcement to wrench back control.

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There is no telling where the next bullet or bomb will come from, but it could trigger a wave of domestic terrorism, with a variety of disparate actors standing armed and ready.

Al-Qaeda, Al Shabaab Urge ‘Gallant Knights’ to Globally Emulate France Terror Attacks

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/al-qaeda-al-shabaab-urge-gallant-knights-to-globally-emulate-france-terror-attacks/>

Nov 03 – Driven by recent terror attacks in France, al-Qaeda in the Islamic Maghreb and Al-Shabaab have issued statements telling followers that they should emulate the assaults, with



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the latter declaring that “the hypocritical slogans of freedom and liberalism are nothing more than a disguise intended to conceal the sinister plots of the crusaders.”

“Killing the one who insults the prophet is the right of every Muslim capable of applying it,” AQIM declared in its statement, which told would-be jihadists to “not ask for authorization to kill the one who insults the prophet” but to mind sharia law and “spare those whom it is illegitimate to target.”

Al Shabaab declared that lone jihadists “across the globe continue to shake the world with their glorious feats and heroic operations” and have proven that they “will never abandon seeking vengeance” for perceived insults of Muhammad, “a crime that bears dire consequences.”

Mentioning the France attacks, Al Shabaab called the terrorists “gallant knights” who “have treaded the path of the noble companions in dealing with those who malign our religion.” The terror group then advised others to follow in those footsteps as well in a “war” against secularism, naming recent attackers in France “and the other unknown soldiers of Allah.”

Al Shabaab wrapped up with a message directed to France, quoting Osama bin Laden: “If your freedom of speech has no restraints, then you should be willing to accept the freedom of our actions.”

The AQIM statement said a boycott of French products — a list was circulated online in recent days by ISIS supporters — was the “minimum for a believer” but said that “any Muslim capable” should commit acts like the recent beheading of a French teacher.

While neither al-Qaeda nor ISIS have claimed responsibility for the attacks, both terror groups are using the incidents to encourage similar attacks with a message of singular purpose trumping assignment of blame to one group or another.

Just hours after three people were killed last week in a knife attack in Nice, France, ISIS published a full-page article in its regularly scheduled weekly newsletter featuring a photo from the attack scene and a call to threaten France to the extent that the country would feel driven to ban depictions of Muhammad.



Three people were fatally stabbed Thursday at Nice’s Notre Dame Basilica, with one of the victims escaping the church but succumbing to her wounds in a nearby cafe where she sought help. One of the victims in the basilica reportedly had her throat slit.

The suspect, Tunisian national Brahim Aouissaoui, 21, was wounded by police and taken into custody. Aouissaoui is still in the hospital and has tested positive for COVID-19, according to [Agence France-Presse](#); a source told the news agency that he had not yet been questioned and “his prognosis remains uncertain.”

On Oct. 16, French teacher Samuel Paty was beheaded walking home from school after one of his recent classes studied freedom of expression in the context of the *Charlie Hebdo* Muhammad cartoons. On Sept. 25, two people standing outside of *Charlie Hebdo*’s former office

were [attacked](#) with a meat cleaver and survived the assault.

France raised its terror alert to its highest level after Thursday’s Nice attack. Then on Monday evening, a gunman killed at least four people and injured 22 after opening fire in the center of Vienna in what Austrian government officials are calling an Islamist terror attack. The gunman shot and killed by police, Austrian-born Fejzulai Kujtim, 20, of St. Poelten, was sentenced in April 2019 to 22 months for attempting to go to Syria to join ISIS, but was released in December.

The ISIS article in the group’s weekly *al-Naba* newsletter published Thursday incited violence against France, stating that “the French continue to mock the Messenger” and arguing that European nations wouldn’t change blasphemy laws to the terror group’s liking “unless there is a true threat to the lives and interests of their subjects.”

Al-Qaeda previously issued a statement declaring France to be a target and inciting attacks. And in the previous week’s issue of *al-Naba*, ISIS featured a photo of Abdullakh Anzorov, the 18-year-old Chechen fatally shot by police after killing Paty, and praised him as a “martyr.” The article also noted that young would-be jihadists conducting individual attacks on their home soil often can’t hijack a plane or plant an IED “inside a train, bus, or the like” because these are “operations that require capabilities they cannot afford” — instead, the terror group said, “urge them to do what they can ... with what they have in their hands.”

The latest ISIS article said demonstrations have unfolded as “reasonably understood” expressions of anger in areas of the Muslim world after French President Emmanuel Macron



said in an Oct. 2 address that “Islam is a religion which is experiencing a crisis today, all over the world,” and said there is a need to build an “Islam des Lumières,” or Islam of Enlightenment. But the terror group also brushed off protests and calls for boycotts against France as “temporary enthusiasm” and pointed to eventual fatigue for and disintegration of the 2005 boycott of Danish products after the newspaper *Jyllands-Posten* published a dozen Muhammad editorial cartoons.

“By targeting the major French companies working in Muslim countries, and threatening their interests, this will push the governments and companies to call on their people not to provoke Muslims because of the influence it has on the safety of their citizens and the activity of their economy, and even issuing laws that criminalize it if the danger increases to them more,” the article said.

The new AQIM statement, which said boycotts were the minimum acceptable course of action, said that the French “must know that the continuation of this campaign by their president will only increase the resolve of Muslims to avenge those who attack the Prophet.”

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Mercenaries in the Service of Authoritarian States

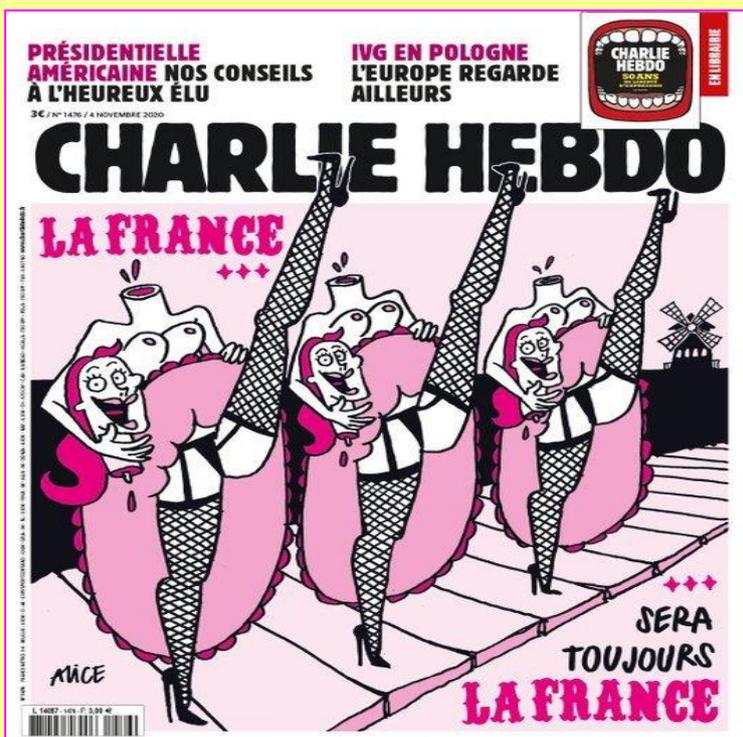
Source: <https://css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-security-studies/pdfs/CSSAnalyse274-EN.pdf>

By using mercenaries and ostensibly private security services, China and Russia project power and protect their interests abroad without openly deploying their armed forces. However, in doing so, the two countries follow two very different paths.

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After the new Nice terrorist attack



Terrorist Knifer in France Illegally Crossed EU Border with Migrants

By Todd Bensman

Source: <https://www.meforum.org/61736/nice-terrorist-crossed-eu-border-with-migrants>

Oct 30 – An Islamic terror attack in Europe — where a knife- and Quran-wielding jihadist fatally slashed three people in a church in Nice, France (nearly decapitating one of them) — can now be added to the world's newest but still largely unread book on terrorist travel tactics: He illegally infiltrated Europe's borders posing as a migrant-refugee to reach his French target, [according to French officials](#).

Nice terror suspect Brahim Aouissaoui photographed in the Italian port city of Bari in early October (left) and after being shot by police following his October 29 attack (right).

In entering Europe using this highly effective clandestine infiltration method, 21-year-old Brahim Aouissaoui joins scores of attacking, plotting Islamic terrorists who have crossed Europe's borders as illegal aliens since 2014, hiding among numerically greater migrants and refugees — and still come even though Europe's so-called [migrant crisis](#) supposedly ended in 2017.



An "Exit Slip" and a Red Cross Identification Card

The accused border-infiltrating terrorist is a Tunisian who, apparently angered by France's recent vow to uphold the free-speech right of cartoonists to draw Prophet Muhammed, illegally [voyaged September 14](#) over the Mediterranean Sea on a migrant boat and reached the Italian island of Lampedusa on September 20.



The Italians quarantined him there for 14 days with the rest of the migrants as part of a coronavirus containment policy. Aouissaoui registered with the Italian Red Cross and received an official identification card but did not apply for political asylum, [according to a report](#) in *The Guardian*. On October 9, he somehow made his way on a small boat to the Italian mainland port of Bari.

[Migrants on the Italian island of Lampedusa wait to board a coast guard ship](#)

There, with so many Tunisians clogging Italy's repatriation process, the authorities released him with

an "exit slip," requiring him to leave the country within seven days. A similar kind of process occurs on the American southern border during migrant surges, where migrants are released with a "notice to appear" in court.

Of course, Aouissaoui did not go home. He used his Italian Red Cross identity card to board a train for France. It arrived Thursday, the same day Aouissaoui staged his bloody attack inside the church, shouting "Allahu akbar!" (God is greatest) even as police shot and critically wounded him.

Many Came Before

The Nice knife attacker's method of reaching his target is hardly rare. It's only the latest of many just this year, which tragically demonstrate how this new global terrorist border infiltration phenomenon has continued unabated in the year since the Center for Immigration



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Studies quantified and analyzed it in the study titled "[What Terrorist Migration Over European Borders Can Teach About American Border Security](#)". As many as 150 terrorists who got through Europe's land and marine borders with other migrants since 2014, by my count, have conducted scores of attacks that have killed and wounded many hundreds of people in a dozen countries. These include the most recent beheading of a Paris schoolteacher for discussing the Mohammed cartoon controversy and [four Tajikistani migrants](#) caught plotting to bomb U.S. air bases in Germany this past spring.

Many of the migrant-terrorists came via Lampedusa Island and the sea route from northern Africa during the 2014-2017 European migrant crisis. They still do, [as I reported here in May](#) when Italians luckily caught the so-called "ISIS Rapper" Majed Abdel Bary, one of Europe's most-wanted terrorists, after he, too, used the route on a migrant boat.

Lessons for American Homeland Security

American homeland security planners and professionals, contending with several thousand migrants a year coming over the U.S. southern border from the same Islamic nations, including Tunisia, might take stock of Europe's various security responses to its terrorist border infiltration catastrophe.

As CIS's study and the first chapter of my forthcoming book [America's Covert Border War](#) extensively detail, the European Union has responded with a variety of methods to reduce the migration flows from Islamic countries where jihadist ideology and terrorist organizations are prevalent. Yet the routes still exist, ferrying 141,846 migrants over EU external borders in 2019, according the EU border agency Frontex's 2020 threat assessment, nearly 24,000 of them using the Western Mediterranean route that Aouissaoui used.

U.S. homeland security and border management agencies should consider all of these cases as red flag warnings to up their game regarding security vetting at our own borders, where migrant asylum-seekers from all of the same Muslim-majority countries [regularly show up from Mexico after traveling through Latin America](#).

Todd Bensman is a fellow at the Middle East Forum and a senior national security fellow for the Center for Immigration Studies. He previously led counterterrorism-related intelligence efforts for the Texas Intelligence and Counterterrorism Division.

EDITOR'S COMMENT: Red arrows indicate the biggest part of the problem. Italy has the strategic depth to counter sea border infiltration – they did not. Lampedusa is a small island. All boat owners should be known on first name basis and all sea activities should be registered and supervised – they did not. Red Cross policy should be changed – trusting people who risk their lives to cross open seas is at least hilarious. Ticket issuing authorities should report cases that used RC documents to buy tickets to authorities on both sides of the border – they did not. If someone has done the trip once then he can spread the word on how to do it. After that, it is not difficult to buy a good knife from a supermarket, is it? Add a few Captagons or alike and the next attack is a fact! Perhaps if EU closes its borders to Italy, France and Spain (as they did with Greece) then the hard core of the union 😊 will be protected.

Austria admits security failings over Vienna gunman

Source: <https://www.thejakartapost.com/news/2020/11/05/austria-admits-security-failings-over-vienna-gunman-.html>



Nov 05 – Austria acknowledged Wednesday there had been security failings leading up to the deadly gun rampage in Vienna by a convicted Islamic State sympathizer. Interior Minister Karl Nehammer said **intelligence services had received a warning from neighboring Slovakia that the assailant had tried to buy ammunition, but that "a failure of communication" had followed.**

Chancellor Sebastian Kurz has described the decision to release Fejzulai as "definitely wrong". "If he had not been released then the terror attack would not have been possible," Kurz told public broadcaster ORF on Tuesday. Austria's top security chief Franz Ruf told local media that at his last session of a publicly-funded de-radicalization program in late October, Fejzulai had condemned the recent militant attacks in France. Nehammer has said the attacker successfully "fooled" the programs, and that raids at his home revealed plentiful evidence of his radical views. "Without wanting to put the blame on someone, if they are the experts, why didn't they notice



anything?" Rast said. "They must have had the most - and the last - contact with him." The organization running the programs, DERAD, hit back at the criticism, insisting that it had never described Fejzulai as "de-radicalized".

EDITOR'S COMMENT: From my own experience, it is very difficult for intel analysts to make "predictions" because they are afraid that their guessings will be proved wrong in the eyes of their superiors. They cannot adopt the perception that a prediction is valid only for a day or a week and not forever. A prediction can change many times depending on the incoming info and the overall environment. If you desire 100% prediction then you can wait for the bad things to happen! In that respect, if you get the tip that someone is looking to buy (illegal) guns then you arrest that person and remove him from the market. Deradicalization centers or schools is a joke reminding the efforts of late Michael Jackson to change the color of his skin. Equally problematic seems to be the experts involved that have a sick ambition to interfere with evil minds believing that they will succeed in transforming devils to angels.

Islamist Terrorism: Germany Is Home to More than 600 Agitators

By Matthias von Hein

Source: <http://www.homelandsecuritynewswire.com/islamist-terrorism-germany-home-more-600-agitators>

Nov 04 – At least one of the [assailants in the Vienna attack](#) was known to police. The 20-year-old, shot dead on Monday evening, had made several attempts to leave the country and join the so-called Islamic State (IS). It would appear, however, that the authorities did not see him as a potential terrorist.

Similar miscalculations have happened in Germany too. As of September 1, 2020, German security forces counted 627 potential terrorists. One of them was the 20-year-old Syrian Abdullah al-H., who [attacked a homosexual couple with a kitchen knife](#) on October 4 in Dresden, although his movements were monitored by police. One of the victims was seriously wounded, the other even died of his wounds shortly afterwards.

German authorities regard the threat level as "steadily high." The 2019 report by Germany's domestic intelligence agency, BfV, issued in July 2020, refers to several foiled plans for attacks that testify to the potential for terrorism in Germany.

The domestic intelligence service says a major threat comes from "individual assailants inspired by terrorist organizations," who are especially difficult to pick out in advance.



What Defines an Agitator?

The German-language term "*Gefährder*," which refers to those who are a threat to society and translates literally as "endangerer," was coined by police and a clear definition now applies nationwide. In typically verbose bureaucratic language, an agitator is defined as "a person pertaining to who certain facts indicate that it is safe to assume that he or she will commit a politically motivated crime of considerable significance."

These facts include, above all, the findings of the security forces or intelligence services.

An agitator may not be arrested unless he or she is suspected of having committed or can be proven to have plotted to commit a crime. Membership in a terrorist organization is a crime. It is prohibited, for example, to "prepare or support a crime posing a severe threat to the state."

Agitators and "Relevant" Persons

In addition to those defined as agitators, the security authorities list more than 500 "relevant persons." These can be leaders, supporters, or potential culprits within the terrorist spectrum who are believed to be likely to commit, finance, or otherwise support a terrorist attack in the future. However, they may also just be companions of agitators or people who simply associate with known agitators.

As of July 1, 2020, of the approximately 300 [Islamist fighters who have returned to Germany](#) from IS-held territory in Syria and Iraq, 109 were classified as agitators and 90 as "relevant persons."



All in all, the authorities estimate that nearly 30,000 people in Germany are potential supporters of Islamist terrorism. Most of them, more than 12,000, are Salafists. Their circles were and remain the main support base for violent jihadism.

How to Keep Tabs on Agitators

Each agitator is assessed individually by the security authorities. Depending on the outcome of the assessment, a range of measures is possible, ranging from a verbal warning to technical surveillance to around-the-clock observation by police.

Total surveillance is staff-intensive. According to the intelligence services, 25 to 30 police officers are needed to monitor a single person. Hence, the bar to impose round-the-clock surveillance is high.

The alleged Dresden attacker did not clear that bar. Abdullah al-H. was released from prison in late September, shortly before the attack. He had served his sentence and taken part in a deradicalization program. Nevertheless, he was seen as radicalized and dangerous.

Therefore, strict conditions were attached to his release and he had to report to the police every day. The intelligence services placed a hidden camera at the entrance to where he lived. The authorities appear to have missed the fact that he bought two sets of knives in a Dresden department store two days before the attack.

Deportations Not Always Possible

The debate about deporting agitators reignites after every terrorist attack. After the knife attack in Dresden, German Interior Minister Horst Seehofer openly considered putting an end to the policy of not deporting agitators to Syria.

Apart from the moral issue of whether it is right to deport people to a war zone without a conviction, there is a range of obstacles to deportations to Syria. First and foremost, Berlin has no diplomatic relations with Damascus and there are no official channels to the Syrian authorities.

Nevertheless, agitators do get deported. The authorities have been keeping records of this since 2017. By the end of 2019, 93 agitators and "relevant persons" had been deported. Deportations are legally fraught and time-consuming. One example is the case of [Anis Amri, the man who committed the attack on a Christmas market in Berlin](#) in 2016 that claimed 12 lives, making it the worst Islamist attack on German soil.

Partly because Amri had at least 14 different aliases, the German authorities, in their bid to have him deported, were unable to source the necessary identification papers from Tunisia in time. They did not arrive until two days after the attack.

The main obstacle to deportation from Germany, however, is that [most of the people classified as agitators are German citizens](#).

Matthias von Hein is a journalist based in Bonn, Germany.

France bans Turkish ultra-nationalist Grey Wolves group

Source: <https://www.dw.com/en/france-bans-turkish-ultra-nationalist-grey-wolves-group/a-55503469>

Nov 04 – The French government on Wednesday banned the Grey Wolves, [a far-right nationalist group](#) accused of violent actions and inciting hate speech in France.

The ban was approved during a weekly Cabinet meeting, according to government spokesperson Gabriel Attal.

France accused the group of "extremely violent actions," spreading "extremely violent threats" and creating "incitement to hatred against authorities and Armenians," Attal said, citing an Armenian memorial near the eastern city of Lyon that was found defaced last weekend.

The 1915 Armenian genocide memorial had "Grey wolf" and "RTE," the initials of Turkish President Recep Tayyip Erdogan, written on it, as well as pro-Turkish slogans. Armenians have long campaigned for the mass killings of their ancestors in the Ottoman Empire from 1915 to be recognized as genocide. [France backs their call](#).



Who are the Grey Wolves?

The Grey Wolves group is linked to a top ally of the Turkish president and is seen as a militant wing of the Nationalist Movement Party (MHP), which is allied with Erdogan's Justice and Development Party (AKP) in the Turkish parliament.



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The Grey Wolves was a nickname given to members of a fringe Turkish movement that emerged in the 1960s and 1970s. The group used violence in the 1980s against leftist activists and ethnic minorities.

Wednesday's ban follows escalating tensions between Ankara and Paris over France's fight against extremism.

Erdogan recently said French President Emmanuel Macron needed "[mental treatment](#)" for defending caricatures of the Prophet Muhammad.

France has been cracking down on militants after the [beheading of schoolteacher Samuel Paty](#) over the use of caricatures of the Prophet Muhammad as well as what French police have called a deadly [Islamist attack at a church in Nice](#).

Tension between France and Turkey has also been growing [over the Nagorno-Karabakh conflict](#).

Ankara has backed its ally Baku in the fighting. The region is a part of Azerbaijan but has been controlled by ethnic Armenian separatists since a 1990s war claimed 30,000 lives.

Turkey hits back

In reaction to the ban on the Grey Wolves, Ankara vowed to "respond in the firmest way possible."

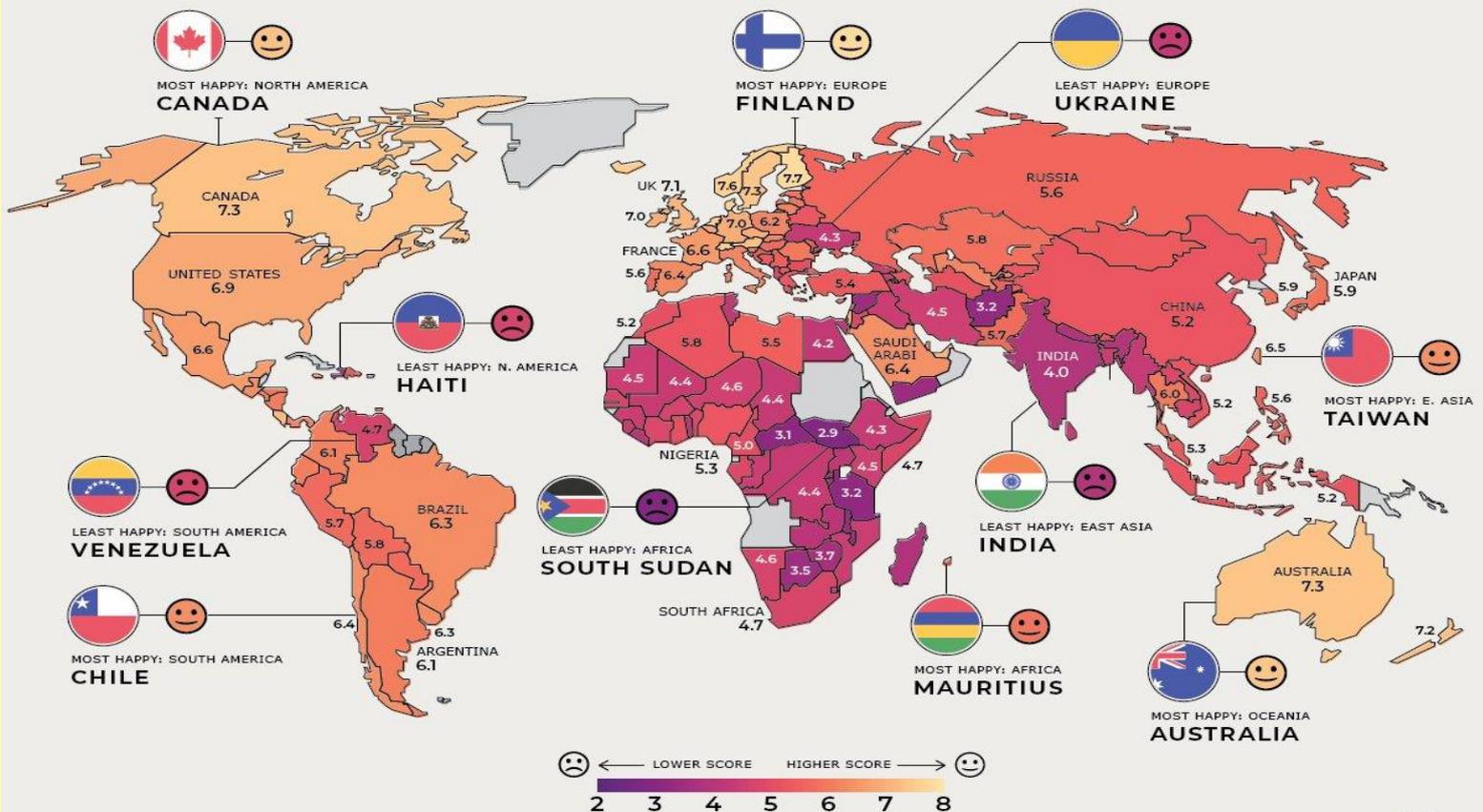
The Turkish Foreign Ministry denied the very existence of the group, saying France was "dealing with an imaginary formation."

In a statement, the ministry said the French government had to "protect the freedom of assembly and expression of Turks in France." It accused the French government of ignoring "incitements, threats and attacks" against Turks in France.

The Foreign Ministry said banning the group showed, "The French government is now completely under Armenian influence." It accused France of "double standards" and "hypocrisy" because it allows the Kurdistan Workers' Party (PKK) and other groups to be active in France. Turkey considers the PKK to be a terrorist organization.

Is happiness still around this planet?

THE MOST AND LEAST HAPPY COUNTRIES AROUND THE WORLD



SOURCE: World Happiness Report 2019

visualcapitalist.com



10 Awesome Things That Happened Between Resident Evil 4 And 5

Between the games Resident Evil 4 and Resident Evil 5, so much happened. Not all of it was good... i.e. bioterrorism!

Terrorist attacks in Europe: How did Pakistan, Turkey help Islamist Extremism grow?

Source: <https://www.dnaindia.com/analysis/report-terrorist-attacks-in-europe-how-did-pakistan-turkey-help-islamist-extremism-grow-2854596>

Nov 05 – As every country in the world is working together to fight the Coronavirus pandemic, a similar effort is required to eliminate terrorism, which is no less than an epidemic. Because recently, in many countries of the world, there has been at least one terrorist incident. Although the Islamic State has been named before in such attacks, the terrorist attack in France, Afghanistan twice in a few weeks and then in Vienna, Austria, has divided the whole world into two parts.

The reactions from some Muslim countries after this attack started from France have further increased these attacks. After this, a jihadi attack has been carried out in many countries. In particular, Turkey and Pakistan carried out several verbal attacks that provoked sentiments. The question of the reasons behind such incidents of terrorism is arising in people's minds.

Such an attack is not possible without the cooperation

Turkey and Pakistan's statements have once again served to increase terrorism. The youth who were joining the Islamic State and other such organizations were losing their tendency. Some of its remaining members were active in Syria and Iraq. They are also decreasing. But terrorist activities have increased with the support of Pakistan and Turkey for the attack on France. Attacks occurred in many places in Europe. Such incidents are coming up in many countries of the world. As far as such an attack is concerned, much planning is being done. That is, they are doing this only with the help of some intelligence agency. It is clear that with the help of some country it helps to spread terror.

ISIS-Al-Qaeda is in every corner of the world

At the same time, after the France attack, the government is running a search operation to prevent such incidents. The army has arrested around 200 people, while 8 thousand people have been kept in the suspect category. But earlier, there were no terrorist incidents in Europe, nor did any country openly say anything on this issue. But in recent times, many countries of Europe have also been victims of terrorist incidents.

Today the Internet has connected the whole world. Today is the technology world, and now it has increased manifold ahead of the attacks that took place earlier. When ISIS came out in 2014, there were four years of fighting in Syria, Iraq. Then people thought that they were over. But it's not like that. Even though one place is over, Al Qaeda and ISIS's networks are spread all over the world. They are looking for a place where they strengthen themselves. Central Asia is one such place. It is also clear from what is happening in Europe that the terrorist network has been formed in these countries because suddenly, it is impossible to attack ten people in a day.

Underground and over the groundwork

Explaining the reason for this, take it. General Hasnain points out that there is a generational problem. Initially, the migrants who arrived after the second world war were well settled. According to them, the next generation did not get a job, did not get social status, and mostly became weak. In such a situation, he joined these groups. In such a situation, they do not have to do anything and become underground, and sometimes, if such a situation comes, they become active. Over-ground networks or some countries facilitate such a situation. This is why attacks happen that do not consider their responsibility.

Trying to spread its impact

At the same time, there have been many attacks that refugees reached other countries. The network of ISIS is from the Philippines to Spain. Their surrogates' group is also in many countries like Somalia, Kenya, Mali, etc. Many attempts have also been made in India. There were attacks in Sri Lanka. Pakistan also tried to spread its foot, but many organizations are already active there, so the place was not found. Now they are also reaching Afghanistan, especially in Central Asia. We don't feel that this group is active. Just the ways of doing these have been changing. Now when they



have done 4-5 incidents together, they are being discussed all over the world. That is, they want to increase their network. So, the network has to be cut.

The Incendiaries: How Pakistan and Turkey Fan the Flames of Islamic Anger

By Jonathan Spyer

Source: <https://www.meforum.org/61752/pakistan-and-turkey-fan-flames-of-islamic-anger>

Nov 06 – French President [Emmanuel Macron](#)'s condemnations of political Islam following the decapitation of teacher Samuel Paty on October 16 have led to furious demonstrations in parts of the Islamic world. A number of violent incidents of Islamist terrorism have followed, including the murder of three people in a church in Nice, by a recent Tunisian immigrant to France. It seems likely,



though it cannot yet be confirmed, that the terrorist attack in Vienna on November 2, in which four people died, was also related to the mood of fury among sections of European and global Islamic opinion related to the depiction of images of Muhammad, the prophet of Islam.

[Istanbul on October 30](#)

Outbursts of murderous fury of this kind, often not directed or organized by Islamist terrorist networks, form a tragic by-product of the arrival in recent years to the European heartland of significant numbers of people with Islamist sympathies. This outlook brings with it a desire to ensure – by whatever means deemed necessary – an elevated level of respect for Muslim

religious sensitivities, over and above those of any other religion or creed. This latter situation is a state of affairs that exists in most Islamic countries. Some European commentators have concluded that such acts are intended to bring about the enforcement of Islamic blasphemy laws in non-Islamic countries.

So far, so familiar. But the current moment differs from previous episodes of Islamist political violence in Western countries in two significant ways.

First, these latest attacks come at a time when the actual organized networks of Salafi jihadi terrorists are weaker than at any time over the last two decades. The al-Qaeda network is aging, and closely observed by Western security services. The [Islamic State](#), meanwhile, has yet to recover from the loss of its last territorial holdings in Iraq and Syria in March 2019, and the killing of its leader, Abu Bakr al-Baghdadi, by the US in October 2019.

The murders of Paty and the three other French citizens in Nice were not, it appears, the result of a direct decision by an Islamist terrorist network. It is too soon to draw any conclusions on this subject regarding the Vienna attack. ISIS has now claimed responsibility for this. But it is possible that ISIS sympathizers chose to act with no specific order from a chain of command.

Second, and most significantly, the atmosphere of fury and desire for retribution are no longer being stirred up only by Islamist preachers and jihadi organizations. Rather, the incitement, the steady drum beat of accusations and threats are coming now from the leaders and official mouthpieces of a number of Muslim states. This is a new situation. It is one of profound importance. The states in question are, most importantly, Turkey, and also Pakistan.

The Turkish and Pakistani efforts in this regard appear designed to generate among Muslim populations in Western countries a sort of "soft power" for the governments of Recep Tayyip Erdogan and Imran Khan. They thus include within them a dismissal of the notion of legitimate sovereignty, according to which the internal affairs of other states are those states' business alone.

Erdogan, following Macron's comments, declared that the French president needed "mental treatment," urged the boycott of French goods, and asserted that Muslims in Europe faced a "lynch campaign similar to that against Jews before World War 2." France subsequently recalled its ambassador from Ankara.

The Turkish president has form in this regard. In 2017, following a ban by Germany on Turkish officials campaigning in Germany in favor of support for Erdogan in a referendum to increase his powers, the Turkish president warned, "If you go on behaving like that, tomorrow



nowhere in the world, none of the Europeans, Westerners, will be able to walk in the streets in peace, safely.'

He also threatened at that time to send a new wave of migrants from Turkish shores across the Mediterranean to Europe.

In recent days, the Turkish president added to his exhortations against the French government, saying, "If there is persecution in France, let's protect Muslims together." He claimed in a speech to the AKP parliamentary group last week that "disrespect for the prophet is spreading like cancer, especially among leaders in Europe."

Pakistani Prime Minister Imran Khan, meanwhile, said that the French president had "attacked Islam," and accused Macron of "deliberately provoking Muslims." He summoned the French ambassador to Islamabad for a reprimand.

A statement from the Pakistani Foreign Office followed, asserting, "Pakistan condemns systematic Islamophobic campaign under the garb of freedom of expression."

These statements were made against the background of furious demonstrations in Turkey, Pakistan and further afield – including in the Gaza Strip and Iraq.

The efforts by powerful leaders of Muslim countries to inflame the sentiments of Muslims in Europe and beyond are a relatively new phenomenon. At the height of al-Qaeda's insurgency a decade or so ago, political Islam was a powerful but oppositional presence in majority Muslim countries (with the exception of Iran, whose Shia identity makes it less relevant in this regard).

Today, it is Erdogan, above all, with Khan as his understudy, who is leading the way with the incitement.

It should go without saying that Erdogan and Khan's calls for religious tolerance have no reflection in their own policies at home.

Erdogan recently converted the ancient Hagia Sophia Church into a mosque and is set to do the same with the Church of St. Saviour in Chora, Istanbul. Khan rules over a country where Ahmadi and Shia Muslims and Christians are regularly convicted on blasphemy charges, and where Hindus have been forcibly converted to Islam.

This, however, is precisely the point. These leaders, as is crystal clear to their supporters, are asserting a notion of elevated honor to be afforded the symbols of Islam, not arguing for parity.

When the atmosphere of incitement erupts into violence, as it inevitably must, Erdogan and Co. will be on hand to express regret. Erdogan, after all, only supplied the matches and the kindling. Someone else entirely lit the fire.

This approach makes policy sense for the Turkish leader and his allies. Through it, Ankara seeks to acquire a ready-made instrument to impose pressure on Western countries. France is an emergent strategic rival to Turkey, above all in the Eastern Mediterranean. Having an ability to foment public disorder within it is a useful weapon.

The Syrian Salafi strategist Abu Musab Al Suri famously came up with the idea of an "individualized" jihad, in which organizations would issue only general directives, leaving individual jihadis to take violent action at their own initiative. This formed the backdrop to the so-called "**Stabbing Intifada**" in Israel in 2015. It is strange to see that another version of it appears to now be an element of the policy of a powerful, still officially Western-aligned state.

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Why the U.K.'s Terrorism Threat Level Has Been Raised and What Happens Now

By Alasdair Booth

Source: <http://www.homelandsecuritynewswire.com/dr20201107-why-the-u-k-s-terrorism-threat-level-has-been-raised-and-what-happens-now>

Nov 07- Most parts of the U.K. are now living in a state of some form of lockdown. Meanwhile, however, more police are out on the streets. This is because in the wake of the terrorist attacks in Austria and France, the U.K.'s terrorism threat level has been [raised to "severe"](#).

In [Vienna](#), a man reported to be a sympathizer of the proclaimed Islamic State group, opened fire with an automatic rifle in a city street, killing four and seriously injuring several more.

This came shortly after two other attacks in France. In [Nice](#) two people were killed and, in Paris, a [teacher was targeted at the end of October](#). At the time of these attacks, the UK terrorism threat level was set at "substantial" – meaning that an attack was likely.

The threat has been at this level since November 2019.

The timing of the attack in Vienna was significant. It was the night before Austria was due to go into a period of lockdown to manage the spread of COVID-19. It meant the city center



would be busy as people enjoyed a final night out before restrictions came into force. Busy public spaces have been targets in multiple other attacks in recent years in France, Germany and the U.K.

Why Was the Threat Level Raised?

In response to these events in Vienna, Nice and Paris, the Joint Terrorism Analysis Centre (JTAC), part of MI5, **upgraded the UK's terrorism threat level to "severe"**. The increased threat level came immediately in response to the Vienna terrorist attack, and indicates that an attack in the UK is considered highly likely.

The UK government has been keen to stress that despite the change in threat level, there was no specific intelligence to suggest that an attack on the U.K. or U.K. interests overseas was imminent. Home secretary Priti Patel has said people should be **"alert but not alarmed"** and that the increase in the country's threat level was a "precautionary measure".

Decisions on the terrorism threat level take into consideration a number of factors. These include what intelligence is available at the time and what security authorities already know about things like what resources terrorist suspects might have available and what motivations they might have for carrying out an attack, irrespective of ideology.

Assessing the terrorism threat involves continuously monitoring world events so it was almost inevitable that the UK government would raise its terrorism threat level after what happened in Austria and France. Terrorist groups will have considered these attacks a success so there would naturally be concerns that they might seek to replicate the attacks in the U.K.

What Happens Now?

It is likely there will be changes to security arrangements across the UK now that the threat level been raised. There is likely to be an increase in visible policing, particularly in public spaces and crowded places. Expect to see more police in locations considered to be symbolic or iconic, since these are considered more desirable targets for attackers. That might mean places of worship, major shopping centers, sports stadiums and visitor attractions.

Usually these venues are heavily populated, which can lead to a high number of casualties if attacked, and they are often considered to be soft targets due to having limited protective security measures making them vulnerable. Some targets may be considered to be **symbolic if they represent a culture**, corporation or government that a terrorist wants to attack.

Given the attack in Vienna involved the use of an automatic firearm, and the attacks in Nice and Paris involved bladed weapons, it is feasible that visible patrols in some areas of the UK could be carried out by police firearms officers to help increase the U.K.'s preparedness to deal with a similar style attack.

This also acts as a visual deterrent and a reassurance to the public. Overt police armed patrols were used in the UK in response to the terrorist attacks in Paris in 2015, for example.

There will also be more security messages and announcements over public address systems in crowded places, such as transport hubs and crowded places. This is meant to increase vigilance and encourage people to report suspicious packages or activity.

The U.K. Counter Terrorism Policing network will deploy its security message of **"run, hide and tell"** which provides advice on what the public should do if caught up in a firearms and weapons attack. This too, reflects the nature of the attacks in Austria and France. The National Counter Terrorism Security Office (NaCTSO) and the Centre of the Protection of National Infrastructure (CPNI) have specialist security advisers who work with businesses considered to be at risk of being targeted by terrorists, and provide protective security advice to them. The heightened security level is likely to see an increase in engagement between them.

Many public spaces and crowded places are likely to be quieter, with less visitors due to non-essential businesses being closed for lockdown. That reduces opportunities for terrorists to carry out attacks. But the U.K. government still clearly considers there to be an ongoing terrorist threat to the U.K. and the public will need to remain vigilant.

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EDITOR'S COMMENT: Threat levels mean a lot to responding agencies but might mean nothing to citizens during their daily activities. The word "severe" should elicit specific measures and actions to be taken by people by profession – run, hide, and tell is OK for

5 THREAT LEVELS

CRITICAL

An attack is expected imminently

SEVERE

An attack is highly likely

SUBSTANTIAL

An attack is a strong possibility

MODERATE

An attack is possible but not likely

LOW

An attack is unlikely

Whatever the threat level be alert
- but sod the terrorists 'cos
WE ARE LONDONERS!



pedestrians only. In example, a restaurant owner should do the following: (1) Lock all doors; (2) Kill the lights; (3) Fortify doors and windows with in-house furniture; (4) Direct clients to the back of the store taking cover behind solid surfaces; (5) Be sure that communications are available; (6) Be prepared to extinguish fires; (7) Have the first aid kit ready for glass injuries if a explosion takes place in close proximity to the restaurant; (8) Unlock the fire arm locker and be ready to fight back if terrorists try to enter premises – so, guns for everybody? This is a question without a solid answer due to a number of pros and cons but the thing is that if terrorists know that they will have to fight not only police forces but also armed citizens then they might think twice before going to the next step. Terrorists are not supermen; they are just individuals with guns attacking individuals without guns. Perhaps the new moto “run, take cover/hide, shoot back and tell” would be more efficient and become a game changer.

Driven to Extremes: Vehicle Ramming as a Terrorist Tactic

By Stevie Kiesel

Source: <http://www.homelandsecuritynewswire.com/dr20201107-driven-to-extremes-vehicle-ramming-as-a-terrorist-tactic>

Nov 07 – On Halloween 2017, a horrific terrorist attack took place in New York City. [Sayfullo Saipov](#), a 29-year-old man inspired by the Islamic State, drove a rented pickup truck down a crowded bike path along the Hudson River. After crashing into a school bus, he got out of the truck and began chasing after pedestrians with two guns – later determined to be a paintball gun and a pellet gun. This attack killed 8 and wounded 11, the deadliest terrorist attack in New York City since September 11. Vehicle ramming attacks are brutal, effective, and hard to anticipate or defend against.

In this article, the term “**vehicle ramming attacks**” (hereafter, VRAs) encompasses any terrorist attack that utilizes the kinetic force of a vehicle to strike its target. This excludes vehicle-borne explosive devices. Some data sets use a broader definition of “vehicle” than I will use here. For example, the University of Maryland Global Terrorism Database considers the September 11th attacks an example of a VRA because the kinetic force of an airplane was used against several targets. This article examines attacks with land vehicles, such as cars, trucks, tractors, and buses, in order to understand how extremists with limited means can still perpetrate a devastating attack with relatively few resources.

The publicly available information from the Global Terrorism Database contains records of VRAs from 1970 through 2018. Because the scope of this analysis is limited to attacks with land vehicles, records that involved planes and helicopters were eliminated, leaving a total of 146 incidents. These [charts](#) show key trends in the number of attacks over time, as well as perpetrators and locations. targets. A trend toward unsophisticated tactics and weapons led to a rise in vehicular attacks, perpetrated by individuals motivated by a nationalist struggle.

The second spike captured by the Global Terrorism Database can be attributed mainly to jihadists, particularly those claiming allegiance to the [Islamic State](#). References to vehicle ramming attacks can be found in jihadist sources going back, at least, to 2010, when al-Qaeda in the Arabian Peninsula called on supporters via their magazine [Inspire](#) to use this tactic.

However, such attacks were sporadic until the Islamic State began losing territory and encouraging its supporters to conduct retaliatory strikes in Western countries. The first attack in this vein was the [2016 attack](#) in Nice, France, which killed 12 and wounded 67. The Islamic State claimed responsibility for this attack and used it as an example for what its followers could achieve. This attack kicked off a wave of similar attacks in countries around the world, including the [United States](#), [Sweden](#), [Austria](#), [Spain](#), [the United Kingdom](#), and [Germany](#).

Several researchers have suggested that vehicle ramming as a tactic has spread like a virus, largely through media and social media networks: “the coverage of VRAs in the media and in online discussion forums on websites has encouraged others, often with wholly different political and religious motives, to engage in [VRAs](#).” This theory may explain why jihadists were responsible for the second spike of VRAs across North America and Western Europe in 2015, and why white supremacists and other far-right extremists in the US have shown increasing interest in the tactic since 2017.

In 2017, white supremacist [James Fields](#) drove into a crowd of anti-racism demonstrators in Charlottesville, Virginia, killing one. This incident was a harbinger of vehicle-based violence against protestors in the United States. Ari Weil, a researcher with the University of Chicago’s Project on Security and Threats, has found at least [104 incidents](#) of people driving vehicles into protests in the United States from May 27 (the start of protests against police brutality sparked by George Floyd’s death) through September 5. While all these actions have targeted anti-racism protestors, the motivations of the perpetrators differ from case to case, and more will become known as these cases are investigated and prosecuted.

Using a vehicle as a kinetic weapon has several key advantages that will continue to be attractive to violent extremists. First, vehicles are more accessible than numerous other



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types of weapons – many people own a vehicle or can easily rent one. There is no assembly require, unlike with vehicle-borne explosives, where the bomb must be manufactured and the vehicle may need to be modified. Additionally, no special expertise is required other than the ability to operate the car, and generally the attack can be carried out with little expense. These features make vehicles particularly appealing to lone-actor terrorists, who can easily carry out such an attack on their own. Vehicles are also chosen because they are effective, both in casualties and psychological impact. Several VRAs recorded in the Global Terrorism Database caused double-digit fatalities, and in one case over 100 people were injured. A final attractive aspect of VRAs is that they allow for [follow-up attacks](#). [In several cases](#), after the vehicle was driven into its target, the perpetrator exited the vehicle with another weapon and attacked the crowd.

Defending against VRAs is difficult. Vehicles are highly accessible and used by millions of people every day. Additionally, there are generally very few indicators that someone is planning to commit a VRA. More complex terrorist attacks tend to have multiple points of interception – perpetrators discussing the attacks online, conducting surveillance, or making purchases of suspicious materials. But VRAs are generally conducted by a single person, with little forewarning and little opportunity to interdict the attack. Therefore, [risk mitigation](#) tends to focus on hardening security by identifying likely targets and adding barriers and additional security personnel.

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Poll: 46% of French Muslims believe Sharia law should be applied in country

Source: <https://www.i24news.tv/en/news/international/europe/1568920086-poll-46-of-french-muslims-believe-sharia-law-should-be-applied-in-country>

Sep 19 – At least 46% of foreign-born Muslims in France want to adopt Sharia law into the country's legal system, reveals a poll conducted by IFOP (French Institute for Public Opinions) for *Le Point* magazine.

The survey also indicates that **among French-born Muslims, 18% believe that sharia should prevail.**

That percentage rises to 46% among French Muslims coming from abroad, the study discovered.

"This claim of a supremacy of Sharia is therefore first carried by newcomers who come from countries where the imprint of Islam is very strong," director of opinion and corporate strategies at IFOP Jerome Fourquet told *Le Point*.

The IFOP survey also reveals that "41% of Muslims believe that Islam must be practiced and integrated into French customs."

Éric Ciotti, Member of the French National Assembly since 2007, responded to the survey by taking to social media and called for a return to "assimilation."

"In the face of Islamist communitarianism, which is growing and threatening the (French) republic, we must stop immigration and rediscover assimilation as the core of our integration policy," Ciotti posted to Twitter.

The presidential limousine through time

Source: <https://www.autocar.co.uk/slideshow/presidential-limousine-through-time>

2019 was the 80th anniversary of the US presidential limousine in the modern era - this is a picture history of every car since then



Muslims need to launch their own ‘Not in my name’ protests against cartoon beheadings

By Aabhas Maldahiyar

Source: <https://theprint.in/opinion/muslims-need-to-launch-their-own-not-in-my-name-protests-against-cartoon-beheadings/538798/>

Nov 07 – The beheading of Samuel Paty, the Paris school teacher, has brought reactions from world over. While most of them straightaway condemn the heinous act, few are coated with the spice of ‘conditions. A few others have been apologists for the killer. Among all the reactions, I read an interesting [article](#) by Zainab Sikander in ThePrint: “*Quran doesn’t tell people to fight any more than Gita, Bible, Torah. Why pick on Muslims.*” Even though I read the article with the utmost care, I could not find the expressed arguments in the right order.

According to Zainab, offensive cartoons of Prophet Muhammad have humiliated and bullied a faith that is older than fourteen centuries in the name of “freedom of expression”. If I read the author’s expressions well, then French President Emmanuel Macron’s endorsement of *Charlie Hebdo*’s caricatures of Prophet Muhammad was a grave mistake, and a deliberate attack on Muslims — an insult to the Rasul. But, wasn’t it the same France that gave [refuge to Muslims](#), among whom was Paty’s killer Abdoullakh Abouyedovich Anzorov?

Even before Anzorov was born, *Charlie Hebdo* had a reputation for being satirical on all Abrahamic faiths. Largely, the magazine has always been anti-religion. Hence, it is never of great sense to expect it to behave differently for a particular faith. As far as Macron’s endorsement is concerned, one must get the context right. The French President’s reaction came after [Samuel Paty was beheaded](#) for showing *Hebdo*’s caricature of Muhammad in the classroom to explain ‘freedom of expression’. As per the [reports](#), Samuel had requested Muslim students to leave the classroom to avoid any offence. He was sensitive enough to take care of someone else’s faith. But despite that, he lost his life.

Quran and violence

Zainab says that be it 9/11, Paty’s killing, IC-814 hijack or Al-Qaeda, Prophet Muhammad cannot be held responsible for these acts. But every incident she mentions has happened in the name of Muhammad. I, as a non-believer in Muhammad’s words, always get sceptical of his true will and desires. For a Kafir like me, the question continues to trouble — whose interpretation should I accept? Of an Islamic scholar like Zakir Naik or some other deemed-to-be Moderate Muslim? The fact is that even the Quran was penned decades after the demise of the Rasul and we have various versions of it. As per Quran, it is supposed to be the final book, but despite that, Hadiths were written. Everyone tried to become an advocate for Rasul. Unfortunately, there are verses in the Quran that talk of beheading quite clearly.

Now when ye meet in battle those who disbelieve, then it is smiting of the necks until, when ye have routed them, making fast of bonds; and afterward either grace or ransom ‘til the war lay down its burdens. (47.4)

Commentators agree that beheading is prescribed in war. And the likes of Osama bin Laden have been using Quranic verses to terrorise people. Hence, when these verses offend non-Muslims, Muslims shouldn’t be questioning them. Instead, the onus lies upon the Muslim community to first recognise the offence and protest the misuse of the Quran by terrorist organisations. Non-Muslims never have issues with Quran-defending Zainab Sikanders, but they have issues with bin Ladens and Baghdadis who, too, quote the Quran to smit the neck of innocent people. In this case, Zainab’s defence of the Quran becomes invalid because people are still out there who behead in the name of Muhammad and the Quran. Hence, it should be the duty of the Ummah to ensure that the Holy book and the Rasul don’t remain hijacked by the terrorists.

Islamic terrorists have always chanted “Allahu-Akbar” while executing the crime. The verse is considered pious by the world’s one-fourth population who thinks an ‘insult’ to Muhammad as offensive. Shouldn’t Muslims first take offence of the fact that terrorists use the name of “Muhammad” and “Allah” while they commit heinous crimes? Every liberal Hindu went “la la” to sing the tune of “[Not in My Name](#)”, but in contrast, it never appeared among the Islamic diaspora. Instead, “Ummah” always stood only to condemn and protest the acts of blasphemy.

French law allows everyone to be Samuel Paty

What Zainab also forgets in her protest of the cartoonists is that France has long abolished the blasphemy law. Hence, drawing cartoons of Muhammad or any other prophet is not a crime there. The Constitution of France gives rights to every citizen to do what *Charlie Hebdo* and Samuel Paty did. Why should someone have a problem with the way France has operated for so many decades? Did refugees like Anzorov not consider France’s socio-



cultural fabric when they came seeking shelter in the country about a decade ago? And did any other country stand for them in their crisis, the way France did?

There have been incidents in India and world over where the silence of the Muslim community have been deafening — it's only hurting them.

Kamlesh Tiwari was murdered because he addressed Muhammad as gay. A Dalit Congress leader's [house was set on fire](#) in Bengaluru because his nephew shared a derogatory post about Muhammad. The Swedish city of Malmo saw rioting after far-Right activists burned the Quran. In all these incidents, I have never seen Muslims protest or come together and condemn the acts of violence. Don't people often quote the Quran 5.32?

"... whoever kills a soul unless for a soul or for corruption [done] in the land – it is as if he had slain mankind entirely. And whoever saves one – it is as if he had saved mankind entirely..."

Does this verse from the Quran not talk about corruption in the land? If so, then breaking the rule of a country amounts to corruption. But there are no large protests against those murderers? Shouldn't humanity outweigh the book? If Muhammad was present today, the apostle of peace that he was (as mentioned by most of my Muslim friends), he would have been the first to disown these heinous acts against non-Muslims. The people who call themselves the followers of Muhammad must ensure that the non-believers see him in a good light. Let verse 5.32 be more of Muhammad's identity than 8.12. The action speaks louder than words.

The Muslim world needs 'not in my name'

According to Zainab, the world has been fixated with Islam for nearly two decades because of terrorism. It appears she is ill-informed. Islamist extremists have perpetrated 31,221 terror attacks and killed 146,811 people worldwide since the ugly episode of 9/11, says the reputed German newspaper *Welt* in a [report](#) published a year ago. If I do basic mathematics, it gives that around five terror attacks happen every day. In India, we have seen huge support at funerals of terrorists like Burhan Wani when agitations should have occurred against them. Does it not answer why fingers are pointed at Islam? Aren't 'deemed-to-be-moderate' Muslims responsible for it?

Zainab believes that the French President's reaction has kept France talking entirely about Islamic terrorism. But how else would have Macron reacted? Was it not Islamic terrorism that tried to curb the core principle of French democracy, which is 'freedom of expression'? Zainab finds Marcon's decision to keep publishing *Charlie Hebdo's* work as deliberate provocation and insult to Muslims. Why is she expecting France to go against her natural character, just to appease a particular community?

While the author seems to feel the pain of the one-fourth population of the world, she ignores what happens in Hindu-majority India, most of the time. Many stand-up comedians have insulted Hindu gods/goddesses. Do these ever lead to global protests?

Protests that stand on the blood of innocents only push Muslims on the back foot. The story would have been much different had the pan-Islamic community made an exception in 2020 by bringing large assemblies condemning the attacks in France and starting a movement like 'Not In My Name'.

Context and Quran

Zainab says that people cite Quranic verses out of context to paint Islam violent. But she fails to understand that precedents supersede contexts. The Ummah believes in the establishment of Dar al-Islam, and as per theology, until the same is fulfilled, Dar al-Harb shall ever remain an enemy State. The Muslim world, globally, needs to denounce the idea of Dar al-Islam. Until the same is done, it is impossible to believe that Ummah is not going to consider non-Muslim kafirs as enemies. B.R. Ambedkar decodes the idea in his book *Pakistan or Partition of India*.

Zainab states that it is wrong to cite Quran 2.191 to establish Islam's open support for violence. According to her, verse 2.191 of Quran was revealed when Muslims on the Hajj pilgrimage were attacked and killed by the Quraysh tribe who had signed a treaty with the Prophet, promising not to attack the pilgrims. But is this claim by the author true? One needs to read *Sirat Rasūl Allāh* by Ibn Ishaq to know the reality, detailed in folio 803.

After the treaty of Hudaibiya was made, two feuding tribes aligned themselves on opposing sides of the Meccan-Muslim divide. The tribe that allied with the Meccans had suffered a series of murders at the hands of the other before the alliance, which they sought to avenge. The matter can be summarised as below:

A member of Tribe Banu Bakr (later allied with Mecca) is murdered by members of Tribe Khuza'a (later allied with Prophet Muhammad). In revenge, the Bakrs murder a Khuza'a. In retaliation, Khuza'a kills three members of Tribe Banu Bakr. After this bloodshed, while Khuza'a joins the Muslim alliance, Banu Bakrs join the Meccans. Banu Bakr then seeks revenge for the last murders by killing members of Khuza'a.



Although the original chain of murder was started by Khuza'a, the fact that they were attacked by the tribe allied with the Meccans after allying with the Muslims constituted a technical breach of the treaty – which Muhammad then capitalised on by marching his superior forces into Mecca and establishing the authority of Islam by force. Hence, it would always appear that the Meccans were the first to violate the treaty. Significantly, the treaty's main purpose was to allow Muslims to enter Mecca and perform the haj at the Kaaba. This had been the main grievance of Muhammad (Source: Sura 2 of the Quran). Not even the staunchest defender ever claims that the people of Mecca hindered Muslim pilgrims following the treaty's signing. Hence, in plain words, they were faithful to the terms, making armed conflict unnecessary.

However, even within the realm of technicalities, Muhammad was still the first to violate the Treaty of Hudaibiya. In fact, the Quran acknowledges this, which means any knowledgeable Muslim must as well.

The terms of the treaty specified that any Muslim who flees Mecca for Medina must be returned. But when a group of Muslims did exactly that a few weeks after the treaty was signed, Muhammad did not return all of them and kept the women. The same finds justification in the Quran; 60.10. So, was Muhammad given personal permission to break the treaty?

Hence, it becomes clear that Muslims were murdering Meccans well after the treaty was signed and also before for revenge killings between the opposing tribes.

Quran and Gita, a flawed comparison

Zainab also compares Quran 2.193 with Bhagwad Gita 2.33. Another wrong comparison. In the former's case, the Meccans were forced into war and in fact, Muhammad himself had broken the treaty technically (as explained above). Also, here the history involved the establishment of a religion. But in Gita, Krishna asks Arjuna to fight for the sake of Dharma. Zainab commits the mistake of equating religion and Dharma. Religion is an institution while Dharma is the way to strive to be right. Dharma tells to reject the institution which shows the wrong path. It signifies behaviors that are considered to be in accordance with Rta, the natural order that makes life and universe possible. It includes duties, rights, laws, conduct, virtues, and the right way of living. 'Rajadharma' means king's duty, not religion. We mustn't confuse "dharma" with "religion."

It was futile to compare Gita with the Quran. When Bhagwad Gita was conceived, the concept of religion was non-existent. The fight was not about religion but about dharma — righteousness. The truth is that, however bitter it may seem, no one kills in the name of Gita. No one has ever cited verses of Gita to justify why he wishes to kill non-Hindus. But verses from the Quran have even been part of Osama bin Laden's Jihad declaration over the US.

Muhammad will not come back and nor will Krishna, but our deeds will portray the image of them upon generations to come. With the given circumstances around, it must be understood that the image of the Quran and Prophet Muhammad lies in the hands of the Muslims, and not in its comparison with Gita, Bible or Torah.

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Western Multiculturalism and Islamic Terror

By Galit Truman Zinman

BESA Center Perspectives Paper No. 1,805

Source: <https://besacenter.org/perspectives-papers/multiculturalism-islamic-terror/>

Nov 08 – Recent weeks have seen a wave of violence and terror in France and elsewhere sparked by the satirical magazine *Charlie Hebdo's* republication of the Muhammad cartoons. These acts of terrorism represent a direct attack on Western values, symbols, liberalism, and belief in individual rights and freedoms.

After the murder of French history teacher Samuel Paty, President Macron expressed himself with unusual bluntness, calling it an "Islamist terrorist attack." Indeed, the recent attacks in the suburbs of Paris as well as in Lyon, Nice, and Avignon reflect an intensification of anti-Western tendencies in France as the terrorists seek to alter the country's sociopolitical agenda by force. Nor is France the only target. In early November, four Austrian citizens were murdered in an Islamist terror attack in the heart of Vienna.

These events are the continuation of a string of attacks by Muslim terrorists in Western countries in recent years (often with ISIS's support and inspiration) – from France and Belgium, to Germany and Britain, to the US, Canada, and Australia. The attacks have been carried out in conspicuous public places like airports, entertainment and tourism venues, hotels, and



nightclubs. The terrorists have employed hatchets, knives, guns, and vehicles, and have caused hundreds of deaths and injuries. These attacks are intended to sow fear among Western populations, undermine their sense of personal and public security, damage their economies and morale, and deter them from taking part in an international anti-terror coalition (especially one directed at ISIS). The perpetrators have mostly been young Muslim men—some of them immigrants, some second- or third-generation offspring of immigrants. In the case of the latter, the terrorists were born and educated in open and tolerant Western societies. Some had difficulty integrating into liberal society, leading them to loathe and reject the democratic values of secularization and individualism. A radical minority, exposed to preaching and incitement on the street, in mosques, on social networks and on the internet, identifies with a puritanical Salafi-jihadist stream. This minority joins terror groups, mainly ISIS, or acts under their guidance and inspiration.

A considerable portion of Muslim communities in the West are alienated from the general population and for the most part stay separate and conduct an autonomous way of life. There is a debate on the origin of this development: some accuse the majority of discriminating against Muslims and forcing them into segregation, while others maintain that the Muslim communities have isolated themselves by choice. Many of these communities are indeed socially, culturally, and geographically isolated, existing at the margins of society and beset by poverty, lack of equal opportunity, unemployment, and economic deprivation.

The Muslim minority is not only culturally and ethnically different from the local population but also distinct in terms of religious belief, which considerably influences its worldview and way of life. The Muslim communities diligently uphold their religious tradition. They speak the language of their country of origin and live in accordance with Islamic law (*sharia*) and its customs. In many locations formal education is separate and tailored to the community. This pattern of adhering to religious tradition and bequeathing it to the next generation contributes to the majority society's perception of the Muslims' "foreignness" and, in turn, to their exclusion.

These trends pose a serious problem for Western societies that advocate multiculturalism and tolerance toward the "other." That approach—conjoined with a relatively open and accommodating immigration policy—has led over the years to the cultural-religious segregation of the Muslim communities, accompanied by a distancing and lack of interaction with the non-Muslim majority. The prevailing multicultural approach has also contributed to religious radicalization and the growth of terror, including the formation of terror cells and a substantial rise in the number of "lone wolves." Multiculturalism thus appears to have only a limited capacity to assimilate and fully integrate Muslims into Western countries.

The multicultural approach essentially seeks to maintain ethnic and cultural diversity and guarantee human rights while granting full access and participation in society, upholding constitutional principles, and fostering common societal values. It entails a public policy that takes cultural differences into account and provides support for ethnic-minority organizations. In the educational field, multiculturalism involves the creation of special curricula, instruction in mother tongues, and the establishment of religious schools for minority groups alongside the recognition of distinct religious traditions and practices, places of worship, and religious ceremonies. Advocates of multiculturalism point to positive outcomes of this approach, such as the recognition of cultural identities and the cultivation of ethnic pluralism, protection from discrimination and incitement to hatred, and socioeconomic cohesion and equality between minorities and the majority.

In recent years, however, the political, public, and media discourse has focused on the dichotomy that has emerged between the values of the absorbing society and those of the immigrants, such as gender inequality, the hijab requirement for women, female genital mutilation, forced marriage, honor killings, rejection of LGBT people, and so on. The application of those cultural norms within liberal societies has been central to the debate about the relevance of multiculturalism, the prevailing integration policy, and tolerance toward Muslims, who do not always display reciprocal tolerance toward Western values. While the supporters of multiculturalism keep emphasizing its advantages, its opponents point to societal schisms, the lack of a binding social glue, and a clash between cultural values on the one hand and religious traditions on the other that can lead to revulsion, radicalization, violence, and terror. The multicultural policy that grants everyone freedom of expression, religion, and association is exploited by Islamists to set up terror groups, preach and incite in public and online, and engage in terror attacks like those to which the West is once again being subjected.

In any case, the demographic changes in Western countries over the past decades pose major challenges regarding the absorption and integration of large communities that differ from the native population in cultural and particularly religious terms.

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A Year After al-Baghdadi's Death, ISIS Is Alive -- and Growing

By Joseph V. Micallef

Source: <https://www.military.com/daily-news/opinions/2020/11/06/year-after-al-baghdadis-death-isis-alive-and-growing.html>

Nov 06 – Roughly a year ago, U.S. special operators located and killed Abu Bakr al-Baghdadi, the founder and leader of the Islamic State of Iraq and Syria, or ISIS.



A few months earlier, in March 2019, the United States and its allies took control of the last vestiges of the ISIS caliphate in eastern Syria. These two events, the death of al-Baghdadi and the defeat of Islamic State forces, closed the chapter on the short-lived ISIS caliphate.

It did not, however, mean the end of the Islamic State organization. Indeed, a year after the end of the caliphate, it appears that the Islamic State, or IS, continues to be well-funded, and is not only maintaining, but even expanding, the scope of its worldwide operations.

Over the course of 2020, there has been a significant escalation in the number of attacks carried out by IS militants worldwide, especially in Africa, the Middle East and Central Asia, the three regions in which they are most active.

In Iraq and Syria alone, attacks by IS militants have been averaging between 100 and 200 a month. Between mid-July and mid-August, more than 500 people were killed or injured in over 130 separate attacks.

The Islamic State's Global Reach

Globally, attacks by IS-organized, affiliated or inspired militants averaged another 100 to 200 incidents per month. It's a difficult number to pin down, because the nature of the Islamic State's influence and organization has become increasingly diffuse.

IS manifests itself around the world in three principal forms: branches which are organized as provinces or "wilayahs;" affiliated jihadist groups; and what the U.S. Department of Homeland Security calls Homegrown Violent Extremists (HVEs). The latter are jihadists who are inspired by Islamic State ideology, but operate without any direct support or instructions from IS.

As of October 2020, there are approximately two dozen official Islamic State provinces. These provinces do not necessarily correspond to existing countries. To be a formal province of the Islamic State, the local branch must appoint a Wali (governor) who declares his allegiance to the head of Islamic State (currently Abu Ibrahim al-Hashimi al-Qurayshi) and a Shura Council (a board of religious leaders to adjudicate religious disputes), and submit a plan to establish control of a particular territory and implement Sharia law as defined by the Islamic State.

Currently, IS branches have varying degrees of territorial control in Afghanistan, Nigeria, Somalia, Mozambique and the Democratic Republic of the Congo. Branches in Libya, Egypt (Sinai), the Philippines and Yemen may also control some territory, but the degree of control is more diffuse.

In all these places, the territories controlled are predominantly rural and, in many cases, desert areas with little population. At best, they contain a handful of villages or hamlets.

Moreover, the concept of control varies from a sort of proto-state accompanied by some semblance of infrastructure and civil services (Nigeria, Afghanistan, Mozambique and Somalia) to a more fluid control revolving around the ability of IS militants to project or withdraw power in a region depending on the forces arrayed against them.

Examples of this kind of fluid control include setting up temporary roadblocks along major roads to shake down travelers, extorting money or valuables from inhabitants of an area, or punishing people for violations of Sharia law.

Currently, there are no major urban areas or any significant populations under the direct control of any branches of Islamic State. Worldwide, IS controls less than 2,000 square km/772 square miles of territory, down from more than 100,000 square km/38,610 square miles in 2017. Islamic State propagandists claimed that, at its peak, IS controlled over 282,000 square kilometers/109,000 square miles of territory.

Elsewhere, IS branches in the wilayahs consist of little more than insurgent cells carrying out attacks against local and national government officials and engaging in criminal activities like kidnapping, smuggling and robbery to finance their operations. This is the current state of IS operations in Iraq, Syria, Pakistan, India, Tunisia, Algeria, the Caucasus, Saudi Arabia, Turkey, Azerbaijan and Gaza.



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The situation remains very fluid, however. Insurgent groups can shift back and forth between holding a specific geography to being stateless, as has happened in Libya on several occasions.

A second group of Islamic State supporters are affiliates that are aligned with the Islamic State but stop short of meeting the requirements for being assigned a wilayah. This phenomenon is particularly common in areas that have small Muslim populations or have historically not been part of the Islamic cultural sphere. National Thowheeth Jama'ath (NTJ), the group responsible for attacking Christian churches in Sri Lanka on April 21, 2019, for example, is a group that is affiliated but not formally a part of the Islamic State. In some cases, like Boko Haram in Nigeria or al-Shabaab in Somalia, the groups were originally affiliated with IS, but some militants eventually fell out, leading to a split in both organizations. One faction became an IS branch and was assigned a wilayah, while the opposing faction retained its independence. This pattern of affiliates evolving into branches and eventually wilayahs may be what will happen to various IS-linked insurgent groups in the Sahel and West Africa.

IS in Europe

Likewise, there are still dozens of jihadist-like groups operating in Europe. Some are IS cells or cells of other, larger established jihadist organizations; others are more informal groupings of would-be jihadists or jihadist sympathizers. These groups are often nominally affiliated with either IS or al-Qaida, although they may switch patrons opportunistically.

These groups largely operate independently but can sometimes procure weapons and get training from larger jihadist organizations. They also serve as a reservoir of manpower that can be drawn upon as needed for operations being organized by IS or other militant groups.

In addition, it's believed that there may be between 2,000 and 5,000 Islamic State militants from Europe who have been able to return home. A further 5,000 or so European jihadists are still trapped in Syria. About half of those were being held by the Syrian Democratic Forces, although that number has likely gone down significantly in the last six months.

Some of the returning jihadists are probably done with militant activity, but a significant number are not and will be a fertile area for recruitment.

Moreover, European prisons have become hotbeds of jihadist radicalization and recruitment. In France alone, Europol estimates that there are between 1,000 and 2,000 inmates who are jihadist militants, and that roughly half were radicalized as a result of their incarceration.

Finally, it's estimated that between one-third and two-thirds of the 50,000 or so jihadists who fought for Islamic State are still alive. This group represents a core of trained, battle-hardened militants. Many have nowhere to go. A portion have been organized into militia groups by the Turkish government and have been deployed as mercenaries in Libya and Azerbaijan. Others have joined Turkish-backed and -armed militia groups operating in Syria.

According to a recent intelligence estimate on the scope of Islamic State's worldwide activities, in addition to the roughly two dozen official wilayahs that have IS branches, there are IS-linked jihadi groups in approximately 50 countries around the world, although in some places these groups may exist in little more than name only.

Geographically, Islamic State is well represented across the Middle East and extending into northeast Asia and southeast Asia -- roughly a region from the Mediterranean and the Red Sea to Xinjiang and south to Sri Lanka in the west to the Philippines and Indonesia in the east.

In Africa, the other center of its operations besides Asia and the Middle East, there are IS affiliates across north and Sub-Saharan Africa, including east Africa from Egypt to Mozambique and throughout the Sahel and West African region.

Even in the Western Hemispheres, IS has an affiliate in Trinidad and Tobago, and it is believed to also have connections to groups in Paraguay and Argentina. South America is becoming an important strategic area to Islamic State, as it affords the opportunity to trade armaments for drugs with a variety of narcotics-linked cartels.

Finally, the appeal of the Islamic State's ideology still resonates among many disaffected Muslims. So-called lone wolves, or HVEs, are still a significant source of terrorist activity in Europe and North America. Europe had 21 acts of attempted jihadi terrorist attacks in 2019. Three were carried out successfully, four failed and 14 were foiled.

The U.S. has had roughly six acts of attempted terrorism by HVEs in 2020, and Europe has had a similar number, most recently in Nice, France.

Funding the Islamic State

At its peak, the Islamic State was believed to have income of between \$1 billion and \$2 billion. IS remains a well-financed organization. Although it has lost access to lucrative oil fields in Syria and Iraq and other cash-generating activity, it still has rich coffers and has been finding new sources of revenue.



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U.S. intelligence agencies believe that IS was able to launder approximately \$400 million via various Turkish entities. In addition, it's estimated that another \$250 million was laundered in Iraq through investments in legitimate Iraqi businesses.

The smuggling of stolen antiquities was a lucrative activity for the Islamic State. It was believed to contribute between \$10 million and \$20 million yearly, although it's hard to authenticate those estimates. That activity still goes on in Iraq and Syria, and has now been expanded across North Africa and parts of Asia. Today, the Islamic State is probably the single biggest dealer in stolen antiquities in the world.

More importantly, IS has moved into narcotics-smuggling and distribution in a major way. It has been expanding its role in the Afghan heroin trade, and has also become active in the distribution of cocaine from South America. In both cases, those activities bring it into conflict with al-Qaida which, along with the Taliban, has been involved with the worldwide distribution of Afghan heroin, as well as with the European distribution of Colombian cocaine.

IS has also emerged as a major player in the distribution of hashish in Europe, and in the last year has also emerged as a significant producer and distributor of methamphetamines. Italian authorities, for example, recently intercepted a IS shipment of methamphetamines valued at several million dollars.

In addition, IS still carries out kidnappings and robberies in Iraq and Syria, and still exhorts money from individuals and private businesses in areas where it operates, although the scale of such activities is far less than in the past.

It's hard to get a concrete number for the revenues being generated by the Islamic State's illicit activities, but several U.S. and European intelligence analysts believe it is probably somewhere between \$200 million and \$500 million.

The picture that emerges of the state of Islamic State as we near the end of 2020, is that of an organization that is still very viable, one with access to considerable financial resources and that is parlaying its expertise to construct a significant criminal empire. Moreover, its ideology still resonates with many would-be jihadists around the world, and it can still draw support from a sizable number, although not all, of its former members.

By losing its territorial caliphate, and as a result of fewer Islamic State organized attacks in Europe, IS has largely disappeared off the radar of Western media. Unfortunately, elsewhere in the world, it remains a potent force. Its funding sources are expanding rapidly again as, like its predecessors al-Qaida and the Taliban, it transforms itself into both a political and criminal enterprise.

The Islamic State is becoming just the latest organization to join the ranks of the narco-terrorists. Its growing footprint in the Western Hemisphere should be a source of concern to Washington, especially its efforts to develop alliances with some of the Mexican drug cartels.

In retrospect, the Islamic State caliphate was simply one chapter in what will be the long and complicated history of Islamic State. We certainly have not heard the end of the Islamic State, and we ignore its activities around the world at our peril.

Joseph V. Micallef is a best-selling military history and world affairs author, and keynote speaker.

ISIS supporter jailed over plot to behead a soldier is among 100 terrorists due to be freed from next month

Source: <https://www.thesun.co.uk/news/13140264/isis-supported-jailed-plot-behead-soldier-100-terrorists-freed/>

Nov 08 – Britain's youngest convicted terrorist - jailed over his plot to behead a soldier on Anzac Day - is one of 100 inmates who could soon be walking the streets after planning atrocities.

Scores of terrorists are set to be released from jail - some as early as next month - after becoming eligible for parole.

Two childhood friends trained with weapons in [Syria](#), a Londoner who downloaded terrorist manuals with assassination instructions and a man who tried to join [ISIS](#) to marry a nine-year-old are among those who could be set free.

Last week, [Britain's terror threat level was raised to severe](#), meaning an attack is likely. The risk soared after attacks in Paris and [Vienna](#). It's alleged [members of the public were murdered in Austria by a 20-year-old gunman who had been released early from prison](#) after he tried to join ISIS abroad.

The Anzac Day plotter - known by the initials RXG - is now 20. He is among a group of child offenders, like the killers of the [toddler James Bulger](#), to be granted lifelong anonymity by the High Court. [He was initially jailed in October 2015](#) and ordered to serve at least five



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years. It came after he used social media and encrypted messages to incite Australian Sevdet Besim, 18, to behead police officers guarding an Anzac Day parade in Melbourne. However, cops foiled the scheme in time. Besim was jailed for ten years.

[The Times](#) says a parole hearing will take place not long after December 2, when England's new national restrictions are lifted. And the chances of RXG being released are high, according to court papers.



Forensic psychologist Dr Louise Bowers carried out an assessment of the prisoner in 2018.

Mohammed Nahin Ahmed (left) and Yusuf Zubair Sarwar travelled to Syria in 2013 to join Islamist fighters (Credit: Handout)

She said the defendant "appears to have left his 'terrorist identity' behind", adding: "He is well on the way to developing a new stable and pro-social identity".

If officials decide to keep RXG locked away, he must be moved to an adult prison.

It's feared that, once incarcerated with older men, he

would be "re-radicalised".

Even if he is freed, he'll be under heavy police monitoring and will face strict new conditions, like being banned from the internet.

Moinul Abedin, who has already been released, had detonators at his home (Credit: Newsteam)

Scaffolder Patrick Kabele, of Willesden, [north London](#), is one of the convicts set to be released.

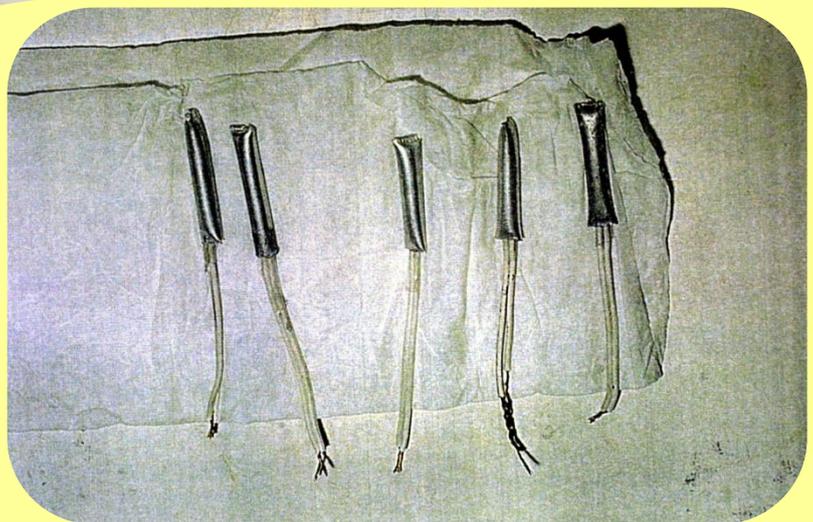
The Muslim convert, who tried to join ISIS, was jailed for six years in 2017 at the age of 32 after police discovered a diary in which he said he wanted to buy a nine-year-old slave girl.

The defendant was found guilty at Woolwich Crown Court and jailed for six years with an extended licence of four years. Kabele was stopped as he tried to board a Pegasus Airlines flight from Gatwick to Istanbul, [Turkey](#) with £3,000 in cash.

Mohammed Hamza Ghani, 29, might also see his sentence end.

Ghani, of north London, had been going through a Government de-radicalisation programme when he made a threat to attack cops. He was jailed for two years and four months in May 2019 after downloading terrorist manuals with assassination instructions - and telling police he found them "entertaining and informative".

Meanwhile, childhood pals Mohammed Nahin Ahmed and Yusuf Zubair Sarwar, who grew up in [Birmingham](#), are likely to go before the Parole Board too.



UP FOR PAROLE - THE MEN WHO PLANNED TERROR ATROCITIES

The pair, who were shopped to police by their parents, travelled to Syria in 2013 after contacting Islamist extremists.

The men, then both 22, were arrested on returning to the UK in January 2014.

Both were sentenced to 12 years and eight months in prison with an extended licence period of five years.

Mohammed Khilji, from north-west London, could also soon be walking the streets.

He was jailed for five years in June 2018 after being found guilty of posting beheading videos on [WhatsApp](#), as well as footage giving advice on how to make a car bomb.

And earlier this year, the UK's first al-Qaeda-inspired terrorist, Moinul Abedin, was released.



The 47-year-old was handed a 20-year sentence in 2002 after collecting almost 100kg of bomb-making chemicals in Birmingham. But in February, he was quietly released by the Parole Board. Many convicted terrorists must now serve at least two-thirds of their sentence before being considered for release. In February, the Government changed the law to prevent such people from being automatically freed. It followed attacks in London at [Fishmongers' Hall](#) and [Streatham](#), where the perpetrators had been released early. Officials revealed over the weekend that 110 people have reached the two-thirds point and have been referred for parole by Justice Secretary, Robert Buckland.

How a Fiercely Christian Nation Became Fanatically Islamic

By Raymond Ibrahim

Source: <https://www.meforum.org/61756/how-fiercely-christian-egypt-became-islamic>

Nov 05 – One of the benefits of Adel Guindy's new book, *A Sword Over the Nile: A Brief History of the Copts Under Islamic Rule*, is that it implicitly answers an important question: how and why did non-Muslim nations become Islamic? In this case, **how did Egypt go from being overwhelmingly Christian in the seventh century, to being overwhelmingly Muslim in the twenty-first century?**

To understand the significance of this question—and because pre-Islamic Egypt's profoundly Christian nature is often forgotten—a brief primer is in order:

Before Islam invaded it, Egypt was home to some of Christendom's earliest theological giants and church fathers, including Clement of Alexandria (b. 150), Origen the Great (b. 184), Anthony the Great, father of monasticism (b. 251), and Athanasius of Alexandria (b. 297), the chief defender of the Nicene Creed, which is still professed by all major Christian denominations. The Catechetical School of Alexandria was the most important ecclesiastical and learning center of ancient Christendom.

►► Read the full article at source's URL.

Raymond Ibrahim is a Judith Friedman Rosen Fellow at the Middle East Forum.

Militant Islamists 'Behead More Than 50' on Football Pitch in Mozambique

Source: <https://www.newsweek.com/militant-islamists-behead-more-50-football-pitch-mozambique-1546285>

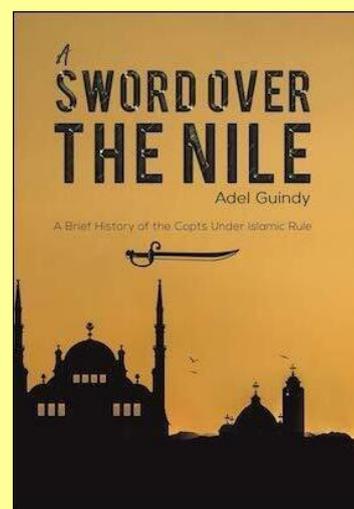
Nov 10 – More than 50 people have been beheaded in a village in northern Mozambique by **militants linked to the Islamic State terrorist group (ISIS)**, according to the country's government-funded media.

Militants turned a football pitch into an "execution ground", where victims' dismembered bodies were found scattered. Several people were also beheaded in another nearby village.

Police confirmed the attack in Mozambique's Cabo Delgado province, which has suffered a series of gruesome attacks since 2017. Up to 2,000 people have been killed and around 430,000 left homeless by the conflict in the majority-Muslim province. Cabo Delgado - a province rich in ruby

and gas - is being seen as a foothold for the terrorist group in southern Africa, where militants use poverty and unemployment as a tool to recruit vulnerable young members.

Bernardino Rafael, commander-general of Mozambique's police, told a media briefing that violence in the area built for several days as the ISIS-linked extremists targeted villages in



the Cabo Delgado districts of Miudumbe and Macomia, killing people, abducting women and children, and burning down homes, Al Jazeera reports.

"They burned the houses then went after the population who had fled to the woods and started with their macabre actions," said Rafael.

Some of the militants fired shots into the air and shouted "Allahu Akbar" when they raided Nanjaba village on Friday night, the BBC reports. It claims state-owned Mozambique News Agency quoted survivors who said two people were beheaded and several women abducted.

A separate group carried out the beheadings of more than 50 in Muatide village. Victims who tried to flee were "chopped into pieces" in the atrocity which was carried out from Friday night to Sunday. The remains of at least 15 boys, who were participating in a male initiation ceremony when the militants struck, were found among the dead, according to the Associated Press.

What Makes a Real Man? - Former Extremists Talk

Recruiters from all extremist groups play on men's insecurities. They know that few things are more attractive to an insecure young man than power, and they offer it along with a weapon and a supremacist doctrine.

In our latest short, *What Makes a Real Man*, from our *Former Extremists Talk* series, we ask why so many young men are attracted to extremism.

Extremists' promise of making a man out of a boy attracts thousands of young men every year. They are guaranteed girls, drink and fighting, everything a real man should want, right?

Former white supremacist Arno Michaelis understands the allure of extremism and explains how unhealthy it is for young men to blame the world, other cultures and religions for their situation. Rather, be a man, stand up and take responsibility.

EU to Increase Cooperation after Terrorism Summit in Paris

Source: <http://www.homelandsecuritynewswire.com/dr20201110-eu-to-increase-cooperation-after-terrorism-summit-in-paris>



Nov 10 – French President Emmanuel Macron on Tuesday said there would be a "rapid and coordinated" European response to recent terror attacks in both his country and Austria.

The response should focus on "the development of common databases, the exchange of information or the strengthening of criminal policies," Macron said after hosting a video conference with fellow EU leaders.

Meanwhile, German Chancellor Angela Merkel said Europe needed to urgently make reforms to the open-border Schengen area in light of recent terrorist attacks.

"I want to mention the entry-exit system in the Schengen area, which should be ready in 2022," she said after a meeting with other European leaders on Tuesday.

"It is vitally necessary to know who comes in and who leaves the Schengen area."

The announcement came after talks between leaders of France, Austria, Germany and the European Union to discuss Europe's response to terrorism threats.

Austrian Chancellor Sebastian Kurz described the thousands of foreign Islamist fighters who have returned to EU countries as "ticking time bombs."

"If we want to protect everyone's freedom, we have to restrict the freedom of these people," he said.

European Commission President Ursula von der Leyen tweeted that the attacks underlined the need to work together more closely.



The meeting was hosted in Paris by both Macron and Kurz, whose countries have both suffered deadly Islamist terror attacks in recent weeks. They were joined digitally by Merkel, Netherlands' Prime Minister Mark Rutte, von der Leyen and European Council President Charles Michel.

EDITOR'S COMMENT: The key-word is in the title of this article: "AFTER" ...

New Body Armor Offers Better Knife Protection

Source: <http://www.homelandsecuritynewswire.com/dr20201110-new-body-armor-offers-better-knife-protection>

Nov 10 – [PPSS Group](#) the other day [announced](#) a replacement for their polycarbonate-based [stab resistant body armor](#). According to company CEO Robert Kaiser, the decision was based on an evaluation of the most realistic operational risks and threats today's homeland and private security professionals face (see product video [here](#)). Kaiser noted that compared to the company's polycarbonate-based stab resistant vest, the new body armor is lighter, thinner, more effective, and more functional. Kaiser said:

Following years of relentless R&D we have concluded that Polycarbonate as a raw material is simply no longer on par with the threats some of our men and women face. We learned to accept that improved protection from knives, machetes, razor blades, shanks and indeed spikes was needed."

We concluded that carbon fiber was the only real reliable and forward-thinking solution. Working with carbon fiber made us understand what truly



superior levels of stab protection could be achieved, alongside substantial weight reduction, lower thickness, and finally also fully certified spike protection. And this at no extra cost.

According to Kaiser, certified spike protection is crucial, especially to correctional and prison officers who face dangerous makeshift weapons, such as shanks and spikes.

Spike protection has now also become of equal importance to private security professionals, due to the type of weapons appearing on the streets in recent years.

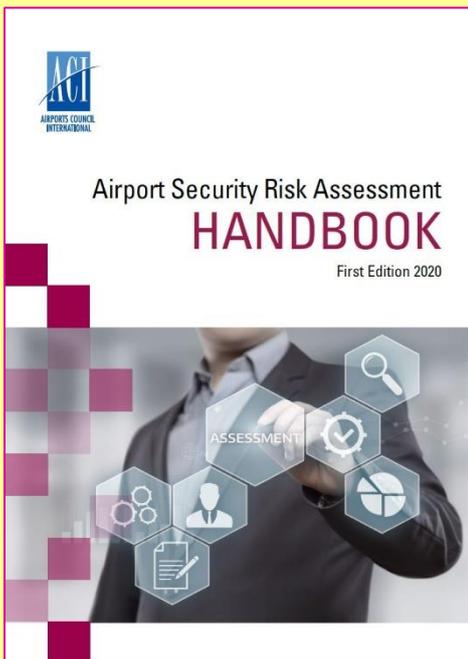
"We have seen an increasing number of knives and edged weapons being carried and used," Kaiser said. "In recent years we have seen dangerous individuals walking the streets, carrying 'Samurai' [swords](#), [meat cleavers](#) and [machetes](#), assaulting, and often killing, innocent people. These individuals are often driven by rage and extremism, in many cases committing multiple homicide or mass murder."

ACI's New Security Handbook Addresses Risk Assessment at Airports

Source: <https://www.hstoday.us/industry/acis-new-security-handbook-addresses-risk-assessment-at-airports/>

Nov 07 – Airports Council International (ACI World) has published the [Airport Security Risk Assessment Handbook](#) which assists airports in understanding threats, assessing associated risks, and allocating resources where they are most needed





Amid the challenges faced by the industry during COVID-19, security remains a top priority. Airports need to meet security standards and be able to manage security effectively in an environment of constrained resources which could include funding, staff levels, and time.

ACI identified that risk assessment can be over-complicated, with unrealistic assumptions made about potential vulnerabilities. The handbook provides a step by step breakdown of a risk assessment process and has been developed in response to industry requests for updated guidance. The new handbook covers guidance on best practices and methodologies that can be applied to security risk assessment to help airports prioritize and manage risks. It includes a case study on insider threat, and examples from airports on how risk assessments are conducted, as well as global best practices and real-life experience from ACI's member airports and experts in the field.

"Our members have told us that risk assessment is as an area where more guidance and training is needed," ACI World Director General Luis Felipe de Oliveira said. "This handbook brings together best practices and methodologies that can be applied to security risk assessment that help airports identify their top priorities.

"As the industry grapples with the impacts and effects of the pandemic, they have not lost sight of the overriding priorities of safe operations, including security. This handbook will assist airports in ensuring secure operations even as they seek to

restart and lay the foundation for a long term recovery for COVID-19."

The handbook includes guidance on recognizing plausible threat scenarios, to assessing the likelihood and impact of an attack occurring, considering measures already in place to address the risk, and possible solutions to address the concern. It helps airports to tailor a risk assessment to their own reality, considering their operation and their national threat and risk picture.

The handbook includes contributions from the ACI World Security Standing Committee and ACI World Business Partners. Production of the handbook was sponsored by G4S.

Greek National Among Several Wounded in Explosion at Saudi Cemetery

Source: https://www.thenationalherald.com/archive_general_news_greece/arthro/france_greek_national_among_several_wounded_in_explosion_at_saudi_cemetery-1186271/

Nov 11 — Multiple people were wounded on Wednesday when an explosive device (grenade?) hit an international ceremony commemorating the end of World War I at a cemetery in the Saudi Arabian city of Jiddah, according to French government officials.

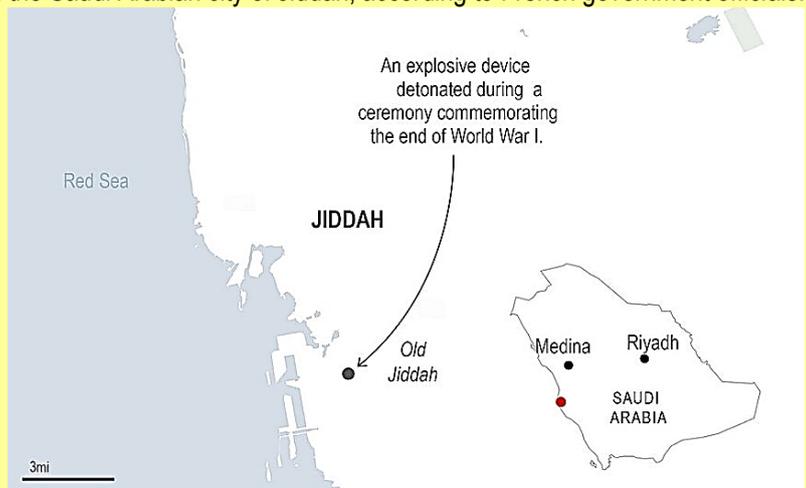
According to diplomatic sources, **a 27yo Greek police officer is one of at least four people who were injured in the blast and has sustained light injuries.**

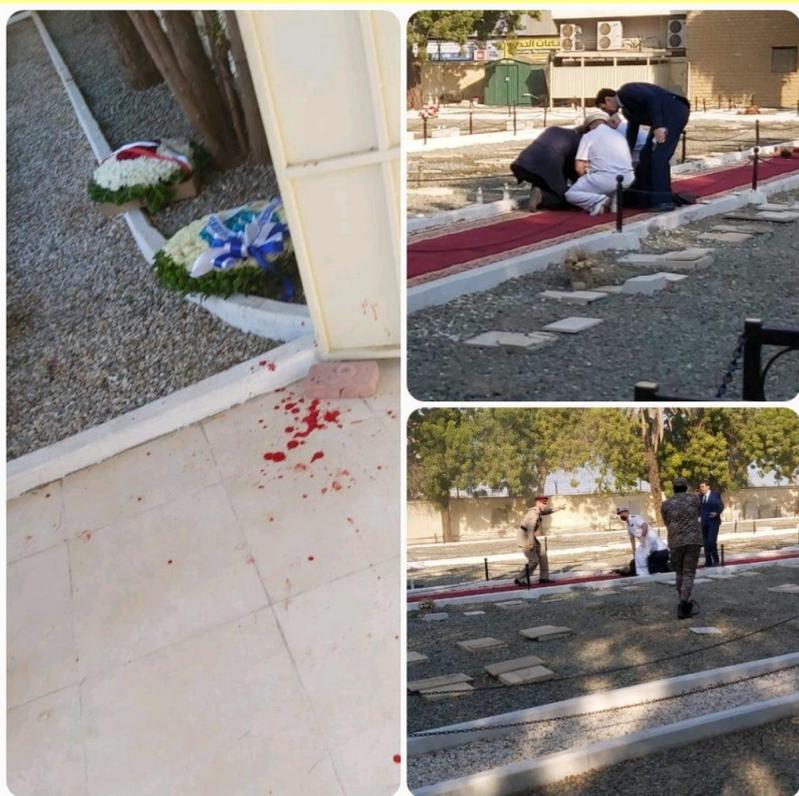
Several countries had representatives at the ceremony, held at a cemetery for non-Muslim dead, the officials from the French Foreign Ministry said. The identities of the victims were unclear.

Wednesday's attack follows on the heels of a stabbing Oct. 29 that slightly wounded a guard at the French Consulate in the city of Jiddah. The stabbing was carried out by a Saudi man, who was arrested. His motives remain unclear.

Wednesday marks the 102nd anniversary of the armistice ending World War I and is commemorated in several European countries. The French officials, who spoke on condition of anonymity in line with regulations, condemned the attack.

There was no immediate claim of responsibility for the explosion. Saudi officials and state-run media in the kingdom have not commented on the attack.





Jiddah, the Red Sea port city, saw its Ottoman troops surrender to the local troops backed by the British in 1916 amid the war. That sparked the start of the Kingdom of Hejaz, which later became part of Saudi Arabia in 1932

Jiddah's Non-Muslim Cemetery sits nears this port city's docks, hidden behind trees alongside a major thoroughfare in the city. The Commonwealth War Graves Commission shows just one soldier buried at the cemetery, Pvt. John Arthur Hogan, who died in June 1944.

Across France, which was particularly devastated by years of trench warfare in World War I, ceremonies were held Wednesday to mark the anniversary of the armistice but also to honor all those who have died for France, including during the Second World War and in current military operations abroad and at home, where troops are deployed to protect against terrorist attacks. France has suffered two deadly Islamic extremist attacks in the past month. Three people were killed in a church in the southern city of Nice, and a teacher was beheaded outside Paris for showing caricatures of the Prophet Muhammad to his class for a debate on free expression.

France has urged its citizens in Saudi Arabia and other Muslim-majority countries to be "on maximum alert" amid heightened tensions over the caricatures, which have sparked protests and calls for boycotts of French products among some Muslims.

The French president has described his support for the caricatures as a cornerstone of free speech and France's secular ideals, which has riled some Muslims who view the depictions as incitement and a form of hate speech.

Saudi Arabia's monarch and top clerics have condemned the depictions, but top Saudi clerics have also called for calm and urged people to follow the prophet's example of "mercy, justice, tolerance."

King Salman is scheduled to deliver an annual address to the nation on Wednesday, laying out policy priorities for the coming year. Diplomatic posts have also been targeted in the past in Saudi Arabia. A 2004-armed assault on the U.S. Consulate in Jiddah blamed on al-Qaida killed five employees. In 2016, a suicide bomber blew himself up near that same U.S. Consulate, wounding two guards.



Muslim pupil, 11, threatens to BEHEAD his teacher in Germany: Boy had 'declared it was okay to kill anyone who insulted the Prophet after minute's silence was held for Samuel Paty'

Source: <https://www.dailymail.co.uk/news/article-8938311/Muslim-pupil-11-threatens-BEHEAD-teacher-Germany.html>

Nov 11 – A German 11 years old school pupil threatened to behead his teacher in a chilling echo of last month's terror attack in France in which Samuel Paty was beheaded. The threat of violence at the Christian Morgenstern primary school in

Spandau, a suburb of Berlin, came after the teacher had stressed the importance of a forthcoming parent's evening. She told her class that the meetings were vital because they would allow problems to be raised, adding that there could be consequences for those who refused to take part. In response to this, the boy said: 'If that happens because my parents didn't show up, then I'll do the same to you as that boy did to the teacher in Paris'.



After that incident, he was spoken to by an imam who was taking part in the minute's silence and who told him that killing people could not be justified.

Following the beheading threat, headteacher Karina Jehniche phoned the boy's mother to arrange for the boy to be picked up and a meeting to take place. 'But the mother told me on the phone that he must have picked this up at school, because she and her husband didn't think that way,' the headteacher said.

EDITOR'S COMMENT: See (added) photo!

The New Age of Police Reform – Part 3

Source: <https://www.domesticpreparedness.com/resilience/the-new-age-of-police-reform-part-3/>

This article is Part 3 of a four-part series on New Age of Police Reform. The next part will provide an overview of some of the intergovernmental challenges in police reform:

- [Podcast – Law Enforcement's Perfect Storm 2020](#)
- [Part 1 – Introduction to the New Age of Police Reform](#)
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Nov 11 – Accountability and transparency are prominent features of modern police reform. Yet, the concepts and structures for holding police accountable trace back to the origins of modern democratic police service in London, UK. A key motivation for creating public police service was the lack of accountability afforded by private police services – the watchman model. With Americans' deeply embedded concerns over governmental excesses, layers of oversight have been imposed on police departments and agencies over U.S. history. The modern digital age poses new challenges and opportunities for police agencies to earn public trust through transparency. Modern technologies also pose serious obstacles to important due process in accountability of police services.

The public's trust in police has been at the core of police reform movements going back to the Metropolitan Police Act of 1829 in London. Police accountability and transparency is an essential character of democratic policing principles. Today, both communities and police departments have much *greater* opportunities for transparency. Although technological advances for both citizens and police enhance transparency, the accountability factor becomes more complex. Transparency without due process impedes true accountability. The public must have confidence in the integrity of due process in police accountability.

Technologies, such as the ubiquitous use of cellphone cameras, speed of uploads to social media, and the proliferation of social media, all converge to eclipse due process for police actions in the global court of public opinion. The speed and global scope by which citizen "reporters" can publicize media and commentary also challenges mainstream journalistic ethical standards. Simply, there is no due process in the court of public opinion. As the public loses trust and confidence in judicial and departmental due process, the court of public opinion becomes more virulent.

Separation of Powers & Judicial Oversight

Under the constitutional doctrine of [separation of powers](#), the three branches of government (executive, legislative, and judiciary) have separate and distinct, but overlapping responsibilities that serve as checks and balances. Police – whether federal, state, local, territorial, or tribal – are within the executive branch of their respective jurisdictions. (Two notable exceptions are the U.S. Supreme Court Police and the U.S. Capitol Police.) The courts regularly review the actions and omissions of all law enforcement agencies and personnel. Judicial review of police is the longest enduring form of police oversight in the U.S. justice system.

The common law principle of *stare decisis*, the precedence of judicial decisions on future litigation, is a powerful tool the courts have over police policy, practices, training, organizations, and procedures. There are many examples in which appellate and federal court decisions have changed the course of policing nationwide. The U.S. Supreme Court has altered police procedures by applying constitutional interpretations that affected the legality of evidence. The landmark cases of *Mapp v. Ohio* ([367 U.S. 643](#), 1961) and *Miranda v. Arizona* ([384 U.S. 436](#), 1966) applied U.S. Constitution protections through the exclusionary rule, denying admissibility of evidence obtained through warrantless search (Mapp) or self-incriminating statements without opportunity of access to legal counsel. Both cases, imposed national changes to police search, booking, and interview procedures. At the time, these landmark federal cases also strengthened the U.S. Supreme Court's *stare*



decisis over the state courts, and thus local police departments, through the selective incorporation doctrine of the U.S. Constitution's Bill of Rights. Both cases dramatically changed police procedures, resulting in strong judicial oversight of police action and advancing constitutional protections.

Federal and state courts have issued binding decisions affecting police use of force policies, training, and procedures. Two of the most prominent governing lawful deadly force standards relevant to modern reform considerations are *Tennessee v. Garner* ([471 U.S. 1](#), 1985) and *Graham v. Connor* ([490 U.S. 386](#), 1989). The U.S. Supreme Court, in *Garner*, set police use of deadly force parameters in fleeing felon situations. Clarifying a 1973 case that addressed excessive use of force, the court ruled in *Connor* that an [objective reasonableness](#) standard is to be used in reviewing all police use of force cases by expanding the applied interpretation of Fourth Amendment protection against unlawful seizure. Also in the *Connor* case, the court set forth the prongs for determining reasonably proportionate police use of force. Subsequent cases have refined aspects of police use of force policies, training, and procedures to include addressing the introduction of electronic control devices (e.g., Taser®).

Important judicial rulings that bring to light past police officer misconduct and dishonesty are found in the cases of *Brady v. Maryland* ([373 U.S. 83](#), 1963) and *Giglio v. United States* ([405 U.S. 150](#), 1972). These landmark rulings, together with [other relevant cases](#), establish a due process requirement for prosecutors to disclose exculpatory and material evidence, even that which may be favorable to the defendant's case. In *Giglio*, the court applied *Brady* rule logic to clarify that the prosecutor's duty to disclose information about the prosecution's witnesses, including police witnesses. Material information under the *Brady/Giglio* duty-to-disclose rule includes police personnel records related to the witness-officer's integrity and credibility. To be clear, under *Brady/Giglio*, prosecutors can still call police officers with tarnished credibility to testify. The defense will have information with which to impeach the officer's credibility under cross examination, and the jury is afforded the opportunity to weigh the value of the officer's testimony in light of the derogatory information. Defense may also use *Brady/Giglio* information in motions to suppress testimony or evidence. In cases where the tarnished or questionable officer is the principal witness or an affiant to a warrant, the officer's credibility may weaken or dismantle the prosecution's case.

Over the years since *Giglio*, prosecutors have had to account for officer credibility in deciding prosecutorial and trial strategies. In 2018, St. Louis (MO) Circuit Attorney Kim Gardner [announced the decision](#) that her office would no longer accept criminal cases from over two dozen city police officers. A statement from the St. Louis Circuit Attorney's office observed that "A police officer's word, and the complete veracity of that word, is fundamentally necessary to doing the job. Therefore, any break in trust must be approached with deep concern."

The U.S. Department of Justice's (DOJ) [Giglio Policy](#) established a requirement for DOJ agencies to research and disclose potential impeachment information of its employees, including law enforcement officers and agents, to assist U.S. attorneys upon request. DOJ defines potential impeachment information as including a number of credibility-related matters such as integrity-related misconduct findings or pending misconduct allegations as well as information that suggests bias for or against a defendant. The *Brady/Giglio* rule is a powerful tool for police leadership and prosecutors to work together in ensuring police personnel uphold the highest standards of honesty and integrity throughout their careers.

There is no statute of limitations on the *Giglio* impeachment information. Some prosecutors maintain lists of police officers deemed unfit as material witnesses. Often referred to as *Brady* or *Giglio* lists, an officer may be placed on such a list based on an assistant prosecutor's subjective interpretation of the rule or an ongoing administrative investigation. Some departments have used the prosecutor's uncredible-officer list as a pretext for removal. In one such case in Mountain Terrace Police Department (WA), the terminated officer successfully sued to recover his job and a [\\$815,000 settlement](#) for wrongful termination based on the prosecutor's listing of the officer.

With 18,000 state and local police departments and federal law enforcement agencies, the standardized application of case law across police policies, training, and procedures with the power of judicial oversight – in the form of evidentiary exclusion and legal redress through litigation – provides strong accountability of police practices. However, the courts' power to impact police procedures is, by design, reactionary. A case must be brought before the court with jurisdictional venue and case appealed to sufficient level (i.e., U.S. Court of Appeals, State Supreme Court, or U.S. Supreme Court) to have broad influence.

Standards in law enforcement training generally require officers and agents to demonstrate their understanding of the case laws behind the agencies' policies and procedures through testing and practical application in training. For most agencies, the frequency of in-service training cycles is insufficient to ensure uniform, consistent application. Departmental leadership, particularly among first line supervisors, is a critical part of the judicial oversight through ensuring officers' continued knowledge of applicable case law and insisting on officer performance in conformity.



Qualified Immunity – Legal Battles Ahead

The doctrine of qualified immunity for public officials has a controversial history. The origins of the qualified immunity trace to a 1967 U.S. Supreme Court case brought under the [Title 42 U.S. Code §1983](#) federal statute, updated from the Civil Rights Act of 1871, that opened the federal courts for redress of violations of civil rights under “color of law.” By virtue of the Civil Rights Act of 1871, the federal courts were afforded jurisdiction over violation claims involving state and local government actors through the equal protection clause of the 14th Amendment of the U.S. Constitution as well as opening the way for selective incorporation of the Bill of Rights.

In 1967, the case of *Pierson v. Ray* ([386 U.S. 547](#)) stemmed from a 1961 arrest and mixed convictions/dismissal of charges for failure to obey segregation rules at a bus station in Mississippi (MS). The MS statute upon which the charges were based was subsequently found to be unconstitutional in a separate case and after the Pierson arrests. The U.S. Supreme Court held that a qualified immunity existed for the municipal police justice and the arresting officers based on the prongs of acting in good faith and with probable cause pursuant to a statute they believed to be valid at the time. Chief Justice Warren, in writing the majority opinion, noted that common law “never granted police officers an absolute and unqualified immunity.”

Subsequent Supreme Court decisions have clarified, and to some degree confused, the doctrine with an objectively reasonable criteria (*Harlow v. Fitzgerald*, [457 U.S. 800](#), 1982) and clearly established law (*Pearson v. Callahan*, [555 U.S. 223](#), 2009) criteria. In the 1987 U.S. Supreme Court ruling in *Anderson v. Creighton* ([483 U.S. 635](#), 1987), the court noted that “qualified immunity protects, ‘all but the plainly incompetent or those who knowingly violate the law’.” The court added:

We have recognized that it is inevitable that law enforcement officials will in some cases reasonably but mistakenly conclude that probable cause is present, and we have indicated that in such cases those officials – like other officials who act in ways they reasonably believe to be lawful – should not be held personally liable.

This is an important point applied to “other officials,” as the court stated. For example, the Medical Malpractice Immunity Act (Title [10 U.S.C. §1089](#)) provides personal liability protection for federal medical personnel from tort claims arising from their performance of official duties. The act provides for the U.S. government to be substituted as defendant. Drawn from the Federal Tort Claims Act (28 U.S.C. Part VI, Chapter 171 and §1346), a limited waiver of the common law doctrine of sovereign immunity is established, permitting defendant substitution to protect federal officials from personal liability from tort claims brought against their performance in official capacity. An important distinction between the qualified immunity doctrine and statutory liability protections is the legislative action of passing a bill versus the U.S. Supreme Court, in essence, creating a law from the bar.

Today, the qualified immunity doctrine, applied to police, is under considerable scrutiny. Although the U.S. Supreme Court continues to apply qualified immunity in applicable rulings, many legal scholars believe the doctrine is judicial overreach. In the 2017 U.S. Supreme Court case of *Ziglar v. Abbasi* ([137 S.Ct. 1843](#)), Justice Clarence Thomas wrote in his concluding opinion, “Our qualified immunity precedents instead represent precisely the sort of ‘freewheeling policy choice[s]’ that we have previously disclaimed the power to make.” Thomas was questioning the Supreme Court’s creation of an immunity protection where it is not clear any existed under law. Thomas added:

Until we shift the focus of our inquiry to whether immunity existed at common law, we will continue to substitute our own policy preferences for the mandates of Congress. In an appropriate case, we should reconsider our qualified immunity jurisprudence.

Qualified immunity is an affirmative defense that must, in most cases, be raised by the defendant-public official. In claiming a qualified immunity defense, the defendant must show that their actions and decision making at the time of the event meet the criteria established in case law.

The [Justice in Policing Act of 2020](#) is a bill that passed the U.S. House of Representatives but failed to be taken up by the U.S. Senate. This act calls for eliminating the qualified immunity defense by amending 42 USC §1983 to read, in part, “It shall *not* be a defense or immunity to any action brought under this section [§1983] against a local law enforcement officer or a State correctional officer” (Sec. 102).

In Colorado, the Enhanced Law Enforcement Integrity Act of 2020 strikes the qualified immunity defense in civil actions alleging deprivation of rights. The statute also provides that the “peace officer’s employer shall indemnify its peace officers” unless the employer determines that the officer did not act in good faith and reasonable belief that the action was lawful. If the officer’s department determines not to indemnify the officer, the officer is personally liable for 5% of the judgement or settlement or \$25,000, whichever of these is less. The statute also provides that if the officer is unable to pay their portion of the judgement, the department or insurance will satisfy the judgement. Lastly, if the civil judgement arises from a criminal violation that results in an officer’s conviction, the department is not required to indemnify the officer for the judgement or settlement.



Police & Independent Oversight Boards

Police accountability through oversight boards is a well-established approach for developing and strengthening public consent. Civilian oversight of police services in the United States traces back to the 1920s when the Los Angeles Bar Association created a Committee on Constitutional Rights comprised of volunteer attorneys responsible for investigating complaints of police misconduct. In the post-World War II period, citizen oversight became more common in major cities, such as the Philadelphia Police Advisory Board (PAB) and Compliant Review Board (CRB) of Washington Metropolitan Police in the 1950s.

The trend for creating and supporting civilian oversight withered in the 1960s. Then, the 1969 Kansas City Office of Civilian Complaints revived civilian oversight, which has continued to grow dramatically into the 21st century. According to the National Association of Civilian Oversight of Law Enforcement ([NACOLE](#)), there are over 200 civilian oversight boards across the nation. The [United Nations](#) and many countries have adopted civilian oversight models as global best practices toward police accountability. The African Commission on Human and People's Rights adopted a resolution in 2006 urging member nations to establish civilian oversight boards through standardized guidance of the African Policing Civilian Oversight Forum ([APCOF](#)).

Despite there being over 200 civilian oversight boards, the U.S. has no national standards for police oversight boards. In 2018, the U.S. Department of Justice, Office of Community Oriented Policing Services (COPS) and the Major City Chiefs Association (MCCA) hosted a roundtable with 21 police agency representatives from the U.S. and Canada to develop an overview of various civilian oversight models. The [Civilian Oversight of the Police in Major Cities](#) report reflects three primary models: The Investigative Model, The Review Model, and The Auditor Model. They also noted that, although many civilian oversight boards could be characterized with the three models, many others did not fit any model. The report also identified six optimal objectives for civilian oversight boards: foster transparency, promote independence, strengthen accountability, enhance public trust and legitimacy, engage the community, as well as “demystify” police internal affairs investigative processes.

Current trends are expanding the powers of some civilian oversight boards. On 28 October 2020, Virginia Governor Ralph Northam [signed two bills](#) authorizing localities to create civilian law enforcement review boards, with subpoena powers and binding authority over disciplinary decisions involving department police officers. Similar laws and ordinances in other states are expanding oversight board authorities with some creating layers of oversight boards. Many police collective bargaining units (unions) are expressing opposition to more civilian board empowerment, particularly granting subpoena power to compel officers to testify.

Many police unions assert that compelled officer testimony threatens to undermine the department's investigative integrity and violates some union contracts. NACOLE points out that, while oversight boards need the ability to obtain information in order to perform the community's oversight function, obtaining and using subpoena authority poses special challenges. Enforcing civilian board subpoenas in a court of law can be a costly, time consuming process. The 1967 U.S. Supreme Court case of *Garrity v. New Jersey* ([385 U.S. 493](#)) limits departments' abilities to compel statements from police officers in administrative investigations.

In August 2020, the New Jersey Supreme Court struck down a Newark City ordinance empowering the Civilian Complaint Review Board's (CCRB) subpoena authority in investigating police misconduct cases. While committing to continue to fight for CCRB to have subpoena power, Mayor Ras Baraka stated that the New Jersey attorney general modified statewide policies governing police internal affairs units requiring the release of certain investigative records to civilian oversight boards. The CCRB is New Jersey's only civilian oversight board today.

Like many other aspects of police reform, the roles and authorities of civilian oversight boards are dynamic. There are many stakeholders involved with the question of due process protections as a core constitutional right of the accused officer.

Role of the Federal Government in Police Accountability

The federal government's role in national police reform is another major issue today. The federal government is taking ever-increasing roles in state and local policing oversight. The U.S. Department of Justice (DOJ) is principally responsible for oversight and federal assistance to improving police practices. The DOJ's oversight is principally in the form of legal actions brought under suspected patterns-and-practice violations, and discrimination “under color of law” violations among other authorities. The DOJ's [Civil Rights Division](#) (CRT) litigations can lead to court ordered settlement and consent decrees in which DOJ oversees monitor teams in verifying the progress of covered police departments in implementing corrective actions. DOJ also provides wide-ranging technical assistance, principally through the [Community Oriented Policing Services](#) (COPS) Office, in the form of working groups, training, equipment, as well as research and studies publications. COPS also manages a grants program to support improving policing capabilities. Other DOJ support to state and local law enforcement includes data collection and reporting, with grants program, out of the [Bureau of Justice Statistics](#) and other DOJ elements.

In the 21st century, the DOJ has increased the volume of investigations to look into allegations of police departments' patterns and practices of unconstitutional or otherwise unlawful conduct. The DOJ Civil Rights Division [reports](#) that existing and new police reform



agreements more than doubled between 2011 and 2016. According to a 2018 DOJ Office of the Inspector General (OIG) [report](#) on DOJ Civil Rights activities, the DOJ achieved an 84% settlement rate in patterns and practice cases involving police departments between 2011 and 2017. These case settlements result in court-ordered consent decrees enabling DOJ and the court to oversee corrective reforms.

Evidence-based police performance improvement and transparency require data collection, analysis, and reporting. The Violent Crime Control and Law Enforcement Act of 1994 ([Public Law 103-322](#)) includes a provision requiring the U.S. attorney general to gather police officer use of force data. The act further stipulates a use limitation that the data collected are for research and statistical purposes and must be devoid of victim and officer identities.

The [Justice in Policing Act of 2020](#) devotes considerable attention to national collection of police performance, patterns, and practices data. In section 118, the bill would require federal, state, and local agencies to collect and submit to DOJ incident data that include race, ethnicity, age, and gender of officers, agency employees, and members of the public involved. Additionally, the bill would require the DOJ to create and manage a National Police Misconduct Registry. The federal, state, and local police agencies would be required to report data on credible complaints, complaints pending review, complaints involving disciplinary action, and complaints in which the officer is exonerated with each category – breaking out use of force incidents separately. Also, the bill would require reporting on all officer terminations, lawsuits, and settlements with use of force situations broken out in the data.

Under the Police Reporting Information, Data, and Evidence (PRIDE) portion of the Justice in Policing Act, the use of force incident quarterly reporting requirement would include “use of a firearm, Taser, explosive device, chemical agent (such as pepper spray), baton, impact projectile, blunt instrument, hand, fist, foot, canine, or vehicle against an individual.” Extensive incident details would be required to be reported, including rationale for why courses of action were *not* taken. Other provisions of the bill’s reporting requirements include specific incident details, which in aggregate would require considerable departmental staff resource to achieve compliance.

The Justice of Policing Act, as passed in the House, makes no distinction as to size of the department. Even very small police departments, less than 10 employees, would have the reporting requirement or risk loss of or inability to apply for DOJ grant funding. Police agencies have long recognized the importance of data analysis applied in policy and training changes. Many departments publish internal police performance data to the public in building trust through transparency. In July 2020, Montgomery County Police Department (MCPD) published a report entitled “[Local Policing Data and Best Practices](#)” to meet Maryland’s Community Policing Law, which will be effective in February 2021. MCPD points out that “policing data is warranted to evaluate and monitor for constitutional and community policing.”

The calls for improving national policing data collection and information sharing is bipartisan. The president’s [Commission on Law Enforcement and the Administration of Justice](#), created in January 2020, highlights the need to develop better national data collection and transparency. The commission is charged with, among other initiatives, reviewing current systems and evaluating gaps in data collection and utilization with a focus on a National Incident-Based Reporting System and Use of Force reporting. In June 2020, President Donald Trump signed the [Safe Policing and Safe Communities](#) Executive Order (EO) 13896 in part directing the DOJ to create and maintain a database of use of force incidents and police decertification actions. The EO adds that the data is to be shared across federal, state, local, and tribal law enforcement agencies.

Police Decertification Information Sharing

Most states certify police officers who are authorized with arrest powers within that state. Standards for requisite training, background check criteria, certification processes, and decertification processes are most often managed or overseen at the state level. State requirements vary considerably, though. Some states such as New York, California, and Massachusetts lack authority to decertify police officers. However, in the four states that lack full police officer certification and decertification authority, private security guards are required to hold state certification or licensure. Federal law enforcement officers are not nationally certified, but rather authorized by their employing agency with law enforcement authorities under the agency’s authority, which is removed when a person leaves the authorizing agency. States like Massachusetts are working to strengthen certification and training standards oversight. As Massachusetts addresses legislation to create a state Police Officer Standards and Training (POST) system, a [2019 study](#) by the state auditor noted that as many as 30 police departments may not meet state POST standards for training requirements.

In states with police officer certification, many do not require departments to initiate decertification with the state authority when an officer is terminated, even for cause, from employment. This enables a terminated officer, or officer who resigns in lieu of termination, to carry their active police officer certification while shopping for another job in law enforcement. To add complications to the decertification issue, termination information is subject to widely varying privacy protections accorded by the states. A former police officer, fired for cause, can be hired by another department void



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of access to cause for release from previous agency and start working immediately because their peace officer certification remains valid.

Calls for a national decertification database have been raised for a number of years. The International Association of Directors of Law Enforcement Standards and Training ([IADLEST](#)) has served as a certifying body for state POST training since well before its name change in 1987. The DOJ COPS awarded IADLEST a [grant](#) in 2020 to promote certification standards in all states, compliance by local departments, and expansion of IADLEST's [National Decertification Index](#) database. Some states already maintain [decertification lists](#) and some make those lists public, like Connecticut's POST Council.

Conclusion

Improving and strengthening public trust and police legitimacy in the digital age is complex. Greater use of citizen oversight boards and leveraging digital tools to collect and share improved data opens opportunities for greater public awareness. Better collection, analysis, and application of policing data is essential for informing the public as well as developing and explaining evidence-based reforms. Lastly, the digital age provides excellent information sharing opportunities about police misconduct-based personnel removals. Certification, like licensure in other professions, should apply nationally uniform standards for decertification while permitting the states to retain their sovereign authority over police services.

The challenges rest in developing and implementing sound legislation, policies, and strategies that respect and preserve every employee and person's right to due process while improving public trust in police performance.

As founder and president of Direct Action Resilience LLC, Joseph Trindal leads a team of retired federal, state, and local criminal justice officials providing consulting and training services to public and private sector organizations enhancing leadership, risk management, preparedness, and police services. He serves as a senior advisor to the U.S. Department of Justice, International Criminal Justice Training and Assistance Program (ICITAP) developing and leading delivery of programs that build post-conflict nations' capabilities for democratic policing and applied modern investigative techniques. After a 20-year career with the U.S. Marshals Service, where he served as chief deputy U.S. marshal and ERT incident commander, he accepted the invitation in 2002 to become part of the leadership standing up the U.S. Department of Homeland Security as director at Federal Protective Service for the National Capital Region. He serves on the Partnership Advisory Council at the International Association of Directors of Law Enforcement Standards and Training (IADLEST). He also serves on the International Association of Chiefs of Police, International Managers of Police Academy and College Training. He was on faculty as an instructor at George Washington University. He is past president of the InfraGard National Capital Region Members Alliance. He has published numerous articles, academic papers, and technical counter-terrorism training programs. He has two sons on active duty in the U.S. Navy. Himself a Marine Corps veteran, he holds degrees in police science and criminal justice.

Top 10 Emerging Technologies of 2020

Source: <https://www.scientificamerican.com/article/top-10-emerging-technologies-of-2020/>

Nov 10 – If some of the many thousands of human volunteers needed to test coronavirus vaccines could have been replaced by digital replicas—one of this year's Top 10 Emerging Technologies—COVID-19 vaccines might have been developed even faster, saving untold lives. Soon virtual clinical trials could be a reality for testing new vaccines and therapies. Other technologies on the list could reduce greenhouse gas emissions by electrifying air travel and enabling sunlight to directly power the production of industrial chemicals. With "spatial" computing, the digital and physical worlds will be integrated in ways that go beyond the feats of virtual reality. And ultrasensitive sensors that exploit quantum processes will set the stage for such applications as wearable brain scanners and vehicles that can see around corners.

These and the other emerging technologies have been singled out by an international steering group of experts. The group, convened by *Scientific American* and the World Economic Forum, sifted through more than 75 nominations. To win the nod, the technologies must have the potential to spur progress in societies and economies by outperforming established ways of doing things. They also need to be novel (that is, not currently in wide use) yet likely to have a major impact within the next three to five years. The steering group met (virtually) to whittle down the candidates and then closely evaluate the front-runners before making the final decisions. We hope you are as inspired by the reports that follow as we are.

1. [Microneedles Could Enable Painless Injections and Blood Draws](#)
2. [Sun-Powered Chemistry Can Turn Carbon Dioxide into Common Materials](#)
3. [Virtual Patients Could Revolutionize Medicine](#)
4. [Spatial Computing Could Be the Next Big Thing](#)
5. [Digital Medicine Can Diagnose and Treat What Ails You](#)



6. [Electric Aviation Could Be Closer Than You Think](#)
7. [Low-Carbon Cement Can Help Combat Climate Change](#)
8. [Quantum Sensors Could Let Autonomous Cars 'See' around Corners](#)
9. [Green Hydrogen Could Fill Big Gaps In Renewable Energy](#)
10. [Whole-Genome Synthesis Will Transform Cell Engineering](#)

Keep in mind

**Pre-Lockdown = People moving around
Public/street mass gathering terrorism
(shooting; suicide IEDs; stabbing; ramming)**

**Post-Lockdown = People indoors
Use of VBIDs
(outside buildings; critical infrastructure; underground parking lots)**

Christmas terror attack: Security expert issues a chilling warning as children of the Bali bombers 'regenerate' amid fears al-Qaeda and Islamic State could unite

Source: <https://www.dailymail.co.uk/news/article-8947981/Terror-attack-Security-expert-issues-chilling-warning-Christmas-looming.html>

Nov 14 – A leading global security expert has warned a terrorist attack in Australia could happen around **Christmas** time, as fears grow that major extremist groups are preparing an attack.



The chilling prediction comes as authorities fear a re-emergence of extremism, with the **coronavirus** pandemic allowing terror groups to prosper in recent months, particularly in South East Asia.

It comes as the region officially plunged into poverty this week, reversing decades of economic stability with mass job losses and school closures, the **Daily Telegraph** reports.

Indonesian authorities have advised regional security and intelligence allies - including Australia - that **Islamic State** and al-Qaeda are now decentralised in some parts and looking to recruit in numbers.

The new wave of terrorists are said to be more sophisticated and organised than those who plotted the Bali bombing (pictured) in 2002

Al-Qaeda-linked Jemaah Islamiah (JI), who were behind the 2002 Bali bombing, have reportedly increased their presence in Indonesia, Malaysia and the Philippines.

Other JI members have joined the pro-Islamic State group in Indonesia Jamaah Ansharud Daulah (JAD), who were linked to the 2019 deadly cathedral bombing in the Philippines.

Australian intelligence sources confirmed that with Islamic State and al-Qaeda support, the new generation of terrorists are even more organised and adaptable than

the Bali bombers who killed 202 people in 2002, including 88 Australians.

Doctor Rohan Gunaratna, a leading expert on global terrorism, warned that the Australian government needs to be aware of the rise of radicalisation abroad in recent months.



'The shift has been significant,' he said. 'Since March, we have seen a decline in the number of terror attacks, but a dramatic increase in the footprint of these groups.'

'Radicalisation has peaked during this period because many of these groups have been active online trying to co-opt people.'

He added the biggest threat to Australia's safety would be the uniting of al-Qaeda and Islamic State.

'Terrorism will peak and you will see in this December because of the spike in France and Austria, the threat cascade to South East Asia during the Christmas period, you will see attacks in the region including Australia and it will go into the New Year period,' he said.

'The future of fighting terrorism is working together.'

ASIO's 2020 annual report concluded Islamic State was plotting opportunistic attacks in South East Asia, with Australia identified as a potential target.

'Islamic extremists continue to disseminate propaganda designed to radicalise, recruit, instruct on and inspire terrorist attacks, including in Australia,' it concluded.

Islamism: How Terror Attacks Have Shocked France

Source: <http://www.homelandsecuritynewswire.com/dr20201113-islamism-how-terror-attacks-have-shocked-france>

Nov 13 – Over the past five years, France has been particularly affected by terrorist attacks.

DW discussed the situation with essayist and professor of German literature and intercultural studies at Sorbonne Nouvelle University Jürgen Ritte, a German-French translator who has been living in Paris for the past thirty-three years.

DW: The attack on the [Bataclan](#) concert hall, on the [Charlie Hebdo](#) editorial offices, on people celebrating in [Nice](#), and more recently [a teacher decapitated](#) near Paris and a knife attack at a church in [Nice](#) — would you say they all were aimed at the heart of French society?

Jürgen Ritte: Yes, that's what makes it particularly disgusting. High-ranking politicians are protected, but institutions open to everyone were targeted. Church buildings are open to the public, schools are open in so far as the exits aren't usually guarded. The middle of society was chosen; it is the only safe target.

DW: Has something gone wrong in France, also with regard to coming to terms with the colonial past? Did the media perhaps play down issues like the role of Islam, and not put enough focus on the lack of integration?

Ritte: People invariably make that connection but we are talking about two different things. It is difficult to speak of a failed integration policy when, as in Nice, you are dealing with an assassin who was in France for just a few hours.

It is also difficult to speak of failed integration when you are dealing with the son of a Chechen asylum-seeker who fled Chechnya during the war that Russia waged there, and now the son thinks he has to continue the war in some way by killing a teacher he doesn't even know. I can't see that as a matter of failed integration. It is simply murder, and criminal organizations are involved.

DW: You teach both literature and journalism at the Sorbonne. How do you deal with issues like radicalization of Islam and social injustice, issues that are all connected?

Ritte: There is no denying that France has social problems in some of the major cities' peripheral districts. The state has indeed failed there. It has pulled out and does not take care of the people crammed into public housing projects. It has failed because it has abandoned the teachers in the schools with overcrowded classes and because, like in Marseille, police officers don't even venture there because they fear attacks by drug dealers.

What can be called a social failure by the state is the fact that since the days of President Francois Mitterrand, no concept for the hot spots in the so-called "banlieues" has been successfully developed or implemented.

But you can't say that as a result, people are now beginning to behead and stab and slaughter other people like animals. I consider it to be extremely problematic to establish this connection, it is an impermissible bypass, an amalgam.

DW: How about France's handling of its colonial past?

Ritte: France's colonial past is the reason why Islam is the country's second largest religious community. A great many people from the old colonial areas or protectorates from North Africa, often also from sub-Saharan Africa, live in France, they are French people in France. Social advancement has been rare, but that does not mean they are not integrated or live miserable lives. They are all French, they have French passports, unlike for example, many Turks in Germany.

Most of them make it somehow. They may not be sufficiently represented in sectors of French society that are visible, like popular TV news broadcasters, or among senior politicians and civil servants, university professors, heads of big companies or in the culture sector. But many graduate from high school and find jobs afterwards.



These people belong to the Muslim religious community, but have absolutely nothing to do with terror, they adamantly reject it because they are tarred with the same brush when terror attacks occur.

It is not the representatives of a dominant white French society who do not distinguish between Islamism and Muslims, but the Islamists who deliberately create this confusion, who are forcing a split in society, who cater to the extreme right and who ultimately long for a civil war-like state.

DW: Are these then exceptional acts by individuals rather than a consequence of France's failed integration policy?

Ritte: That explanation would be too mechanical, because then we would have a permanent civil war all over Western Europe. People everywhere have reason to be dissatisfied. You'll find groups that are not properly integrated everywhere, too, groups for who the state is absent. We do not need to sugarcoat that: We have problems in society.

DW: The attack on Samuel Paty, the teacher, and the knife attack at the church in Nice — the attacks have become more savage. Would you say executing a person out on the street has symbolic power?

Ritte: I have the impression that they are symbolic acts in the sense that they are killings like those we have seen on television, from pictures of what the so-called Islamic State did in Iraq and Syria. We've seen the photos from Afghanistan.

To cut off a person's head, to butcher them like an animal, you can't do anything worse in its barbaric dimension. But that is how they stage themselves, the merciless arm of an avenging god: There is a reason why some assassins film their murders. The fact that the images of Samuel Paty's beheading were quick to be circulated on the Internet [an Islamist imam had posted them on the net, editor's note] is part of the idea; it's the message. That is total terror.

DW: How can France still defend its values if the teaching staff must fear being executed in the streets?

Ritte: First of all, we need to improve security in schools. We already have the "Vigipirate" security measures introduced after the Charlie Hebdo attacks, where universities and other public buildings like museums are accessible only through a gate and after controls. We should do the same in schools.

It is quite simply a matter of defending a legal system. We have the police and secret services for prevention. We have laws, and courts. That is what we should rely on first of all. President Macron has repeatedly reminded us of France's values: Freedom of expression, secularism.

I find it problematic that after every single terrorist attack values are being stressed with quite some rhetorical effort. It is understandable in view of the huge shock the attacks trigger.

But should we engage in a discussion of values because of terrorist attacks? Should we let murderers force on us a discussion? That would give them legitimacy, it means we would accept murder as a contribution to the discussion while you wonder what values the other side puts up for debate.

Macron Alone: Where Are France's Allies in the Fight against Islamism?

Source: <http://www.homelandsecuritynewswire.com/dr20201113-macron-alone-where-are-france-s-allies-in-the-fight-against-islamism>

Nov 13 – Martin Luther King memorably said: "In the end we will remember not the words of our enemies but the silence of our friends." Douglas Murray writes in [The Spectator](#) that that reflection may now be going through the head of the French president Emmanuel Macron. "In recent weeks he has been left alone on one of the most dangerous and delicate ledges of our time: that of Islamic extremism. And while he has already incurred the wrath of much of the so-called Muslim world — with French goods disappearing from many Arab supermarkets and Macron condemned from Ankara to Islamabad — it is the silence of everyone else that has been so striking," Murray writes.

Last month Macron delivered remarks on what he called "Islamist separatism" in France. In a major speech he warned that a portion of France's six million Muslims were forming a "counter-society."

Murray writes that such speeches are now common after Islamist terrorist atrocities, but Macron seems to be serious. "In the best traditions of the



Republic, he stressed the non-negotiability of French secularism. He then said things that any honest interlocutors in the Muslim world would have recognized, praising, for instance, the ‘Islam of the Enlightenment’.

Repeating a theme, he stressed in previous statements, Macron made it clear he does not regard Islam as the problem. His enemy — France’s enemy — is a radical form of the religion to which more Enlightenment forms are the answer.

Murray continues:

Macron has turned out to be interested in actions as well as words. In the weeks since his October speech he has ordered the recall of the French ambassador in Ankara and called for Turkey to be expelled from the EU customs union. Several radical organizations inside France have been dissolved and the numbers of government forces at the French borders doubled. Macron has also promised to bring his proposals for a rethink of EU border controls to the European Council in December. If he does, he will find some support from his eastern and central European counterparts, who may wonder what took him so long.

**“In the end we will remember not the words of our enemies
but the silence of our friends.”**

Martin Luther King

This brings us to the silence of France’s friends. “Throughout this whole shocking episode there remains one great question. Where are France’s friends and allies?” Murray asks, adding:

Whether or not France’s allies are scared, Macron is not. In an interview with Al Jazeera at the end of last month, he pointed out that the people he says are ‘distorting’ the religion of Islam ‘teach that women are not equal to men. They teach that girls should not have the same rights as boys.’ Well, Macron went on: ‘Not on our soil. We believe in the Enlightenment.’

Of course, hanging over that noble claim is the question all our countries have avoided for decades. Which is that while it is all very well to do a better job of asserting your values, what (if anything) can be done with people who are in your country, who know what your values are and still reject them? Like all his European counterparts, Macron has put that discussion off for another day. But the rest of this civilizational issue he has decided to have out. He has decided — whether sincerely or politically barely matters — to make a stand on the principles of the Republic he leads. He deserves the support of his friends. To date he has not even got our words. To our shame, not his.

EDITOR’S COMMENT: Martin Luther King spoke the truth. Strong EU member states live in their own bubbles where business is more important than any other value. Not directly threatened by the incoming tsunami of illegal Muslim immigrants or the ambitions of an Asian leader with extraordinary dreams they are willing to accept a few occasional terrorism casualties that practically are not enough to overturn the existing status quo between civilizations. On the other hand, it is good to know that even big powers are alone in difficult times and stop counting on solidarity – a forgotten value of the past.

Survey Explores Impact of COVID-19 on Security Industry

Source: <https://www.hstoday.us/industry/survey-explores-impact-of-covid-19-on-security-industry/>

Nov 07 – A survey from Axis Communications has revealed how system integrators and their customers are responding to the COVID-19 crisis amidst uncertainty and instability in the marketplace.

Axis’ Partner Integrator Survey included **data from 455 security business leaders from across the United States** that operate in a range of industries including education, government, retail, healthcare, transportation, hotels, stadiums and law enforcement.

The survey of security professionals cited that end-customers will be more willing to explore IP-based solutions (58%) and the acceptance of AI will accelerate (45%) following COVID-19 crisis.

“The pandemic demonstrated a clear understanding that technologies that support business continuity and employee safety should be top of mind for everyone within the organization, not just security professionals,” said Fredrik Nilsson, VP of Americas, Axis Communications.

“Our study revealed the resourcefulness of professionals within the industry as well as the flexibility of IP solutions and our partner ecosystem. Accordingly, there’s a clear interest in,



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and increased acceptance around, the potential for integrated solutions that solve long-term security needs, enhance business operations and address health and safety measures.”

According to security professionals, respondents cited economic recovery in general (67%), supply chain management (49%), losing customers (37%) and shifting business models (30%) as the biggest business concerns due to the COVID-19 crisis. While 53% of system integrators stated a decrease in business during the pandemic, because they are designated as “essential critical infrastructure workers” the majority of integrators continued to work on projects the entire time and remain on the frontline serving end users amidst COVID-19 restrictions (70%). Twenty-eight percent of security business leaders cited that they have invested in digital transformation of workflows to address challenges amidst COVID-19 and support new, remote business operations.

“The results of our Partner Survey demonstrated that while there is still uncertainty about the evolving business climate, a strategic approach to technology adoption and integration is pivotal,” said Nilsson. “These insights help Axis to better support our partners and to provide pragmatic, innovative IP security offerings that drive long term return on investments for our customers.”

According to the survey, security professionals cited that their end-customers were most concerned with economic recovery in general (57%), human resource issues (43%), the ability to function remotely (42%), cost of ownership on long-term investments (25%), short-term return on investment (21%) and cybersecurity (19%). As businesses look to reduce COVID-related risks, security professionals cited the following concerns as being increasingly important for end customers to address: remote monitoring to lower personal contact (49%); access control for contactless entry (49%); the adoption of analytics for crowd management (35%); reduce high-traffic areas with heatmapping solutions (32%); and curbside pickup with analytics (23%).

Michigan Terrorists Planned to Kill All State Legislators, Blow Up Capitol Building

Source: <http://www.homelandsecuritynewswire.com/dr20201116-michigan-terrorists-planned-to-kill-all-state-legislators-blow-up-capitol-building>

Nov 16 – The Michigan terrorists who plotted to kidnap Governor Gretchen Whitmer and attack the Michigan State legislature building, planned for no one to emerge alive from the building, according to the Michigan Attorney General’s Office. The plotters planned to carry food and supplies with them as they stormed the Capitol building, and barricade themselves inside. Their plan then called for the legislators to face televised “trials,” in which they would be charged with “tyranny,” and then executed. Fox and his fellow plotters believed they would be able to hold on for about a week, during which all the legislators and their staff would be executed and their executions televised.

How Technology Is Helping Terror Tactics Evolve

By Robert J. Bunker

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/how-technology-is-helping-terror-tactics-evolve/>

Nov 17 – While most terrorist incidents are characterized by the use of the ‘gun and the bomb,’ threat groups are expanding into both low- (e.g. knives and vehicular overruns) and high-end (e.g. weaponized drone and teleoperated static weapons platform) technology use and the tactics, techniques, and procedures supporting it. Further, novel variations on mid-range technology use – such as the armoring of VBIEDs (vehicle borne improvised explosive devices) – are also taking place as is the use of homemade or 3D-printed firearms.

The study and observation of unconventional and advanced technology use by terrorist,



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insurgent, and other threat groupings lead to such terrorism futures projections and assessments. Years of research and subsequent analysis of terrorist technology and TTPs reveal some trends:

- **FPS/Livestreaming Attacks:** First-person shooter (FPS) attacks later aired in online propaganda videos, and even livestreamed, allow terrorist groups to create a more immersive experience for their audiences. When livestreamed, these have an almost addictive quality. Livestreaming was utilized by the knife-wielding ISIS-linked terrorist Larossi Abballa in an FPS variant (first- person stabber or slasher) incident on June 13, 2016, in Magnanville, France. On March 15, 2019, white nationalist extremist Brenton Tarrant then livestreamed his Christchurch, New Zealand, shooting rampage on Facebook, showing its crossover appeal to a terrorist movement with far different ideological tenets than that adhered to by SOA [soldier(s) of Allah]. **Impact:** Limited use to date although the technique has spread to a Mexican cartel – Cártel Santa Rosa de Lima (CSRL) – with an FPS incident (later uploaded to social media) taking place in Valle de Santiago, Guanajuato, on Feb. 5, 2019.

Video frame capture from Christchurch First Person Shooter (FPS) livestreaming attack posted on Facebook by Brenton Tarrant, a right-wing (white nationalist) extremist. The image is of him approaching the doorway into a mosque on March 15, 2019, prior to his targeting of its worshippers.



- **AVBIEDs:** Vehicle-borne improvised explosive devices (VBIEDs) – parked and then later detonated (used early on by the IRA) or driven into their targets as a martyrdom operation (used by numerous radical Islamist groups) – have existed for decades now and are a well-known form of terrorist attack. The armoring of such weapons systems, turning them into armored vehicle-borne improvised explosive devices (AVBIEDs), thus allowing them to better reach their intended targets in insurgent and conventional warfighting environments, was pioneered by ISIS, which utilized them in place of the artillery in which they were deficient. **Impact:** While the potentials of armored VBIED usage have not been realized in Europe and the United States, when or if such deployment takes place will represent a significant security threat to hardened facilities and venues. Further, the TTP of a tandem attack, in which the first AVBIED blows a hole in the defenses of a facility thereby allowing the follow-on one a clear path, must also be considered in physical counterterrorism planning.
- **IED Drones:** The placement of an IED on a rotor or fixed-wing unmanned aerial system (UAS)/unmanned aerial vehicle (UAV), which then detonates upon contact or in proximity of the target. **Impact:** A significant threat now exists with ISIS having used these weaponized devices extensively in Iraq and Syria before the territorial Caliphate was overrun. All major terrorist groups recognize the utility of IED drones and many – including Hezbollah (early pioneers of their use), Hamas, and al-Qaeda – have fielded them as have some Latin American criminal groups. In certain instances, this form of drone usage has matured to the carrying of bomblet(s) that they then drop upon their intended targets, although this is presently more of an insurgent rather than terrorist TTP.
- **Remote-Controlled Firearms:** This evolution in the use of firearms is derived from the hardline cable or wireless control of an assault rifle or other type of firearm by means of a game controller, smart phone, tablet, laptop, or desktop computer interface for targeting and C² purposes. These systems have existed since the early 2000s with their battlefield usage beginning in the 2010s. The remote sniping,



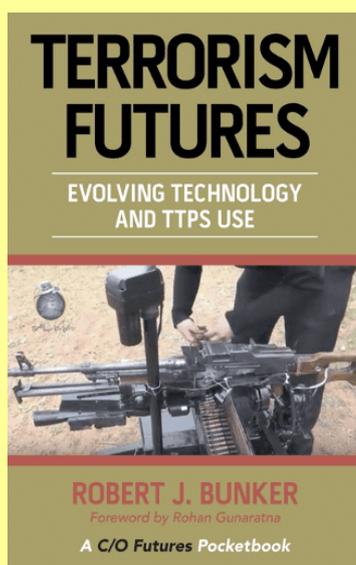
virtual targeting presence, and remote combined arms capabilities gained by these systems would have a great deal of practical utility for terrorist groups. **Impact:** These systems are being seen sporadically overseas such as in the Iraqi, Syrian, and Libyan conflict zones with their deployment by insurgent and terrorist groups. Higher-end systems are also being developed by state military forces and even crowdsourced for Ukrainian military use (e.g. the Sabre Remote Weapon Station). Remote-controlled firearms have not yet been utilized for terrorist attack purposes in Western societies. This is due to a moderate technical and CONOPS hurdle that underlies the lack of sophistication and creativity of most terrorist organizations and their members operating in the West.

- **Mass Arson:** The use of arson attacks has been advocated in the Islamic State magazine *Rumiyah* (the January 2017 issue) and in the al-Qaeda magazine *Inspire* (the May 2012 and March 2013 issues). As evidenced by past jihadist attacks, the arson component is generally auxiliary in nature, overly complex, and applied at the tactical level as part of a martyrdom action. The radical Islamist adherents engaging in these attacks are missing the larger operational and strategic implications of what could be accomplished utilizing them. Target sets such as “Apartment Buildings, Forests Adjacent to Residential Areas, and Factories,” as advocated in *Rumiyah*, would result in large-scale residential and urban fires and the potential for large death tolls and infrastructure devastation. In May 2019, ISIS claimed to have used wildfires for crop destruction in various regions of Iraq and Syria as an insurgent tactic although this TTP has not been applied overseas for terrorism purposes. **Impact:** While the origins of recent forest and brush fires in the American West, Australia, and other regions of the world are being closely monitored, links to terrorism have not been evident.

(ISIS’ *Rumiyah* magazine)



In addition to the technology and TTPs excerpted above, their application in ever-changing combinations – along with more traditional forms of terrorism approaches – can be utilized for attack purposes. Such layering can readily be seen in the employment of a drone for ISR (intelligence, surveillance, and reconnaissance) which took place some months prior to Brenton Tarrant’s Christchurch FPS streaming rampage. It must be ultimately remembered, however, that terrorist technology and TTPs use is a process undertaken in order to achieve disruptive targeting effects (via the generation of terror directed at a government and its population) by means of physically destructive actions and operations serving as a catalyst to achieve the higher order disruptive effects. Hence, as this process becomes more sophisticated and deadly, the expectation is that those disruptive effects will become more pronounced.



The [Terrorism Futures: Evolving Technology and TTPs Use](#) pocketbook (160 pp, \$16.99) is derived from a series of nine essays written by the author—then a Non-Resident Counterterrorism Fellow—between December 2014 and June 2017 for TRENDS Research & Advisory, Abu Dhabi, UAE. With subsequent organizational and website changes at TRENDS, a majority of these essays are no longer accessible via the present iteration of that entity’s website. In order to preserve this collection of forward-thinking counterterrorism writings, the author elected to publish them as a [C/O Futures](#) pocketbook in October 2020 with the inclusion of new front and back essays, an acronyms listing, an image gallery, curated additional readings, and a foreword by renowned terrorism expert [Rohan Gunaratna](#).

Robert J. Bunker is the director of research and analysis of C/O Futures, LLC and a managing partner. An international security and counterterrorism professional, he was Futurist in Residence at the Behavioral Science Unit (BSU) at the Federal Bureau of Investigation Academy in Quantico, VA, Minerva Chair at the Strategic Studies Institute (SSI) of the U.S. Army War College, Carlisle, PA, and has taught at American Military University, University of California State University San Bernardino, Claremont Graduate University, and the University of Southern California. Dr. Bunker holds degrees in the fields of history, anthropology-geography, social science, behavioral science, government, and political science and has trained extensively in counterterrorism and counternarcotics. He has also delivered hundreds of

presentations—including U.S. congressional testimony—with well over 500 publications across various fields and formats.



U.S. Reportedly Planning to Designate Iran-Backed Houthis As Terrorist Group

The U.S. State Department is reportedly planning on [designating](#) the Yemen-based Houthis as a Foreign Terrorist Organization (FTO). The renewed focus on designating the Iran-backed group follows a terrorism and intelligence [review](#) deliberated by the State Department in September. If imposed, the FTO designation would sanction the Houthis, prohibit any U.S. contact with the group, and isolate them financially.

EDITOR'S COMMENT: Perhaps a US – S Arabia – UAE something is underway in order to eliminate this “thorn” from the Arabic Peninsula.

The coming spike in European terror

By Sofi Heikkinen

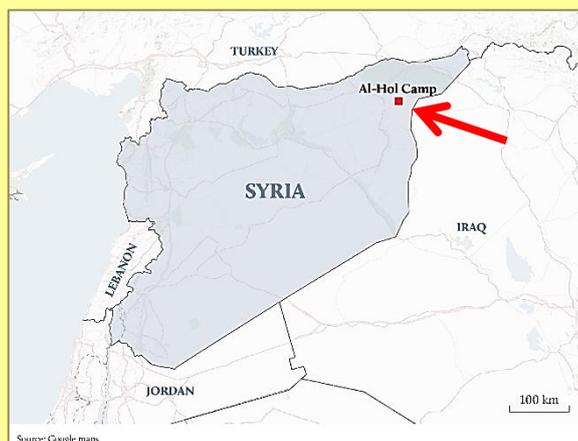
Source: <https://www.euractiv.com/section/defence-and-security/opinion/the-coming-spike-in-european-terror/>

Nov 18 – With the attention of world leaders focused on fatality rates and tanking economies, it has been hard to notice the persistent rise of global security threats. In more ways than one, the COVID-19 has been a godsend for extremist groups all over the world, creating new vulnerabilities and adding fuel to radicalist narratives.

Nowhere have these rising dangers been felt more strongly than on the European continent. With terror attacks on the rise in Europe, it is imperative that European leaders wake up and notice the threat at hand. Recently, international media reported the impending release of militant prisoners in Syria as prisons become overcrowded.

According to reports, Kurdish authorities have decided to release 15,000 inmates from the **Al-Hol camp in northeast Syria** after rising infection rates have worsened conditions in the already overcrowded facility.

Al-Hol is known to house thousands of Islamic State fighters and their families whom the Kurds themselves have warned pose a major security threat to the region. Managers of Al-Hol have warned they



cannot maintain responsibility for some 65,000 residents indefinitely. The added challenge of the pandemic has only hastened the inevitable.

This massive and sudden release of jihadist

militants poses a major threat to Europeans. Experts are warning that any radicals who are tempted to flee the camp could join the majority of Syrian migrants and head to Europe.

Hans-Jakob Schindler, director of think-tank the Counter Extremism Project, expanded on what the security risk involved with the Al-Hol release would look like. “There is a significant [number] of Syrians in Al-Hol who did not de-radicalize — if anything they re-radicalized and will come out with a new furor in their ideological thinking,” he said.



Al-Hol is far from an isolated example. As overcrowded boats travel from war-torn nations, like Syria and Libya, en route to Europe, terrorists are disguising themselves as legitimate migrants, exploiting this vulnerability. This technique is not new, but only the resurgence of a well-known tactic used by terrorists in recent years.

A case in point is that of Salah Abdeslam, one of the perpetrators of the Paris terror atrocities in 2015 which killed 130 people and left more than 350 injured. Abdeslam is believed to have made four trips to Hungary during which he picked up other terrorists linked to attacks in both Brussels and Paris.

Following the Paris attacks and similar incidents in neighbouring countries, the security threat of migrant routes became a central focus of the European establishment.

Authorities were shocked that although some of these extremists' names were on European counter-terrorism databases, many of them posed as refugees and carried fake Syrian passports to evade detection.

Furthermore, the vulnerability of migrant routes was not limited to the individual militant travelling through them.

The masses of refugees along these journeys provide extremists with an ample pool of recruits that could be targeted for radicalization. Over the past five years, substantial measures were taken to clamp down on the terror threat of migrant routes.

Now, with COVID-19 shifting energy and resources to health and financial systems, the ability to keep these routes to Europe secure is becoming increasingly limited. As experts have pointed out, managerial challenges of the pandemic have increased the security risks to Europe at every level.

Not only is less manpower available to monitor and police the influx of foreigners, but even the very health protocols designed to slow the spread of the virus can be capitalized on by infiltrating extremists. The norm of wearing facemasks for instance now makes it easier for would-be attackers to disguise themselves while crossing international borders.

Events over the past months have shown extremist violence is still a threat to Europe. Despite lockdowns across the continent that have substantially limited mass gatherings and curtailed potential targets, jihadist attacks have been identified in major cities in France, Spain, and Germany since early 2020.

And yet extremists have capitalized on the pandemic in more ways than sneaking attacks past already strained governments. The advent of COVID-19 has given militant groups ripe material for propaganda, whether it be blaming the West for the virus's spread or promoting conspiracy theories as to the disease's origin.

ISIS has even asserted the coronavirus is a sign of the approaching Day of Judgment and a sign that the faithful should rally to their militant causes.

How can Europe combat this increasing danger of extremist infiltration into Europe? The answer lies in a fresh look at border security. For too long, Europe has taken an overly lax position on movement between countries on the continent. Under the Schengen Agreement of 1995, travel across borders without passport checks is allowed between 26 countries on the European mainland.

While this freedom of travel has produced its benefits, the costs are now becoming more manifest than ever. Despite authorities being alert to the threat of porous borders for several years, the disarray of 2020 has made addressing this threat within the framework of the status quo all but impossible.

Adding to that the increased danger of extremist violence triggered by COVID-19, and it is becoming clearer than ever that a new paradigm on border security must be adopted in Europe.

While the threat of extremist violence is rising for Europeans, authorities still have the ability to get ahead of this danger. The rapidly changing world of 2020 has given governments and its defence agencies the opportunity to reassess one of the most basic elements of their national security.

Sofi Heikkinen is a Helsinki-based counter-terrorism and crisis management consultant.

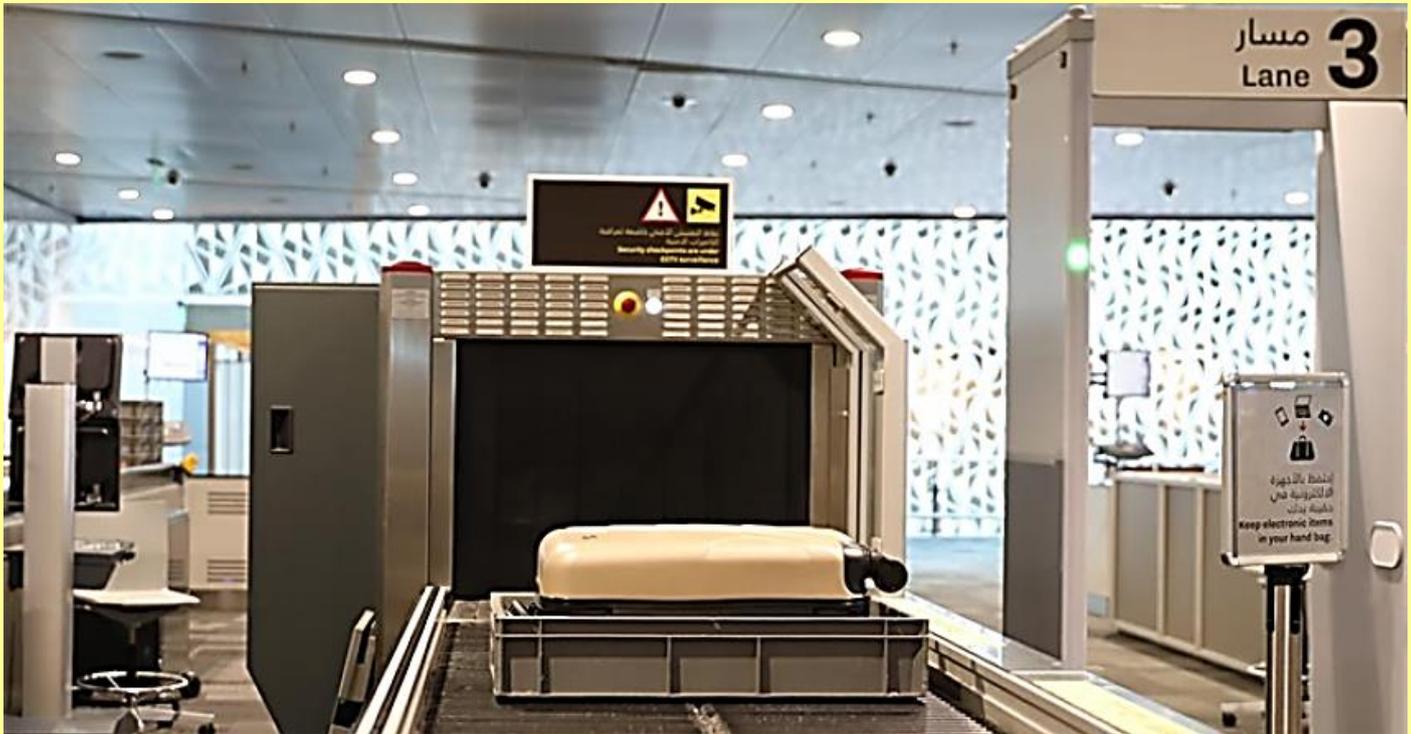
Qatar's Hamad International to install new Smiths Detection (passenger screening checkpoint) technology

Source: <https://www.qatarday.com/news/local/qatars-hamad-international-to-install-new-smiths-detection-passenger-screening-checkpoint-technology/79833>

Nov 19 – Hamad International Airport (HIA) is the **first airport in the region** to obtain **Smiths Detection's HI-SCAN 6040 CTiX**, which offers advanced screening of carry-on baggage at security checkpoints using Computed Tomography (CT) X-ray.



The cabin baggage screening equipment uses a CT gantry that rotates at a constant speed as baggage is carried through on its conveyor belt. Hundreds of images are taken of each bag to create 3D imagery in real-time, allowing for more accurate assessments of the bag's contents.



Saeed Yousef Al-Sulaiti, vice president - Security at Hamad International Airport said: "At HIA, we are always championing the adoption of cutting-edge technologies to ensure operational excellence and deliver a seamless passenger experience. Smiths Detection has a reputation for providing market leading solutions with world-renowned standards for quality. We are proud to be the first airport in the region to introduce the latest CT screening technology available in the industry. HIA is committed to remaining at the forefront of technological advancements to continuously enhance the passenger experience while improving operational efficiency."

These new generation X-Ray machines will also be partnered with fully automated tray return systems integrated with **automated UV-C emitting modules that will automatically disinfect the trays** before passengers handle them to further safeguard the health and safety of all HIA passengers.

A Potential Weapon Kills Over 1.5 Million Worldwide –Without a Single Shot Being Fired

By Thalif Deen

Source: <http://www.ipsnews.net/2020/11/potential-weapon-kills-1-5-million-worldwide-without-single-shot-fired/>

Nov 20 – The world's major military powers exercise their dominance largely because of their massive weapons arsenals, including sophisticated fighter planes, drones, ballistic missiles, warships, battle tanks, heavy artillery—and nuclear weapons of mass destruction (WMDs).

But the sudden surge in the coronavirus pandemic last week, particularly in the US and Europe, has resurrected the lingering question that cries out for an answer: Will overwhelming fire power and WMDs become obsolete if biological weapons, currently banned by a UN convention, are used in wars in a distant future?

According to the latest figures from Cable News Network (CNN), the grim statistics of the coronavirus pandemic include 56.4 million infections and 1.5 million deaths worldwide.

As of last week, the US alone has been setting records: more than 11.5 million pandemic cases and over 250,500 deaths since last March, with more than 193,000 infections every day.



The New York Times quoted unnamed experts as predicting that the US will soon be reporting over 2,000 deaths a day and that 100,000 to 200,000 more Americans could die in the coming months. One forecast predicted a US death toll of 471,000 by next March—in the continued absence of an effective vaccine.

The pandemic has also destabilized the global economy with world poverty and hunger skyrocketing to new highs. And all this, without a single shot being fired in an eight-month long war against a spreading virus.

Dr. Natalie J. Goldring, a Senior Fellow and Adjunct Full Professor with the Security Studies Program in the Edmund A. Walsh School of Foreign Service at Georgetown University, told IPS the world faces multiple crises “with the potential to devastate our communities, including the threat of climate change and the risk of nuclear war”

And UN Secretary-General Antonio Guterres, she said, has warned of another potential crisis, which is that terrorists could use biological weapons to produce disastrous results. He pointed out that this sort of weapon use could be even more harmful than COVID-19.

“If a terrorist group were able to carry out the complex tasks of creating and using biological weapons, an intentional release of a biological weapon could be even more deadly than COVID-19,” said Dr Goldring, who is also Visiting Professor of the Practice in Duke University’s Washington DC program and represents the Acronym Institute at the United Nations on conventional weapons and arms trade issues.

She said Guterres makes the important point that “we need to focus immediately on preventing this type of development. We also need to vastly increase the capacity of our communities to respond to infectious diseases.”

“Countries with large military forces often threaten to use those forces to achieve foreign policy and other goals. One question is whether the use of biological weapons could in effect make these conventional and nuclear forces obsolete?”, she asked.

“I’d argue that nuclear weapons are already obsolete and counterproductive. By continuing to develop and deploy these weapons, States increase the risk of nuclear theft and give other countries incentives to develop nuclear weapons in response,” Dr Goldring declared.

Providing a grim economic scenario of the devastation caused by the pandemic, Guterres warned last month of the possibility of an even worse disaster: the risks of bioterrorist attacks deploying deadly germs.

He said it has already shown some of the ways in which preparedness might fall short, “if a disease were to be deliberately manipulated to be more virulent, or intentionally released in multiple places at once”.

“So, as we consider how to improve our response to future disease threats, we should also devote serious attention to preventing the deliberate use of diseases as weapons,” he declared, speaking at a Security Council meeting on the maintenance of international peace and security— and the implications of COVID-19

Meanwhile, if terrorist groups, as Guterres fears, acquire the knowledge to use biological weapons, suicide bombers and AK-47 assault rifles used in random killings, may also become obsolete in future attacks.

Professor Francis Boyle, professor of international law at the University of Illinois College of Law, told IPS “It is not the terrorist groups that are the problem here”.

“It is the terrorist governments like the USA, China, Russia, UK, Israel etc. that have the most advanced biological warfare facilities and biological weapons in the world that threaten the very existence of all humanity as Covid-19 is now doing,” said Professor Boyle who has advised numerous international bodies in the areas of human rights, war crimes, genocide, nuclear policy, and bio-warfare. Dr Filippa Lentzos, Associate Senior Researcher, Armament and Disarmament Programme, at the Stockholm International Peace Research Institute (SIPRI), told IPS: “I don’t believe bioweapons will become the wave of the future”.

“Many might well pivot away from bombs, guns and other explosive weapons — we’re already seeing hybrid warfare and greater reliance on cyber, disinformation, etc — but adoption will be uneven across the globe”.

She said: “I suspect there would also be differences in uptake between state and non-state actors. The way I view potential future biological weapons is as an extreme niche form of weaponry, only potentially ‘suitable’ under very limited circumstances.”

Asked about the use of biological weapons as part of germ warfare during World War I, she said, in an interview with IPS last March, there was some covert use by Germany during World War I to infect horses with biological agents to block their use by Allied military forces.

“In World War II, there were substantial covert attacks on China by Japan, as well as some clandestine use in Europe against Germany. There has been very limited known use since 1945”, said Dr Lentzos, who is also an Associate Editor of the journal BioSocieties, and the NGO Coordinator for the Biological and Toxin Weapons Convention.

According to the UN Office for Disarmament Affairs (UNODA), the Biological Weapons Convention (BWC), the first multilateral disarmament treaty banning the development, production and stockpiling of an entire category of weapons of mass destruction, was opened for signature on 10 April 1972 and entered into force on 26 March 1975.



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Guterres said last week he could have never imagined that hunger would rise again during his time in office as Secretary-General. And according to the Rome-based World Food Programme (WFP), 130 million more people risk being pushed to the brink of starvation by the end of the year.

"This is totally unacceptable," said Guterres. The COVID-19 recovery must address inequalities and fragilities, and the question of food will be central to a sustainable and inclusive recovery.

Meanwhile, David Beasley, WFP executive director, said the socio-economic impact of the pandemic is more devastating than the disease itself.

He pointed out that many people in low- and middle-income countries, who a few months ago were poor but just about getting by, now find their livelihoods have been destroyed.

Remittances sent from workers abroad to their families at home have also dried up, causing immense hardship. As a result, hunger rates are sky-rocketing around the world, he said.

Thalif Deen, is a former Director, Foreign Military Markets at Defense Marketing Services; Senior Defense Analyst at Forecast International; and military editor Middle East/Africa at Jane's Information Group, US. He is also co-author of "How to Survive a Nuclear Disaster" (New Century).

More than 100 "High-Risk" Islamists at Large in Germany: Security Service

Source: <http://www.homelandsecuritynewswire.com/more-100-high-risk-islamists-large-germany-security-service>

Nov 21 – More than 120 Islamists in Germany pose a "high risk," according to Germany's federal police, with 115 more posing a potentially high risk. There is a growing **debate** in Germany about monitoring extremists, and about streamlining deportation policies for extremists about to be released from jail.

EDITOR'S COMMENT: A "debate"? Really? Why don't they make a referendum asking people to decide?

Is Hezbollah's Ammonium Nitrate Linked to Plot against Jews in Argentina?

Source: <https://www.meforum.org/61799/hezbollahs-ammonium-nitrate>

Nov 16 – [Argentina said](#) over the weekend that it had increased security on its border with Paraguay due to an "anonymous tip" to authorities that was passed on via its embassy in the United Kingdom. There was a possibility of "bomb-making materials entering across Argentina's northern border," the report by Reuters noted.

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

What's Behind Iran's Terror Campaign in Europe?

Source: <https://www.meforum.org/61794/what-behind-iran-terror-campaign-in-europe>

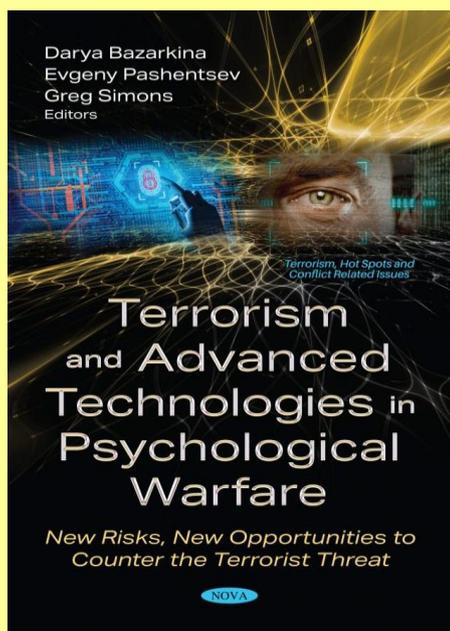
Nov 20 – A trial due to begin next week in the Belgian city of Antwerp is set to cast further light on the Islamic Republic of Iran's use of official diplomatic missions in its ongoing campaign of violence and harassment of its opponents across the globe. While the threat of activities by non-state Sunni jihadi organizations remains high on the agenda of many western countries, the flouting by Iran of global norms in pursuit of the regime's perceived enemies has received little focus. The Antwerp trial may serve to change this.

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

Islamofascism: Europe (and the West) Asleep at the Wheel?

Source: <https://www.rieas.gr/researchareas/editorial/4540-islamofascism-europe-and-the-west-asleep-at-the-wheel>





Terrorism and Advanced Technologies in Psychological Warfare: New Risks, New Opportunities to Counter the Terrorist Threat

Source: <https://novapublishers.com/shop/terrorism-and-advanced-technologies-in-psychological-warfare-new-risks-new-opportunities-to-counter-the-terrorist-threat/>

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Advanced technologies in the contemporary society enable many social problems to be resolved. However, due to the imperfect nature of social relations in human society, these technologies are very often used against human security and public interest. One of the most obvious and dangerous expressions of such usage is the activity of terrorist organizations, which potentially threatens the very foundations of democracy and social security. This book is a first attempt to analyze the current practice and future risks of high-tech psychological warfare waged by terrorists on a national and cross-border basis. An international team of authors from eleven countries assesses the quantitative and qualitative development of the psychological impact of terrorists on their target audiences, taking into account the wider context of global social, economic and political shifts and acute geopolitical contradictions. The book also presents new understandings on methods of countering the psychological impact of terrorists on modern society. These methods include a wide range of technical and social tools – from philosophical concepts and cultural theories to the use of artificial intelligence to prevent terrorism and ensure psychological security of society and its progressive democratic development. It should be clarified that the implementation of advanced technologies by terrorists in the broad sense of the word is based on the contradictory social role of these technologies today and in the foreseeable future.

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Terrorism in a Global Village: How Terrorism Affects Our Daily Lives

Source: <https://novapublishers.com/shop/terrorism-in-a-global-village-how-terrorism-affects-our-daily-lives/>

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This book centers not only on the “scourge of terrorism”, a problem which concerns policy-makers, officials and governments worldwide, but dissects the reasons and effects it has on people’s daily lives. Focusing on 9/11 as the founding event, terrorism and the attention given by the media and news containing violence-related content paved the way for the rise of a new stage of capitalism.

Authors invited to this project discuss with accuracy to what extent terrorism is changing day-to-day behaviours, social institutions and democracy. Basically, the rise and expansion of globalization, which crystalized into a more mobile world, alluded to a culture of instantaneity where news on terror produces a double-edge effect. On one hand, terrorist cells are prone to develop crueller and further violent tactics to perpetrate their attacks since the constant media coverage produces a process of desensitization in audiences. On another hand, the “war on terror” is discursively manipulated to impose some restrictive economic policies that would otherwise be neglected. Lastly, not only does terrorism seem to affect the tenets of democracy, but it also accelerates the rise of populist leaders in the decades to come. Since terrorism is subtly changing our lives, this book offers an all-encompassing model to expand the current understanding of students, scholars and policy makers in order to prioritize republicanism over “the concept of security”. In this vein, Latin America has much to say to shed light on how terrorism effaces democracy. In view of the American sentiment of exemplarity adjoined to the commoditization of death in capitalist societies, the discourse of fear may very well lead to pathological reactions that prevent “hospitality”, which was historically the touchstone of the Western world.

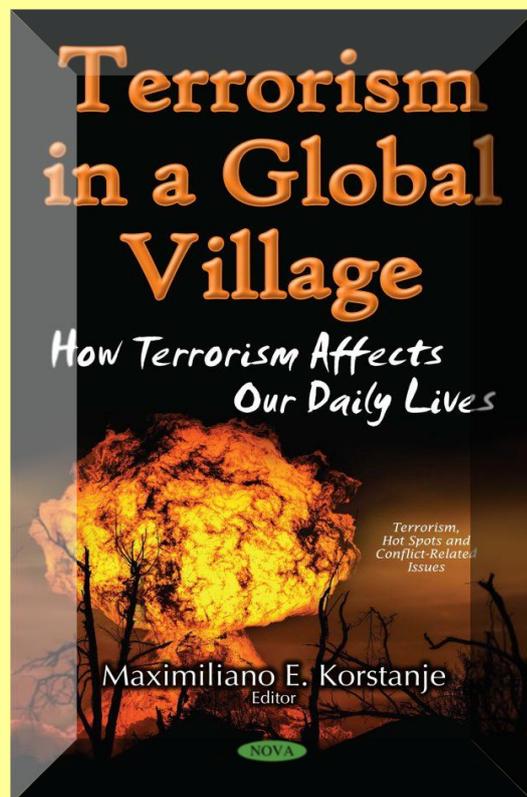
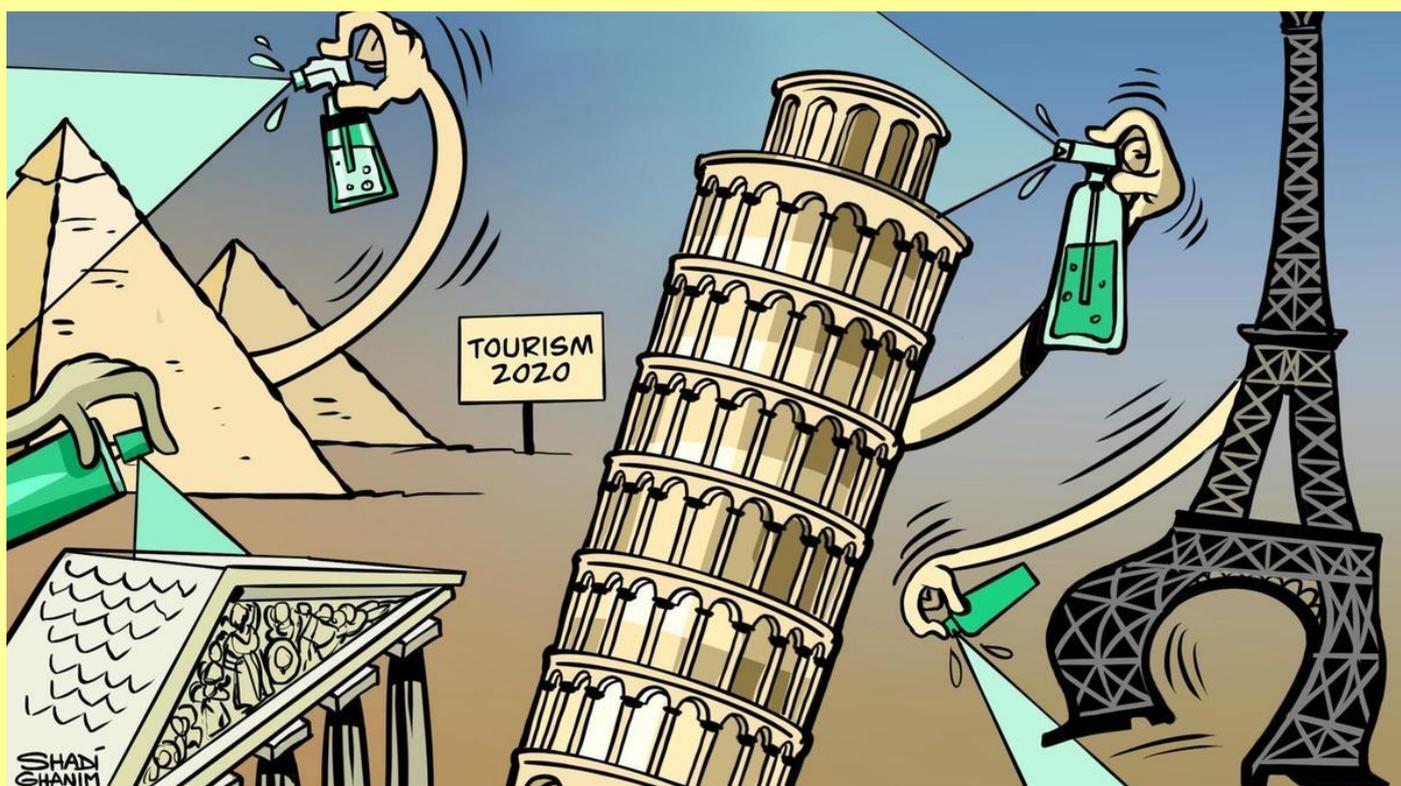


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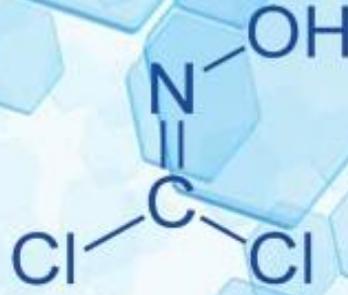
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CHEM NEWS



Armenia carries out eco-terrorism against Azerbaijan

Source: <https://en.trend.az/azerbaijan/politics/3322386.html>

Oct 23 – The manner of terrorism includes itself eco-terrorism as well, but nobody could argue which kind of terrorism is worse than another, Trend reports citing Commentary by the Center for Economic Reform Analysis and Communication.

Originally, eco-terrorism often described as environmental warfare consisting of the deliberate and illegal destruction, exploitation, or modification of the environment as a strategy of war or in times of armed conflict. Currently, eco-terrorism is what we can call actions of Armenia in legal Azerbaijani territories during the last 30 years.



Firstly, we should note the fact that for the last 30 years Nagorno-Karabakh and surrounded 7 regions of Azerbaijan were under illegal occupation of Armenia, while all those territories are officially recognized as part of Azerbaijan. As a result of the occupation, nearly 30 thousand people lost their lives and more than 1 million Azerbaijanis had to leave their homes. Ever since Armenia has never stopped its anti-environmental behavior, thereby, overall nature and biological diversity of those territories are seriously damaged. Environmental collapse is worsening each and every day.

Armenia's eco-terrorism also negatively affected Azerbaijan's water management and planning system. More precisely, some transboundary potable water resources and irrigation systems are under the direct invasion of Armenia and they are usually used as a "weapon" against Azerbaijani people.

Water stress is a hot topic in the modern world and Azerbaijan, where 72,7% of all surface water resources are generated outside of the country. Armenia continuously contaminates transboundary water resources with chemical and biological items. **Research shows that each year nearly 350 million cubic meters of water passing through Armenia is**



polluted with chemical substances. Furthermore, microflora and microfauna of the 43 km part of the Araz river in the territories of Azerbaijan were completely destroyed and **the amount of heavy metals in the Araz river is much higher than normal.**

Getting a bird's-eye view of all the issues, it becomes unsurprising that, Azerbaijan signed the "Convention on the Protection and Use of Trans-boundary Watercourses and International Lake" of the UN in March 1992, but Armenia did not. While eco-terrorism acts of Armenia were discussed with international organizations several times, lots of articles were written and researches were conducted in this regard. Consequently, Parliamentary Assembly of the Council of Europe adopted Resolution # 2085 dated 26 January 2016 on "Inhabitants of frontier regions of Azerbaijan are deliberately deprived of water" which states:

"... The Assembly considered that the deliberate creation of an artificial environmental crisis must be regarded as "environmental aggression" and seen as a hostile act by one State towards another aimed at creating environmental disaster areas and making normal life impossible for the population concerned";

The resolution also states that the occupation of Nagorno-Karabakh by Armenia and other adjacent areas of Azerbaijan created similar humanitarian and environmental problems for the citizens of Azerbaijan living in the Lower Karabakh valley and lack of regular maintenance work for over twenty years on the Sarsang reservoir, located in one of the areas of Azerbaijan occupied by Armenia, poses a danger to the whole border region. The Assembly emphasizes that the state of disrepair of the Sarsang dam could result in a major disaster with great loss of human life and possibly a fresh humanitarian crisis.

Taking into consideration all of those facts, the Assembly requested immediate withdrawal of Armenian armed forces from the region concerned, thus allowing access by independent engineers and hydrologists to carry out a detailed on-the-spot survey, global management, throughout the catchment area, the use and upkeep of the Sarsang water resources, international supervision of the irrigation canals, the state of the Sarsang and Madagis dams, the schedule of water releases during the autumn and winter, and aquifer overexploitation. They also called Armenian authorities to cease using water resources as tools of political influence or an instrument of pressure benefiting only one of the parties to the conflict.

Despite the Resolution Armenia did not back down from its odious and inadequate actions and consistently demonstrated unconstructive behavior to the principles of international law.

The liberation of Sugovusan (formerly called Madagis) from Armenian occupation, on the 3rd of October 2020, enables to restore of the regional eco-balance.

The Assistant to the President of the Republic of Azerbaijan Foreign Policy Issues Department of the Administration Mr. Hikmat Hajiyev stated that:

"30 years long environmental terror came to an end with the de-occupation of Sugovusan village of Azerbaijan. Tartar river runs with plentiful water. On purpose, Armenia always stopped the flow of water. Eco balance will be provided in Tartar, Goranboy, and Yevlakh regions of Azerbaijan."

EDITOR'S COMMENT: The label "eco-terrorism" is very serious but the website is from Azerbaijan so it might be biased given the ongoing conflict between the two countries. The United States Federal Bureau of Investigation defines eco-terrorism as "...the use or threatened use of violence of a criminal nature against innocent victims or property by an environmentally-oriented, subnational group for environmental-political reasons, or aimed at an audience beyond the target, often of a symbolic nature." On the other hand, polluting rivers with industrial waste is a common practice worldwide – especially in the developed countries.

Russia's Clandestine Chemical Weapons Programme and the GRU's Unit 29155

Source: <https://www.bellingcat.com/news/uk-and-europe/2020/10/23/russias-clandestine-chemical-weapons-programme-and-the-gru-unit-29155/>

Oct 23 – On October 15, 2020, the European Union imposed sanctions on six senior Russian officials and a leading Russian research institute over the alleged use of a nerve agent from the Novichok family in the poisoning of opposition leader Alexey Navalny. Russia dismissed as baseless the EU's allegations that it had not complied with its obligations, under the convention it ratified in 1997, to discontinue its chemical weapons program. Russian officials said the country had nothing to do with Navalny's poisoning and implied that if any party had used nerve agents on him, it would have been Western secret services. Vladimir Putin, who in 2017 had personally [watched over the destruction](#) of the last remaining Russian chemical weapons stash, [ridiculed](#) the findings of four separate laboratories, confirmed by the OPCW, that a Novichok-type organophosphate poison was identified in Alexey Navalny's blood.

Two years earlier, in 2018, Russia had dismissed as unfounded allegations that its military intelligence had used Novichok to poison former Russian spy Sergei Skripal and his



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daughter. Similarly, Russia had then stated that it had no ongoing chemical weapons program and had destroyed all of its prior arsenals; while alluding that UK agencies may have used their own stash of Novichok to poison the Skripals in a false-flag operation. A year-long investigation by Bellingcat and its investigative partners [The Insider](#) and Der Spiegel, with contributing investigations from [RFE/RL](#), has discovered evidence that Russia continued its Novichok development program long beyond the officially announced closure date. Data shows that military scientists, who were involved with the original chemical weapons program while it was still run by the Ministry of Defense, were dispersed into several research entities which continued collaborating among one another in a clandestine, distributed R&D program. While some of these institutes were integrated with the Ministry of Defense – but camouflaged their work as research into antidotes to organophosphate poisoning – other researchers moved to civilian research institutes but may have continued working, under cover of civilian research, on the continued program.

Our investigative team believes the St. Petersburg State Institute for Experimental Military Medicine of the Ministry of Defense (“GNII VM”), likely with the assistance of researchers from the Scientific Center Signal (“SC Signal”), has since 2010 taken the lead role in the continued R&D and weaponization of the Soviet-era Novichok program.

Crucially for our conclusions, we have identified evidence showing close coordination between these two institutes and a secretive sub-unit of Military Unit 29155 of Russia’s military intelligence, the GRU. This unit has previously been linked to the poisoning attempts on Emilian Gebrev in Bulgaria in 2015 as well as Sergey and Yula Skripal in the United Kingdom in 2018. Telecoms data we obtained shows that the St. Petersburg-based institute communicated intensively with members of the assassination team during the planning stage of the Skripal mission, while also communicating – at highly correlated moments – with scientists from SC Signal. The two research institutes also appear to collaborate with the [33rd Central Experimental Institute](#) for Scientific Research of the Ministry of Defense, located in the town of Shikhany. This agency was originally involved in researching and testing the Russian chemical weapons program.

Furthermore, our research has established that these two institutes were in frequent communication – including during the planning state of the Skripal operation – with Russia’s [Scientific Institute for Organic Chemistry and Technology](#) (“GosNIIOHT”), the agency that was tasked with supervising the destruction of Russia’s arsenal of nerve agents and ensuring the termination of the country’s CW program.

The role of the 33rd Central Institute and the GosNIIOHT in the development of Russia’s nerve agent program was previously known, and these two institutes were sanctioned by the European Union. However, Neither GNII VM nor SC Signal have been sanctioned by European or US governments, and it appears that their work has stayed outside of the focus of Western intelligence services.

Extreme Toxicology at GNII VM



The sprawling complex of The Institute for Experimental Military Medicine outside St. Petersburg. Photo: The Insider



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GNII VM, the Ministry of Defense's Institute for Experimental Medicine, is a secretive military research unit located just outside St. Petersburg. There is scant public information about this establishment's structure, personnel and projects. A succinct [listing](#) of the institute's history and functions on the Defense Ministry's website suggests that prior to 2015 it had existed as an adjunct research center within Russia's Kirov Military Medical Academy, and had been focused on researching "the ergonomic properties of Russian armaments." As of May 2015, however, the institute was given autonomy and a new focus, including "organization of scientific research in the interest of Russia's defense and national security" and "conducting tests of the developed products." An internal 2017 presentation of the institute, obtained by our team, shows that – at least officially – its main functions were developing and testing

Перспективные МСЗ от поражения токсикантами различных групп		
Разработка	Токсикант	Этап разработки
Антидот опиатомиметиков (препарат «Купол»)	Опиатомиметики	Представление для государственной регистрации в «особом» порядке в качестве ЛПСН
Пентифин	Вещества раздражающего действия	Требуется государственная регистрация (доработка досье под современные требования)
Антидот ФОВ	Соединения с АХЭ-активностью, вызывающие быстрое старение холинэстеразы	Проводятся доклинические исследования
Комбинированные бронхолитики, препарат «БИФ»	Пульмотоксиканты, продукты горения	Закончены доклинические исследования, получено разрешение на проведение клинических исследований
Антидот иприта	Иприт	Требуется завершение доклинических исследований
Изучение фармакогенетических аспектов действия антидотов	Соединения с АХЭ-активностью Опиатомиметики	Установлены полиморфизмы генов, оказывающие влияние на тяжесть интоксикации и эффективность МСЗ

emergency medical equipment, medication, and treatment techniques for wartime use. In particular, the institute reported it was developing an antidote to organophosphate poisoning, with its development being – in 2017 – in a "pre-clinical trial stage". A rare public lecture announcement from 2018 shows that leading researchers from the institute were specializing on the effects of [organophosphate poisons](#) on the human body – and were tracking the international development of antidotes to those. (Poisons from the Novichok group fall into the larger group of organophosphates – which includes also certain pesticides).

The St. Petersburg institute is headed by Sergey Chepur, a 50-year old military doctor and expert in extreme toxicology, with a special interest in the [effects of organophosphate poisons on the human body](#). There are no open-source photographs of its director Sergey Chepur, and a rare public mention of his name is

contained in a September 2020 announcement of an [achievement award](#) for his contribution to military medicine.

Sergey Chepur and Unit 29155's

As a research entity serving the Ministry of Defense, the St. Petersburg's institute has a legitimate and plausible interest in developing antidotes for nerve agents including organophosphates. However, telecoms data we obtained shows that key researchers from the institute are integrated with Russia's military intelligence, including its black-operations unit (a clandestine sub-unit of GRU's Unit 29155) to a degree that cannot be explained away by purely defensive considerations. After initially stumbling upon the phone number of the institute's chairman, Sergey Chepur, in phone call records of Unit 29155's commander Maj. General Andrey Averyanov, the same number kept popping up in phone records of other members of the black-ops team, including the main suspects in the poisonings in Bulgaria and the UK. This prompted us to obtain Chepur's own phone records. They showed that he had repeated communication with at least four members of the clandestine team, and that the communications peaked just before undercover international operations undertaken by the GRU officers. Furthermore, the phone records contained metadata showing that Sergey Chepur visited the headquarters of the GRU during what appeared to be preparation meetings on the eve of the 2018 Salisbury operation.

In the period from November 2017 until early March 2018 – when the Skripal poisoning operation would have been planned by the GRU – Chepur spoke repeatedly with members of Unit 29155. He spoke or texted with the unit's commander, Andrey Averyanov, at least 65 times (the data about these interactions were purged from Averyanov's phone records but remained visible in Chepur's phone metadata). In this period he also communicated repeatedly with Maj. Gen. Denis Sergeev, also known under his cover identity of "Sergey Fedotov", who supervised both the Gebrev poisoning operation in 2015 and the 2018 Skripal poisoning. Chepur also spoke and texted many times with Alexander Mishkin (a.k.a. "Alexander Petrov"), one of the two suspects wanted by UK law enforcement over the Skripal poisonings, as well as with Col. Alexander Kovalchuk. Both Kovalchuk and Mishkin are part of the clandestine-operations GRU team and are medical doctors who graduated from the Kirov medical military academy in St. Petersburg. Alexander Kovalchuk did not travel to the United Kingdom during the Salisbury mission, but remained at the GRU headquarters during the three days of the operation which extended into the weekend.

Phone records for 2017 and 2018 show that Sergey Chepur contacted Alexander Mishkin for the first time three months before the Skripal poisoning, on the December 30, 2017. The



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very next day, Mishkin, traveling under the false identity of “Alexander Petrov,” took a flight from Russia to Switzerland, his travel data shows. On the day Mishkin left for Geneva, Col. Anatoly Chepiga – a.k.a “Ruslan Boshirov,” the second suspect in the Skripal poisonings – arrived back from Geneva to Moscow. During the period from Christmas 2017 until the end of February 2018, at least five members of unit 29155 traveled to Switzerland on a staggered schedule, usually with at least two undercover officers being in the country at any given time. The last member of the team departed from Geneva to Moscow on March 1, 2018, the same day on which Sergeev, Mishkin and Chepiga bought tickets for their flight to London the next day.

Bellingcat has [previously reported](#) on the relevance of Switzerland as a frequently visited location by unit 29155 and has hypothesized that the Skripal attack may have been prepared there, or that alternatively the GRU may have expected Sergei Skripal to travel to Switzerland during the holiday period. The calls between Chepur and Mishkin in the immediate run-up to the “New Year trips” corroborate our earlier hypothesis. It is unlikely that the relatively small GRU elite team would have had the capacity to work on two separate operations in such a small stretch of time.

Immediately following Mishkin’s return from Switzerland on January 12, 2018, Sergey Chepur had several calls with Mishkin and his



boss Andrey Averyanov, on January 13, 14, 17 and 18. A month before the Salisbury operation, on February 2 and 3, 2018, Chepur was contacted for the first time by Denis Sergeev. Sergeev, as we [previously reported](#), oversaw the poisoning mission from a London hotel room, where he kept continuous communication with a burner phone number in Russia. On the evening of February 12, 2018, in the course of 17 minutes (from 20:59 to 21:16), Chepur contacted three GRU officers from the clandestine unit – Mishkin,

Sergeev and Kovalchuk.

On 18 January, Chepur took a one-day trip to Moscow and spent the day at the GRU headquarters. Metadata from Mishkin, Sergeev and Kovalchuk’s phone show they were at the same location at the same time. The previous day Denis Sergeev had returned from Geneva where he had spent a week.

Chepur also had a vast number of interactions with the GRU team on the February 23, 2018. In Russia, this date is celebrated as Defender of the Fatherland day and it is customary for the military to send celebratory messages to each other. However, Chepur’s communication with the GRU team members stand out from the rest as they extend late into the evening, ending with a midnight (23:59) conversation with Alexander Kovalchuk. The number of interactions and the late-night exchanges suggest they were likely linked to the planning of the Skripal operation which was to take place just a week later.

Crucially, on February 27, 2018, just three days before the GRU trio departed for London, Chepur flew to Moscow on a one-day trip. Upon arrival in Moscow, he communicated with several GRU officers as well as with members of another research institute, SC Signal. Afterwards, he headed for the headquarters of the GRU where he spent several hours. Sergeev, Mishkin and Kovalchuk were also present at the GRU headquarters at the same time.

Following his three hour stay there, Chepur made two further phone calls to a key researcher from SC Signal. Chepur then moved to the territory of 27th Military Scientific Center at Baumanskaya St. During this visit, which lasted just over an hour, he had several further calls with one of SC Signal’s lead scientists and organophosphates specialists, Victor Taranchenko.

Our hypothesis is that during this day – February 27, 2018 – final preparations for the upcoming assassination mission in Salisbury were made in Moscow, including for the delivery of the poison and the tools for its applicators, to the GRU black-ops unit.

SC Signal: From Novichok to Sports Drinks

A key part of Russia’s official chemical weapons program prior to its termination was conducted by the 33rd Central Scientific-Research Institute of the Ministry of Defense. This institute, based in the formerly closed military town Shikhany-2 near Saratov, was the R&D base for development of a particularly powerful strand of organophosphate nerve agents



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commonly referred to as “Novichoks.” Another military institute that had an ancillary role in the development and testing of nerve agents was the 27th Scientific Center (which was briefly incorporated into the 33rd Center); this institute oversees one of the two Russian chemical-analytical labs accredited by the OPCW.

In analyzing Sergey Chepur’s call metadata, we identified a correlation between his calls and visits with GRU’s unit 29155, and calls with several researchers who had formerly worked for the 27th Scientific Center. These included the former chairman of the center – Artur Zhiron, as well as his former colleagues Andrey Antokhin and Victor Taranchenko. Chepur spoke with Artur Jirov on 11, 18 and 30 January 2018, on one of the days – the 18 – not long after a phone call to Alexander Mishkin. However, the most notable correlation is with Chepur’s communication with Viktor Taranchenko. Taranchenko was the first person Chepur called once he landed in Moscow on February 27 and just before he headed to the GRU headquarters. Once he was at the GRU and presumably during the planning meeting for the upcoming Salisbury operation, the two exchanged several text messages.

While still working at the 27th Scientific Center, Taranchenko and his colleague Antokhin had specialized in research of cholinesterase inhibitors, a broad class to which the Novichok and other [powerful nerve agents belong](#). Artur Zhiron, on the other hand, had specialized in research of nano-encapsulation: an innovative technique permitting the embedding of chemical compounds into a cell-like membrane-covered structure made of other compounds. This technique appeared to be a promising solution to the necessity to delay the onset of the effects of certain pharmaceuticals.

Taranchenko, like Antokhin and several other key researchers from the 27th Scientific Center, had followed their former boss in 2010 when he left the Center to become the founding CEO of a new scientific research center created through a [presidential decree](#), the generically named Scientific Center “Signal.” SC Signal is incorporated into the structure of Russia’s Export Control Agency, and its official function is to ensure technical and scientific control over the exports of Russian materials, including “chemicals and technologies that can be used in the [manufacturing of chemical weapons](#)”

SC Signal and the St. Petersburg experimental-medicine institute work on two publicly known projects, which in theory could explain the interaction between Sergey Chepur and the Signal researchers. However, the correlation between the calls with SC Signal and members of Unit 29155, as well as a visit by Chepur to one of the addresses of SC Signal on January 31, 2018, following which he continued to the GRU headquarters, suggest that the contacts between Chepur and the SC Signal are likely linked to the planning of the Salisbury operation.



One of the labs of SC Signal is located at Natatinskaya 16 in Moscow. The same address houses one of Russia’s military institutes tasked with the destruction of Russia’s chemical weapons arsenal.



According to several experts contacted by our team, the technique of nano-encapsulation – which appears to be the area of specialization of many of the researchers working at SC Signal – may be successfully applied in the application of organophosphate nerve agents such as the Novichoks. Through this method, experts say, three effects might be achieved that would improve the efficiency and ease of application of the poison. First, nano-encapsulation could delay the onset of the poison by several hours, which may be desirable in clandestine operations. Second, it can improve the rate and speed of absorption through the target's skin. Third, it can provide an opportunity for masking the presence of the active ingredients of Novichok, through the (overwhelming) presence in the victim's body of chemical compounds from the cell's "membrane" – which can be a different, decoy poisonous substance. Notably, both in the cases of the poisoning of Emilian Gebrev in 2015, and in the case of Navalny, presence of other, non-Novichok – and much less dangerous poisons – in the targets' blood were reported.

When approached by our team to comment on the possible link between the SC Signal and the Ministry of Defense's continued program for development of Novichok, the institute's chairman Artur Zhironov hung up the telephone after hearing the question and without uttering a word. Reached by telephone and asked about his possible involvement in the development of organophosphate poisons, Mr. Taranchenko denied and said he was not even an expert in organophosphates – which appears to be contradicted by his body of published research.

Confronted by phone about his frequent interactions with members of GRU's Unit 29155, Mr. Sergey Chepur said he had never spoken to any of Alexander Mishkin, Denis Sergeev, or Andrey Averyanov. He also appeared to clearly remember that he did not visit the GRU headquarters on February 27, 2018. Before hanging up, he advised us to "stop lying to everyone including to yourselves".

New Information on Syria's Chemical Weapons Program

Source: <http://www.homelandsecuritynewswire.com/dr20201026-new-information-on-syria-s-chemical-weapons-program>

Oct 26 – After two years of investigations, the [Open Society Justice Initiative](#) and the human rights group Syrian Archive have compiled the most comprehensive investigative report to date on Syria's Scientific Studies and Research Centre (SSRC), the entity at the heart of Syria's chemical weapons program. The groups submitted the report to the Organization for the Prohibition of Chemical Weapons' (OPCW) Investigation and Identification Team, the UN investigative body—the Independent Impartial and Independent Mechanism (IIIM)—mandated to examine war crimes in Syria, France's war crimes prosecutor, the war crimes unit of the office of Germany's public prosecutor, and the U.S. Department of Justice on Monday.

The report contains new information on how the Syrian government orchestrated attacks using sarin, a banned nerve agent whose use is considered a war crime. In addition, it includes information obtained from government defectors that sheds new light on Syria's attempt to hide chemical weapons-related materials from the OPCW by transferring them from SSRC facilities to a Syrian army facility in 2013. The report also provides investigative leads regarding locations where Syria developed and produced the chemical munitions used in the deadly 2017 attacks on Ltamenah.

In July, the OPCW gave the Syrian government a 90-day deadline to declare the facilities where the chemical weapons, including precursors, munitions, and devices, used in the 2017 Ltamenah attacks were developed, produced, stockpiled, and operationally stored for delivery. It also requested that Syria declare all chemical weapons currently in its possession, as well as chemical weapons production facilities and other related facilities. On 14 October, the OPCW's Director General [reported](#) that Syria had not complied with these requests and with its obligations under the Chemical Weapons Convention.

"Our research shows that Syria maintains a robust chemical weapons program," said Steve Kostas, a senior legal officer with the Justice Initiative. "OPCW member states must insist on accountability for Syria's continued non-compliance with the Chemical Weapons Convention, and they should call for a strengthening of efforts to hold perpetrators criminally responsible."

"All perpetrators of chemical weapons attacks in Syria should eventually face criminal prosecution," added Hadi Al Khatib, founder of Syrian Archive. "Whether it be through the legal principle of universal jurisdiction, an international tribunal, or another mechanism, war criminals must be held accountable."

[More than 200 chemical weapons attacks](#) have taken place over the course of the Syrian civil war, most of which occurred after the Syrian government's notorious 2013 sarin bomb attacks on opposition areas of the Damascus suburbs, which killed an estimated 1,300 people. Over the course of the Syrian war, chemical weapons have killed thousands of civilians, including many children, and many more have suffered long-term disabilities and trauma.

During a meeting that will take place from 30 November to 4 December, the 193 members of the OPCW Conference of the States Parties will debate consequences for Syria's non-compliance with the Chemical Weapons Convention. The Conference of the States Parties



has the power to recommend collective measures that states can take against the Syrian government and to refer the matter to the UN General Assembly.

Russian labs are caught making illegal chemical weapons. Will Trump finally respond?



Source: <http://thewashingtonpost.newspaperdirect.com/epaper/viewer.aspx>

Oct 29 – It was outrageous enough that a deadly nerve agent was used in an assassination attempt against Russian opposition leader Alexei Navalny, who survived. But the story is not over. Now, a group of news outlets has exposed what they describe as clandestine Russian organizations carrying out illegal chemical weapons development concealed as civilian research.

If these reports are true, they add a major dimension of concern to the attempted killings of Mr. Navalny in August and former military intelligence officer Sergei Skripal and his daughter in March 2018 in Salisbury, England. The Chemical Weapons Convention prohibits the development, production, acquisition, stockpiling, retention, transfer or use of chemical weapons. President Vladimir Putin says Russia has strictly adhered to its commitments under the treaty, but these reports suggest otherwise.

The reports are by the open-source investigations outfit Bellingcat; the Insider, a Russian news organization; Germany's Der Spiegel; and the Russian service of Radio Free Europe/radio Liberty. They found cellphone and text message logs that point to previously unknown involvement of two organizations and several scientists in the use of Novichok, a class of nerve agents created by the Soviet Union in the last years of the Cold War, against the Skripals. The news organizations reported that the **St. Petersburg State Institute for Experimental Military Medicine of the Ministry of Defense, as well as the Scientific Center Signal, had taken the lead in weaponizing Novichok agents.** Neither of these two organizations was cited in the recent European Union and British sanctions against Russia in response to the attack on Mr. Navalny.

The news organizations say the two research groups closely coordinated with a black-operations unit of the GRU, Russia's military intelligence, that carried out the poisoning attempt on the Skripals. They report that **Scientific Center Signal may have helped reformulate the Novichok agents to improve the rate and speed of absorption of the poison, as well as make it easier to deliver clandestinely.** The news reports reinforce a conclusion made in 2018 by Mark Sedwill, then the British national security adviser, who said after the Skripal attempt that Russia had started a program to "test means of delivering chemical warfare agents and to train personnel from special units" in their use, and that Russia subsequently investigated "ways of delivering nerve agents, including by application to door handles."

While the Chemical Weapons Convention has allowances for developing antidotes and defenses against chemical weapons, actually producing and using Novichok to poison the Skripals and Mr. Navalny are treaty violations. Recently, the European Union and Britain acted, but the Trump administration remains strangely silent about sanctions in response to the Navalny attack. Bipartisan groups of lawmakers in the House and Senate are urging a tougher response. **Both the E.U. and the United States should investigate the newly identified research organizations.** When the states parties to the treaty meet Nov. 30 to Dec. 4, they should consider a strong response.

Azerbaijan – Armenia conflict

Shushan Stepanyan, Press secretary of the Minister of Defence of Armenia

Oct 31 – The Azerbaijani forces indiscriminately used prohibited phosphorous munitions containing elements of chemical weapons in the Artsakh-Azerbaijani conflict zone, which is a gross violation of IHL, Customary Law, GCs, and relevant UN conventions and docs and constitutes war crimes.



Drug and Biologic Essential Medicines, Medical Countermeasures, and Critical Inputs – Chemical

Source: <https://www.fda.gov/media/143406/download>

Drug Category: Chemical Threat MCMs			
Atropine AI	IM	API and Autoinjector	x
Diazepam	IM or IV	API only	x
Dual chamber atropine/pralidoxime AI - See Antidote Treatment Nerve Agent Autoinjector (ATNAA - DoD) and DuoDote (civilian)	IM	APIs and Autoinjector	x
Hydroxocobalamin	IV	API only	x
Naloxone HCl AI	IM	API and Autoinjector	x
Pralidoxime chloride & AI	IM or IV	API and Autoinjector	x
Pyridostigmine bromide	oral (30 mg)	API only	x
Sodium nitrite	IV	API only	x
Sodium thiosulfate	IV	API only	x

The use of VX as a terrorist agent: action by Aum Shinrikyo of Japan and the death of Kim Jong-Nam in Malaysia: four case studies

By Anthony T. Tu

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Source: <https://www.tandfonline.com/doi/full/10.1080/23779497.2020.1801352>



The Aum Shinrikyo religious cult in Japan injured two people and assassinated another person in Osaka in 1994 using VX, a chemical nerve agent (Ivarsson et al., 1992; Smithson, 2000; Tu, 2002). This was the first case of murder using VX. In Kuala Lumpur, Malaysia in 2017, Kim Jong-Nam, one of North Korea's ruling family members, also was assassinated using VX. Although the VX in this case was not made by Aum Shinrikyo, the two incidents have similarities which are reviewed in this article. VX is a chemical nerve agent, and similar chemical agents have been used to injure or kill political opponents, as has been described in various articles (Groll, 2018; Schmidt, 2018).

I was permitted by the Japanese Government to meet Tomomasa Nakagawa, MD and interviewed him 15 times. He was born on 25 October 1962 and executed on 6 July 2018. He entered the Kyoto Prefectural University of Medicine in 1982. After his graduation he worked as a medical doctor at a hospital. In 1988 he joined the organisation of Aum Shinrikyo and soon became the confidant of Asahara. He was involved in killing of a lawyer Mr. Tsutsumi Sakamoto and his family. He was also involved in making sarin and VX and indicted for 25 murders.

In our recent letter to the Editor in *Forensic Toxicology*, we made a preliminary examination of the possibility that VX was used to assassination of Kim Jong-Nam (Nakagawa & Tu, 2018). In this paper, we focus on the chemistries used by Aum Shinrikyo and by North Korea to make VX.

Background

Aum Shinrikyo was a religious group in Japan, headed by Shoko Asahara (formerly named Chizuo Matsumoto) who wanted to overthrow the current Japanese Government and established new Government headed by Aum Shinrikyo. In 1984 Aum Shinrikyo was a very small group, with only 15 people. In 1989 the Tokyo Metropolitan Government granted Asahara permission to register Aum Shinrikyo as a religious corporation, which meant that the government would not be allowed to investigate its religious activities or doctrine. There are several well-documented reports describing the organisation, growth and activities of Aum Shinrikyo (Danzig & Zachary, 2012; Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo Senate Government Affairs Permanent Subcommittee on Investigations, 1995).

This was a turning point for Asahara's organisation. It expanded at an astonishing pace to become a big organisation; in early 1990 Aum Shinrikyo's membership swelled to 10,000 in Japan and 30,000 in Russia Tu, (2017). With the growth, Aum Shinrikyo needed funds to maintain the organisation. They used various means to collect funds, including activities



unrelated to religious activity. One major source of income was property donations by members in exchange of lifetime support for the donating member. This was one reason why Aum Shinrikyo could not tolerate members who were disillusioned in the organisation and wanted to leave, and it was the main reason for killing members who wanted to leave (Danzig & Zachary, 2012; Smithson, 2000; Tu, 2002, 2017).

One characteristic of Aum Shinrikyo was they had many highly educated members. Mr. Masami Tsuchiya had a Masters degree in organic chemistry. He had studied organic chemistry in a doctoral program at Tsukuba University, but he did not complete the degree because he joined Aum Shinrikyo. Tsuchiya became a leader of their chemical weapons program. It was fortunate for Aum Shinrikyo to have Tsuchiya because he not only made sarin and VX, but he also made all kinds of chemical weapons, explosives, and narcotics. Asahara's ambitions went even further. He wanted to start a war between the superpowers that would result in Armageddon. Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo Senate Government Affairs Permanent Subcommittee on Investigations (1995) and Mowatt-Larssen (2009). For this purpose, they secretly collected the weapons necessary to carry out the plan. They collected and manufactured conventional weapons, such as the manufacture of AK47 rifles and purchased a helicopter from Russia. Aum Shinrikyo is infamous for their attacks on the Tokyo subway and Matsumoto City using sarin, a nerve agent used in chemical weapons. By the time of Tokyo subway sarin attack in 20 March 1995, Asahara also was negotiating to purchase tanks (Aum Shinrikyo death cult made, 2018; Danzig et al., 2012; Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo Senate Government Affairs Permanent Subcommittee on Investigations, 1995; Tu, 2017).

Several members of Aum Shinrikyo were murdered because they wanted to leave the organisation or because they were disillusioned with the cult's teaching. As noted, Aum Shinrikyo could not tolerate criticism or members leaving because of how the organisation was funded, so they retaliated by attacking and injuring or killing dissenters. For example, in June 1994, Aum Shinrikyo did not feel they could get a favourable judgement in a court dispute in Matsumoto with various landowners, so they tried to kill the judges by spraying parts of the city with freshly made sarin. This is often referred to as the Matsumoto Sarin incident. In December 1994, Aum Shinrikyo in Osaka killed Mr. Takahito Hamaguchi because they thought Hamaguchi was a police spy who had infiltrated into their organisation. The details of injury and murder will be mentioned in this personal account in more detail later.

In addition to conventional weapons, the cult prepared biological weapons and sprayed botulinum and anthrax toxins, but these sprays were not toxic and their use of biological weapons was a failure. After that failure, Aum Shinrikyo switched to chemical weapons and selected sarin as their main tool. They made and tested the potency of their manufactured sarin. On 27 June 1994, they sprayed sarin in Matsumoto City causing seven deaths and 500 injuries. As mentioned before, they wanted to kill judges in Matsumoto City because they felt they could not get the court judgement they wanted.

In September 1994, I helped Japanese police investigating the Matsumoto Sarin incident and suggested they could detect sarin degradation products from the soil. The actual analytical method was supplied to me by the US Army. The Japanese police followed my suggestion and detected methylphosphonic acid, a degradation product of sarin. On 1 January 1995, the Yomiuri Daily published an article that the Japanese Police found organophosphates from soil samples in Kamikuishiki village, west of Tokyo where the Aum Shinrikyo had a facility (Detection of sarin residues in Kamikuishiki village, 1995). Thus, using scientific evidence, the police were able to link Aum Shinrikyo to making sarin.

(Personal Note: In 1994, the police had found the toxic agent released in Matsumoto City to be sarin but did not know who was making sarin and where sarin was manufactured. Eventually, the Japanese police analyzed the soil sample near the factory used by Aum Shinrikyo to make about 70 tons of sarin. They also found the methyl phosphonic acid from soil samples near the 7th Satyan and thus got the required scientific evidence that Aum Shinrikyo was making sarin. The Japanese Emperor awarded me The Order of the Rising Sun in 2009 for my services helping with the Japanese police. (CSU professor gets imperial medal for work on solving Japanese sarin-gas attacks, 2009)

After the news report, Asahara thought the Japanese police would raid Aum Shinrikyo's facility, but that raid did not occur. Asahara thought that Japanese police were too busy helping in the Kobe earthquake, the magnitude 6.9 earthquake which struck on 17 January 1995. Asahara then decided to create a big disaster in Tokyo so that Japanese police would not pay attention to Aum Shinrikyo. On 20 March 1995, they struck the Tokyo subway with sarin, causing 13 deaths and 6,500 injuries (Tu, 2007, 2017, 2002). After the Tokyo subway sarin attack, many criminals of Aum Shinrikyo's members were arrested and prosecuted. It took a long time to finish all trials of their members, which started in 1996 and lasted until 2018.

With the success of sarin in 1994, Aum Shinrikyo decided to manufacture VX, the most powerful nerve gas, in quantity. Tsuchiya synthesised the VX. They used it to kill a person in Osaka on 12 December 1994. This was not known to be a murder until 1995 and Akira Yamagata who injected VX to the victim turned himself to the Police authorities (The Asahara Trial: Aum member explains VX attack, 1999). He was sentenced to 20 years but was spared from execution.



The Japanese government approved only two people to interview Aum Shinrikyo's death row inmates. The first was Dr. Richard Danzig, the former secretary of the Navy during the Clinton administration and Chairman for the New American Security, a think tank for anti-terrorism and national security in Washington DC (Danzig & Zachary, 2012). Dr. Danzig was examining why Aum Shinrikyo had made such a big terrorist attack. I was the other approved person, as a result of my work with the Japanese government in identifying sarin in soil and proving that the Aum Shinrikyo cult had manufactured the sarin used in both the Matsumoto and Tokyo attacks. As a measure of their thanks, they approved me to meet Nakagawa.

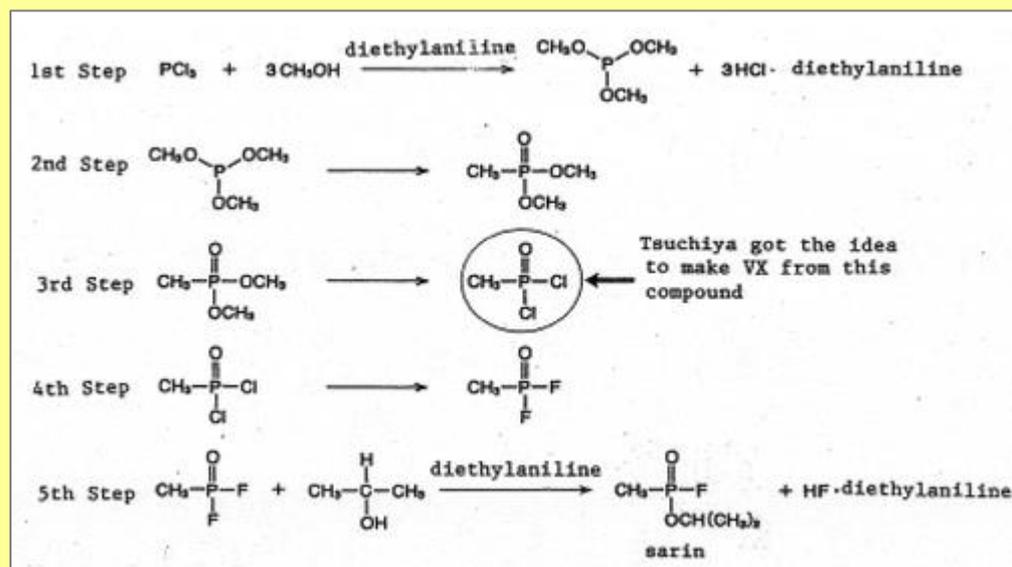
Chemistry of VX

VX is a powerful nerve agent first developed by British scientists in the course of insecticide synthesis in 1952 and the compound, too toxic for agricultural use, was given to the US for military development [Robinson, 1971]. The US continued to develop VX and its use as a nerve agent in 1960s (Ivarsson et al., 1992; Robinson, 1971; Smithson, 2000; Tu, 2002).

The chemical name of VX is ethyl (2-[bis(propan-2-yl) amino]ethyl)sulfanyl (methyl)phosphinate and the International Union of Pure and Applied Chemistry, IUPAC, name for VX is N-[2-[ethoxy(methyl)phosphoryl]sulfanylethyl]-N-propan-2-ylpropan-2-amine (IUPAC name at, 2020).

In addition to sarin nerve gas, Aum Shinrikyo also explored other nerve agents. They knew VX was the most powerful nerve agent and they were afraid that in making it, they might injure or kill themselves (Tu, 2007, 2002, 2018). This was the reason they did not make VX in large quantities in the beginning. However, later Aum Shinrikyo decided to make their own VX. They searched literature of VX synthesis but could not find the reference for synthesis, so they developed a synthetic method from the chemical structure of VX. They also referred to several review articles I had written (Tu, 1994a, 1994b). In these review articles, VX is mentioned only briefly to avoid having the information misused. But Tsuchiya looked at these reactions and was able to make VX. (These were the same articles the Japanese police had read before they asked me how to detect sarin in soil.)

In late 1994, during the sarin synthesis, Tsuchiya had made and used dichloro-methylphosphonic acid; this same compound can be



used in the synthesis of VX. In our discussions, Nakagawa confirmed that this was the synthesis Tsuchiya used for sarin and VX. Figure 1 shows the reaction schemes Tsuchiya used for synthesising sarin and VX.

Figure 1. A schematic showing the synthesis scheme Tsuchiya used to make Sarin. In the third step dichloro-methyl phosphonic acid was produced so Tsuchiya used this compound as the starting material for VX synthesis.

According to Nakagawa, at first Tsuchiya made VX-HCl and tried it

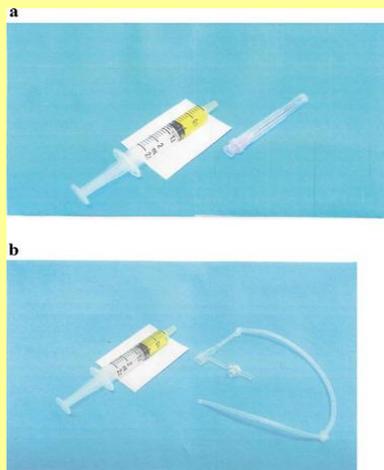
on someone and found there was no toxic action. But from mass spectra analysis he knew he had made VX (Nakagawa, 2018; Tu, 2017). He then made salt free VX to use.

Injury of two people in Japan

The first VX victim to be injured was Mr. Noboru Mizuno. He was attacked on December 2 of 1994 and the second victim was Mr. Hiroyuki Nagaoka on 4 January 1995. Both victims survived but they were in hospitals for several weeks. In both cases VX was delivered to victim's neck from the syringe drop by drop, (see Figure 2) and the VX penetrated into their bodies through the skin. In both cases the victims felt their surroundings become dark because of the shrinkage of their pupils (Inoue & Miyuki, 1995). Neither the victims nor the medical doctors providing treatments knew the victims were attacked with VX. Only after Aum Shinrikyo's members were arrested and confessed did the police know that VX was used.

Figure 2 shows the syringes used by Aum Shinrikyo for applying VX to these two victims. Nakagawa gave me these photos. I assume he took these photos before his arrest for the

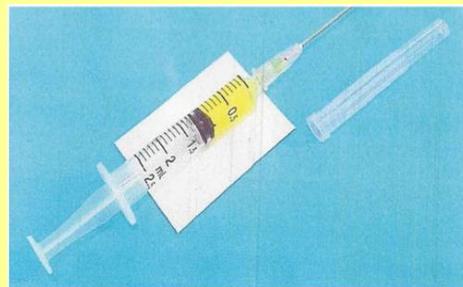




Tokyo Subway attacks. Nakagawa shared additional information during the interviews that the solution was coloured so that it would show better.

Figure 2. Syringe and tube used to injure two victims. The photographs were given to Tu by Nakagawa. Figure 2(a) shows the syringe used on Noboru Mizuno on 2 December 1994. Figure 2(b) shows the syringe used on Hiroyuki Nagaoka on 4 January 1995. a. Syringe used on Mizuno. b. Syringe used on Nagaoka.

Figure 3. Is a photo of the syringe used to murder Hamaguchi. The photograph was given to Tu by Nakagawa.



Murder with VX in Osaka, Japan

Hamaguchi was murdered in Osaka, Japan on 12 December 1994 after being misidentified as a Japanese police spy who penetrated the Aum Shinrikyo organisation. He was murdered with VX by injection; the needle was not removed from the syringe during the attack (Figure 3). He was the first known person intentionally killed with VX

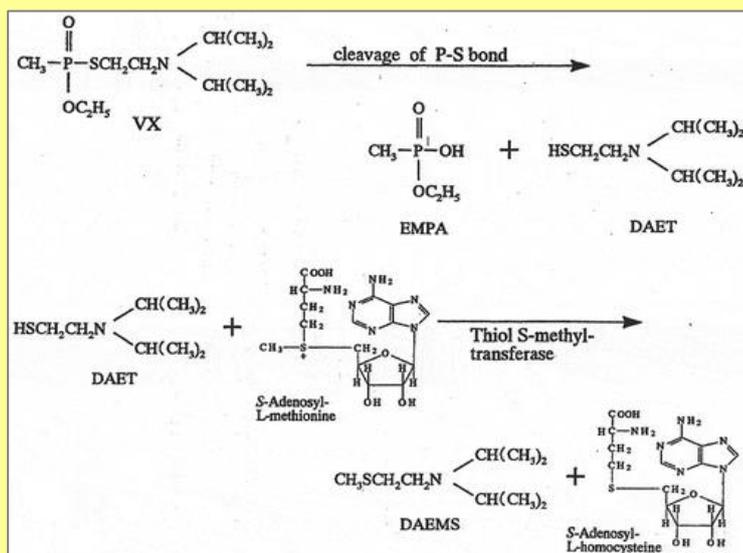
In our discussions, Nakagawa described how he killed Hamaguchi. He said six people, including himself, went to Osaka. One person was the lookout so that nobody would see their actions. The remaining five people grabbed Hamaguchi. One of the cult members, Akira Yamagata, directly injected VX into the victim using the syringe (Tokyo District Court Judgment of Trial Chizuo Matsumoto, 2004). During Hamaguchi's murder, the victim resisted hard and Nakagawa did not believe the syringe went into the vein; instead, it remained stuck in his neck. So, I assume it was more like an intra-muscular injection rather than directly into the blood (Danger of VX, Tokyo District Court, 2015; Trial of Katsuya Takahashi, Tokyo District Court, 2015). Because Yamagata confessed to the act before Japanese police knew the complete case, he was sentenced to life in prison instead of receiving a death sentence.

Nakagawa also helped Tsuchiya with the VX synthesis, in addition to being an active participant in Hamaguchi's murder. They were both sentenced to death for using VX to murder, as well for the murders in the Tokyo subway sarin terrorism incident. Nakagawa was executed on 6 July 2018 for murder of 25 people.

Detection of VX in Japan

Hamaguchi was killed 12 December 1994, but the Japanese Police did not consider it a murder case until after the Tokyo subway sarin attack on 20 March 1995. After this terrorism case, Japanese police arrested many of Aum Shinrikyo's members, including Akira Yamagata, who confessed that he injected Hamaguchi with VX (Trial of Katsuya Takahashi, Tokyo District Court, 2015). The Osaka Police Criminal Laboratory had kept Hamaguchi's blood samples and the metabolite of VX was found in those samples, after the analysis of the blood (Danger of VX, Tokyo District Court, 2015). The metabolism of VX has been described in Figure 4 (Tsuchihashi et al., 2000). The presence of these metabolites proved Hamaguchi was indeed murdered by the injection of VX (Trial of Katsuya Takahashi, Tokyo District Court, 2015).

Figure 4. A schematic of the metabolism of VX according to Tsuchihashi, et al (Tsuchihashi et al., 2000).



Murder of Kim Jong-Nam in Malaysia

On 13 February 2017 Kim Jong-Nam suddenly died in the Kuala Lumpur airport, in Malaysia. It shocked the world because Mr. Kim was the eldest son of the former North Korean leader Kim Jong-Il. Cameras from this busy international airport indicated that an Indonesian



woman scratched Kim's face briefly with her hand and a Vietnamese woman also scratched Mr. Kim's face right after the Indonesian's action (Kim Jong-Nam death: Unravelling the mystery, 2017).

At first no one knew who killed Kim, what poison was used or for what purpose. The surprising matter was that it took such a short time – the two women separately rubbed the face of Kim with two hands within only seven seconds. (Ex-AUM doctor helps with Malaysia's probe into Kim Jong Nam assassination, 2017) Malaysian police reported that VX was found in Kim's body.

On 22 February 2017, before the Malaysian police released the report that VX was found in Kim's body, Nakagawa sent me an email from the prison death row in Japan. Nakagawa said he thought that the toxic substance was most likely VX. He was a physician who had treated a VX intoxicated member of Aum Shinrikyo and he said he also accidentally contacted VX and was poisoned himself; he had unique and personal knowledge of VX. As a result, he concluded the toxic agent that killed Kim must be VX. This email was widely reported in the media in Japan (Ex-AUM doctor helps with Malaysia's probe into Kim Jong Nam assassination, 2017; Tu, 2017, 2018; U.S. toxicologist meets Aum cultist on death row to discuss Kim Jong Nam murder, 2017).

The chemical analysis by the Malaysian government indicated that Kim was indeed killed with VX (Nakagawa & Tu, 2018; Subramaniam, 2017) as Nakagawa had suggested. If the agent was VX, how could the women use their bare hands to apply the deadly poison? The VX must have been made from two components applied in sequence by the two women.

The binary system of VX invented by the US Army consisted of two parts, QL (isopropyl aminoethylmethyl phosphonite) and rhombic sulphur. QL's structure is shown in the simplified diagram in Figure 5. But the Malaysian police reported that QL was not found on the hand of either woman or on Kim.

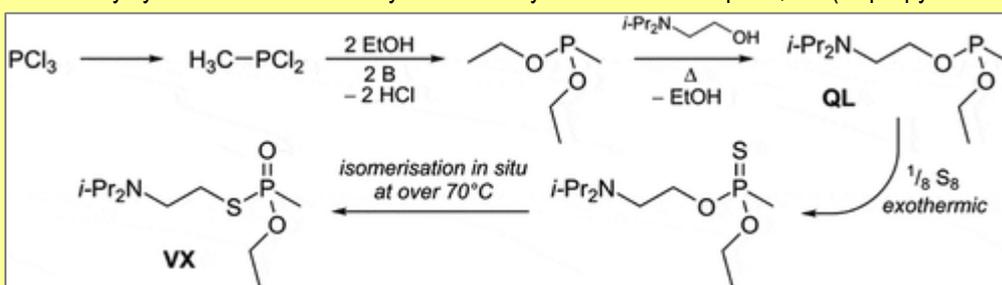


Figure 5. VX synthesis using QL.

The compounds obtained from the body and clothes of Kim were VX, 2-(diisopropylamino)ethyl chloride, 2-(diisopropylamino)ethanethiol, O-ethyl methylphosphonothioic acid, ethyl methylphosphonic acid, bis(2-diisopropylaminoethyl)sulphide, bis(2-diisopropylaminoethyl) disulphide and 2-(dimethylamino)ethanol (IUPAC name at, 2020). See Table 1. In our recent article (Nakagawa & Tu, 2018), only the names of the compounds found were listed. It is clearer to show their chemical structures, as is shown here in [See Table 1](#).

Detailed chemical analyses from Kim and the two women from Indonesia and Vietnam were performed. A significant finding was that the compounds detected from the three people were all different, highly suggestive of a binary system. Especially because the compounds found from the two women were drastically different. If it was not a binary system and simple VX was used, such as in the Aum Shinrikyo murder attempts, then the compounds found from the two women would be the same. This was not the actual finding, no QL was found.

This suggested that Kim was most likely killed by a binary system of VX (Nakagawa, 2018). The two components are relatively nontoxic (each woman had one of the compounds on her hands), but when they are combined, they could combine to form VX. However, the binary system used in Kuala Lumpur was different from that of the US Army; there was no QL in the Kuala Lumpur analyses.

The compound identified from the Indonesian (first) woman's shirt was ethyl methylphosphonic acid. The compounds obtained from the Vietnamese (second) woman's t-shirt and finger nails were VX, 2-(diisopropylamino)ethyl chloride, 2-(diisopropylamino)ethanethiol and bis(2-diisopropylaminoethyl) disulphide. [See Table 1](#).

From this evidence, we surmise that VX was formed on Kim's face after the second woman, the Vietnamese woman, rubbed his face with her palm. Kim complained that his eye hurt, suggesting that VX entered his system through his eyes. This would explain why Kim died within 20 minutes from the start of exposure to his face. At least some of the VX entered through the eye's mucous membranes.

Another question was why Kim was killed at the busy airport of Kuala Lumpur. The assassins might have wanted Kim to die after boarding an aeroplane. VX can penetrate the skin, but it is even faster when it enters the body through mucous membranes or soft tissue. The combined time for action by both women was several seconds, and Kim died 20 minutes later. The time from exposure to death depends on many factors, and we cannot pin it down to one specific reason. But if the VX did not get into Kim's eyes, perhaps he would have died after boarding the plane and perhaps the VX might have also affected other people on the plane.

According to the analysis by the Malaysian government (Subramaniam, 2017), two compounds, ethyl methylphosphonic acid and 2-(diisopropylamino)ethanethiol, may have



been used to produce VX on Mr. Kim's face. According to the US Army's synthesis of VX binary system, the temperature needs to be above 37°C (Adams, 0000). The temperature of the two ladies and Kim were 37°C. As stated, even though the synthesis used in the Kuala Lumpur attack and that used by the US Army are different binary reactions, it is reasonable to assume some kind of catalyst must be used to lower the activation energy. In the Kuala Lumpur case, a catalyst might have been used, but no analysis was made for its presence.

Conclusions

Our analysis of several case studies has shown that VX has been used as an assassination/murder weapon in four instances. In Japan, the Aum Shinrikyo cult used it to attempt to murder two people in December 1994 and January 1995 by dripping VX onto the necks of the victims. They successfully murdered a person in December 1994 via an injection of VX. In February 2017, in Malaysia, a member of the Kim family was assassinated by applying a binary form of VX onto the face and eyes of the victim. None of these cases used VX synthesised in the manner that it was made in the US Army's binary program. However, in both cases, the VX could have been synthesised using 2-(diisopropylamino)ethanethiol and ethyl methylphosphonic acid.

►► References are available at source's URL.

Anthony T. Tu obtained his BS from National Taiwan University, MS from University of Notre Dame, and PhD from Stanford University. He did postdoctoral work at Yale University and was Assistant Professor at Utah State University, Professor at Colorado State University and retired as Professor Emeritus since 1998. During sarin terrorism made by Aum Shinrikyo, he assisted Japanese Police by providing the analysis of sarin from soil. By finding methylphosphonic acid from the soil near the facility of sarin production the Japanese Government eventually cracked down Aum Shinrikyo's organization. For his contribution he was awarded a medal, The Order of the Rising Sun, Gold Rays with Neck Ribbon from the Japanese Emperor Akihito. He was permitted by Japanese Government to interview death row inmate, Dr. Tomomasa Nakagawa. Only two people were approved by the Japanese Government to meet death row inmates of Aum Shinrikyo. He interviewed Dr. Nakagawa 15 times to find the detail plan and internal decision of the cult organization. When Kim Jong-Nam was assassinated in Malaysia on Feb. 13, 2017 Dr. Nakagawa predicted VX was used. Dr. Nakagawa and I discussed VX murder cases in detail and I summarised the 4 cases of VX use to kill or injured human being. Judging from chemical analysis I thought Mr. Kim was killed by binary system of VX.

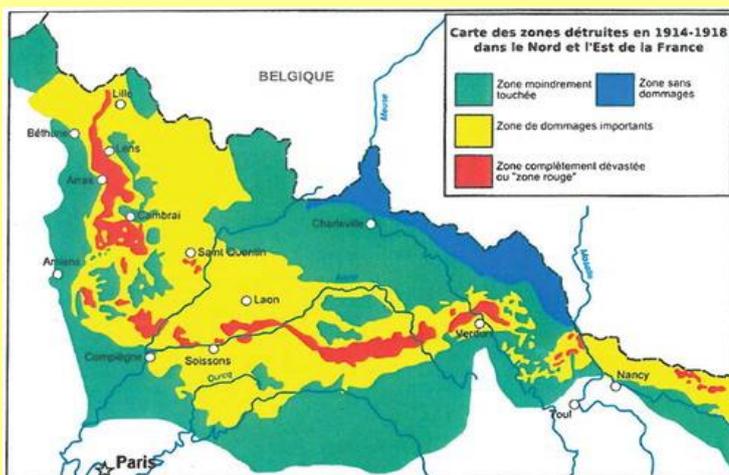
Environmental contamination with persistent cyclic mustard gas impurities and transformation products

By Katarzyna Chmielińska, Daniel Hubé, Tobias Bausinger, et al.

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ABSTRACT



The battlefield of Verdun has seen some of the heaviest shelling in the history of mankind. This site as well as clean-up facilities in Germany may constitute contamination hot-spots and point-sources with leaking to groundwater. This study collected existing toxicological and ecotoxicological data on mustard gas degradation products, together with physical – chemical properties of listed compounds.

France – Red Zone Verdun

It also provides quantities of these products measured in the groundwater of France, Germany



and the pore water of the Baltic Sea. We indicate a deficiency of information on the toxicity of 1-oxa-4,5-dithiepane and 1,2,5-trithiepane. In the groundwater of the German city of Munster 1-oxa-4,5-dithiepane was measured up to 250 µg/L, thus exceeding safe levels. Ecotoxicological studies classify this compound as toxic to aquatic organisms. 1,2,5-trithiepane is not a persistent compound. It was measured, however, in the groundwater at 1 µg/L level. This suggests that it could be formed from an active source of mustard gas. Considering the lack of toxicological data and the uncertainty about the amount of munition deposits, we suggest that research into the toxicity and exposure of, 1-oxa-4,5-dithiepane and 1,2,5-trithiepane is needed for sites of concern.

Chemical weapons, Ayatollah Khomeini and Islamic law

By Katariina Simonen

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1. Introduction

The Iran–Iraq War (1980–1988) began when Iraq invaded Iran on 22 September 1980. After Iran repelled the initial Iraqi attack and began a counterattack inside Iran, Iraq resorted to chemical weapons ('CW') in 1982 against Iranian troops and then continued to use them throughout the entire time-span of the war until 1988 (Zanders, 2001a). Yet, during the war, the Iranian leadership declared on several occasions that it would not retaliate in kind against Iraq's CW attacks. In fact, it has not been established that Iran used CW in any substantial way. Nevertheless, during the final stages of the war and in the years immediately following it, Iran had an active CW armament programme (Maneshi, 2015, p. 5; Zanders, 2001a). It should also be noted that prior to the entry into force of the Chemical Weapons Convention (CWC) in 1997, the development, production and stockpiling of CW was not prohibited under international law so the reasons for Iran's restraint with regard to the use of CW during the war must be sought elsewhere.

This article explores the role of religion in restraining Iran's CW policy during the Iran–Iraq war. During the war, the then guardian jurist Ayatollah Khomeini, as well as senior religious scholars, argued that CW were contrary to Islam, citing several principles relating to the means and methods of warfare (*jus in bello*). However, by the mid-1980s, the Government's attitude towards CW nuclear weapons ('NW') began to change, apparently with Ayatollah Khomeini's acquiescence (Hashmi, 2004, p. 332). Doctrinal changes were elaborated by Khomeini in order to accommodate this change in attitudes. Several senior scholars opposed these developments, calling the conduct of the war religiously unlawful (Giles, 2000, p. 83).

The effect of Islamic law on State CW policy in Iran is *sui generis* for two reasons. First, the religious argument became naturally included in political debates through Ayatollah Khomeini's work and the establishment of the *Islamic Republic* in 1979. Secondly, Iran's State religion is *Twelver Shi'ism*, which has a highly hierarchical, yet pluralistic, system of authority in the person of grand jurists (*marāji'i taqlīd*). It follows that the evaluation of Islamic law's effect on State CW policy needs to take account not only this multiplicity of authoritative interpreters but also their possibility to affect Government policies at any given time. It is also for these reasons that parallels between religion's effect on CW policy and Iran's policies on weapons of mass destruction in general need to be drawn with caution (Giles, 2000, p. 80).

The morality of weapons of mass destruction has not given rise to significant discussion on the part of Islamic ethicists, whose discourse has focused mainly on the legitimate grounds for war (*jus ad bellum*) (Hashmi, 2004, p. 321). This is also true of most western ethical analyses of Islamic law and weapons of mass destruction (particularly NW), as exemplified by the otherwise abundant literature on Iran's nuclear programme (Perspectives on the Iran Nuclear Deal, 2015). In addition, Iran constitutes a special case for any analysis, since, as already suggested above, the existence of a plurality of authorised interpreters of law means that Iran's position is bound to differ significantly from other mainstream Sunni Muslim countries. Moreover, this aspect is under-researched in the arms control context for two reasons: first, as evidenced by some western analysis of the current leader Ali Khamenei's stance on NW, the research has been strongly politicised (Butt, 2014; Porter, 2013). Second, an unhindered access to primary sources in Iran is not obvious and is, often, dictated by underlying policy motives. In sum, there is a need for objective, critical, academic research on Islamic law's effect on State policy on weapons of mass destruction, both in Iran and in other Islamic countries.

The article's scholarly input to existing literature stems from its contextual approach to Islamic law's potential for affecting CW policy in Iran. The contextual approach is inspired by the French Annalist school from between the two World Wars (Bloch, 1993, p. 70). According to this methodological approach, the political, legal, historical and cultural context should be included in the evaluation of different phenomena, without limits imposed by the scientific conventions of different branches of science (Kekkonen, 2013, p. 20). In fact, it is only through a complex analysis of religious, legal and political arguments, that one is able to evaluate the role of Islamic law and its effect on weapons of mass destruction policy – in a



historical context. As far as policy concerns go, the article discusses the role of religious argument in non-proliferation. It evidences the potential of religious imperatives to impact on policy on weapons of mass destruction. It also evidences the fact that religious imperatives do not operate in a vacuum. Their power to affect policy is defined by concrete power relations, which not only include Iranian internal settings but also the absence of any condemnation by the international community of Iraq's use of CW.

As to the transliteration of Arabic, the article follows the modified IJMES scheme.¹ To facilitate the reader's acquaintance with the key Islamic legal concepts, both an English version and an *italicised* Arabic version of these concepts will be laid out. For their part, names of the persons referenced are written in their English form in order to make the article more accessible to the western reader.

2. Iran as an international 'Citizen' in non-proliferation and disarmament

Irrespective of the type of regime in power, Iran has a long tradition of adhering to international treaties governing the conduct of war (Bucht et al., 2003, p. 9). Apart from Jordan (which took over British international obligations upon attaining independence in 1946), Iran is the only State in the Middle East to have signed all the global agreements that restrict the use of poison and poisoned weapons and biological and chemical modes of warfare (Bucht et al., 2003, p. 9). Iranian arms control commitments in the beginning of the Iran–Iraq War were as follows:

- The St. Petersburg Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight (signed on December 1868);²
- The signature and ratification of the Hague Convention 1899 (II)³ and the signature of the Hague Convention 1907 (IV).⁴ According to Article 4 of the Convention (IV) Respecting the Laws and Customs of War on Land (1907), the 1899 Convention (II) remains in force for those powers that have not ratified the 1907 Convention (IV) (Brown, 1915, pp. 232, 238). The articles relevant to CW warfare (Arts. 22 and 23) are identical in both conventions. Hence, the right of belligerents to adopt means of injuring the enemy is not unlimited, and the use of poison or poisoned weapons is especially forbidden;
- The Hague Declaration 1899 (IV, 2) concerning Asphyxiating Gases, whereby it abstained 'from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases';⁵
- 5 November 1929 the 1925 Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare (without any reservations).⁶ Iran has later expressed that it considers the Geneva Protocol a codification of an existing and operational norm (Bothe, 1973, p. 247). The Protocol does not, however, prohibit the development, production or possession of chemical weapons. It only bans the use of chemical and bacteriological (biological) weapons in war. Furthermore, many countries (including Iraq) signed the Protocol with reservations permitting them to use chemical weapons against countries that had not joined the Protocol or to respond in kind if attacked with chemical weapons.⁷ However, since the Protocol was binding on Iran, any CW use would have been a violation of the Protocol (Giles, 2000, p. 83); and
- On 10 April 1972 Iran signed the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction⁸ (BTWC) and ratified it on 22 August 1973.

In comparison, Iraq had adhered to the 1925 Geneva Protocol in 1931, with a reservation that it would respect the Protocol only in relations with those States which had signed and ratified the Protocol, or adhered to it, and that it did not consider itself bound by the Protocol vis-à-vis any enemy State whose armed forces or whose allies did not respect the Protocol. Notwithstanding this, it used CW extensively during the Iran–Iraq War. As far as biological warfare is concerned, Iraq had signed the BTWC in 1972 but nevertheless began pursuing biological warfare in the Iran–Iraq War, when it started to make tangible advances in offensive BW technology (Rissanen, 2003).

3. Iranian chemical warfare capability and some key statements

At the beginning of the Iran–Iraq War Iran did not possess either offensive or defensive chemical weapons capabilities (Zanders, 2001a). The Iranian forces were unprepared and had poor defensive capabilities. The first Iraqi CW attacks against Iran's human waves in 1982–1983 caught the Iranians with no protection. Iran's defensive preparedness continued to be insufficient for a considerable time. Towards the latter half of the war, Iranian preparedness improved greatly and concrete *defensive* measures were implemented (e.g. the Derakhsh -6 chemical anticontamination and anti-chemical bomb system) (ibid.).

The Iranian *offensive* preparation was directly linked to Iraq's continuous CW attacks. As Zanders notes, since a CW armament programme is complex and involves many phases (including R&D, setting up a production base, weaponisation, offensive and defensive doctrine development, establishment of logistics and operational support, training, protection and defence), Iran could not be expected to have developed an advanced chemical warfare



capability before the ceasefire in August 1988, unlike Iraq, which was known to have embarked on a CW armament programme in the 1970s (although there are earlier indications, too) (Zanders, 2001b, p. 3). Hence, between 1984 and 1987, Iran was in all likelihood unable to retaliate and when it may have acquired a militarily relevant capability by the end of 1987, the fortunes of war had turned against it, possibly leading to fears that Iraq might retaliate against Iranian cities. Zanders assesses that there was probably sporadic use, possibly of phosgene and mustard agent (Zanders, 2001b, p. 12). Hashmi states that by 1984, Iranian troops had begun using captured stocks of Iraqi chemicals against Iraqis but whether this reflected an official change of government policy is still unclear (Hashmi, 2004, p. 332). It was also during this period that Iran's attitude to NW began to change as well (Ibid., p. 343). When agreeing to the ceasefire in 1988 Iran stated that it did so because of its technological inability to retaliate in kind, its fear of Iraqi missile strikes against population centres with CW and the great impact of massive Iraqi CW use during battles on the Faw peninsula in 1986. Also, even if Iran was capable of significantly increasing its output of CW, both quantitatively and in terms of types of agents and delivery systems, it had no hope of dominating the escalation of the conflict. On the contrary, there was a fear that Iraq had chemical warheads for its ballistic missiles with which it might strike Tehran and other cities under its 'War on the Cities' –strategy (Ali, 2001, p. 52).

The Iranian Government's statements regarding the Iranian CW capability and its use were, however, somewhat divided, being influenced by the realities on the battlefield and possibly by sincere religious sentiment. In general, it may be said that official statements were highly conditional and referred to Iraq's continuing violations of international norms regarding chemical warfare and the unwillingness of the international community to uphold these norms. These statements were often accompanied by an expression of hope that Iran would never have to resort to chemical warfare. The majority of officials stressed deterrence rather than retaliation: in most cases the phrase 'has the capability' was used, together with the idea that retaliation by Iran was a matter of last resort and tied to Iraq repeating its crimes of CW use and the UN Security Council's inability to stop it (Zanders, 2001b, pp. 5, 6).

In fact, Iran's initial response to Iraq's CW attacks was diplomatic rather than military; it attempted sincerely to draw the international community's attention to what was going on in the vain hope that international condemnation would press Baghdad, as a signatory to the 1925 Geneva Protocol, to discontinue its attacks (Giles, 2000, p. 81). The weak international response to Iraqi violations, including the genocidal attack on the Kurdish village of Halabja on March 16, 1988, greatly disappointed Iran (Hashmi, 2004, p. 332). No international response was forthcoming, mostly owing to political allegiances that were contrary to Iran (Ali, 2001, pp. 48, 50). Iran felt the necessity to start considering additional military responses (Giles, 2000, p. 82).

At the beginning of the war, Ayatollah Khomeini and senior religious scholars cited several Islamic legal prohibitions against CW. In fact, Ayatollah Khomeini was adamant in labelling Saddam's use of CW as a crime, calling for people of the world not only to condemn Saddam's acts but also to condemn all types of weapons of mass destruction. An ample collection of speeches of Ayatollah Khomeini, *Sahifeh-ye Imam*, portrays clearly his reluctance about these types of weapons since they constituted a means of general destruction and oppression of peoples of the world (Karimi and Limba, 2008). The guiding Qur'anic principle 'Fight those who fight against you, but do not transgress limits, for God loves not the transgressors' (2: 190) was used to infer limits on whom could be attacked and which kind of weapons may be used in the process (Hashmi, 2004, p. 326). Discrimination in targeting, the non-use of poison, a prohibition on polluting the environment and a prohibition on causing unnecessary suffering were all part of the Islamic law on just warfare (Seyed Mohaddes, November 5, 2015; Bucht et al., 2003; p. 21). However, the realities of war took hold, and it was reported that Khomeini had come under increasing pressure from elements in the regular military, as well as the Iranian Revolutionary Guard Corps (IRGC), to authorise the use of CW (Giles, 2000, p. 83; with references therein). Hashmi adds that by 1987 Khomeini was also in ill health, and the extent to which he was still functioning as commander-in-chief of the Iranian military is uncertain (Hashmi, 2004, p. 332).

Nevertheless, the Iranian government was at odds as to what policy to follow on the question of CW. For instance, in December 1987, when presenting the Government's new annual budget to the Majlis, Prime Minister Mir Hussein Musavi announced that his country was producing sophisticated offensive CW. He added that Iran would nonetheless observe international law and not use CW unless it was forced to do so. A few days later he retracted the statement, declaring that: 'The Islamic Republic is capable of manufacturing chemical weapons and possesses the technology. But we will produce them only when Islam allows us and when we are compelled to do so' (Zanders, 2001b, p. 6). This statement and its rectification evidenced the on-going dispute between proponents and opponents of chemical warfare in the Government. In general, Zanders considers that the Government's statements of possession probably testified to the lack of significant CW capability, being a weak attempt to deter Iraq. In combination with the portrayal of Iran as the victim of gross violations of international law, the prime function of these statements was probably to force the international community through the United Nations Security Council to restrain Iraq in order to prevent an all-out chemical war (Zanders, 2001a).



Last, it is important to note that the continuation of the war after 1982 (when Iran's armed forces expelled Iraq out of most of the territory that it had occupied) was opposed by the, then, Mousavi Government. Prime Minister Mousavi had reportedly told Ayatollah Khomeini many times that his government was at breaking point owing to the high cost of the war (Sahimi, 2010). Sahimi refers in this regard to a specific letter, which is part of an exchange of correspondence in 1988 between Ayatollah Khomeini and Mohsen Rezaei, then the top commander of the IRGC. In this letter, which was revealed by Rafsanjani who was the commander-in-chief of the Iranian armed forces in 1988, Mousavi had indicated that his government was no longer able to fund the war. In a letter written by Khomeini, Rezaei is quoted as telling the Ayatollah about the number of weapons (incl. NW), soldiers and delivery systems necessary for offensive war activities. The Ayatollah responds that Mousavi's government has told him that it is impossible to continue the war and that, therefore, he has no choice but to end it and accept UN Security Council Resolution 598, which called for a ceasefire (ibid.).

Iranian statements regarding its *past* production programmes conclude that Iran had pilot-production scale facilities but no large-scale production facilities and produced relatively few munitions (Zanders, 2001a). Iran also produced Sulphur mustard in limited quantities whereas the production of hydrogen cyanide was unclear. According to Iran, it destroyed its CW production plants and its munitions after the War. Its declarations on past production capabilities were submitted to the Organisation for the Prohibition of Chemical Weapons (OPCW) and certified by them in 1999 (OPCW, 2000, p. 10, 13).

4. Contextual dimensions underlying Ayatollah Khomeini's view on CW

4.1. General introduction

In October 2014 investigative journalist Gareth Porter published an interesting analysis in *Foreign Policy* on Iran's internal decision-making on CW and the role played therein by the then supreme leader, Ayatollah Khomeini (Porter, 2014). Porter's main source was Mohsen Rafighdoost, who served as a minister of the IRGC throughout the eight-year war. Rafighdoost revealed that after a dramatic increase in Iraqi CW attacks in February and March 1984 when he was unable to secure the assistance of foreign governments, he had proposed to Khomeini that Iran should begin working on both NW and CW. In normal circumstances, the supreme leader would not interfere in the current affairs of the executive, unless there was a dispute or his verdict or edict was explicitly sought by one branch of government. In this case, the situation was far from normal, and the supreme leader's intervention was considered necessary. However, Rafighdoost was told in two separate meetings with the supreme leader that weapons of mass destruction were prohibited by Islam. According to Porter, Khomeini initially told Rafighdoost in 1984 that 'instead of producing chemical or biological weapons, we should produce defensive protection for our troops, like gas masks and atropine' (ibid., p. 3).

Iraqi chemical warfare was taken to a new level in late June 1987, when the Iranian civilian population was targeted for the first time by Iraqi aircraft, which bombed four residential areas of Sardasht, an ethnically Kurdish city in Iran, with what was believed to be sulphur mustard. Of the completely unprotected 12,000 inhabitants, 8000 were exposed and hundreds died. As popular fears of Iraqi attacks against more Iranian cities grew, Rafighdoost attempted to create an Iranian capability to produce sulphur mustard weapons. This CW programme produced chemical precursors for sulphur mustard and in September the manufacture of chemicals necessary to produce a weapon (sulphur mustard and nitrogen mustard) was started. However, these chemicals were never loaded into the various delivery systems, such as artillery shells, aerial bombs or rockets.

According to Porter, the supreme leader had not changed his stance on CW in 1987 despite the dangers to the civilian population: 'it doesn't matter whether it is on the battlefield or in cities; we are against this. It is *harām* [forbidden] to produce such weapons. You are only allowed to produce protection' (ibid., p. 4). Not only that, the supreme leader allegedly invoked Iran's claim to spiritual and moral superiority over the secular Iraqi regime, by asking, if Iran were to produce chemical weapons what would be the difference between him and Saddam. Lastly, Porter states that Rafighdoost had understood Khomeini's views as a *fatwā*, a decision by the guardian jurist, which was binding on the entire government.

There is some discrepancy between Porter's work and the short analysis above in Section 3 regarding the Islamic Republic's offensive CW policy and Khomeini's role therein. There is even a bigger problem with sources used as these are exclusively pro-Government sources, which fact only reflects on the difficulties of access to primary sources mentioned in the introduction. However, as such, Porter's article identifies exactly the questions one is to ask, when evaluating the role of Islamic law in restraining policy: first, who is authorised to interpret Islamic law in Iran, and, secondly, how can the religious argument affect Government policy?

4.2. Introduction to the guardianship of the Jurist (*vilāyat-i faqih*) – doctrine

The doctrine of the Guardianship of the Jurist forms the central axis of contemporary Shī'a political thought, espousing a guardianship-based political system, which relies upon a just and capable jurist (*faqih*) to assume the leadership in the absence of an infallible Imam (Vaezi, 2004). Over time there has been some ambiguity about the scope of the authority



that is delegated to the jurists. In his historical evaluation, Vaezi distinguishes two strands of thought in this regard: according to the first, the vicegerency of a *faqīh* is universal, whereas the second strand is a more cautious one, by virtue of which the *faqīh* is entrusted with some duties in addition to the authority to make a decree, to judge and to act as a guardian for a particular reason (Ibid.). The latter coincides with the early period of Shi'a jurisprudence (until the emergence of the Safavid dynasty during 1501–1722), when the Shi'a community existed as a minority without political power. Jurists remained silent on governance and political issues owing to the social and political circumstances of the time. This type of action is called *taqiyya*, which means self-protection through dissimulation. The universal doctrine is widely and overtly supported by later Imami jurists, who advocated the universal authority of a *faqīh* (Ibid.).

In the historical development of religious authority, the ideological victory of the Usuli school of jurisprudence (*fiqh*) towards the end of the eighteenth century led to the emergence of so-called grand jurists (*marāji'-i taqlīd*), such as Shaikh Murtaza Anṣari (d. 1865 A.D.) or Ayatollah Mirza Hasan Shirazi (d. 1895). These grand jurists acted as spiritual leaders of the community, and, especially since the times of Ayatollah Shirazi, they also possessed extended legal authority in the political sphere (Amanat, 1988, p. 121). The tenacity of religion as a major force throughout the modern history of Iran was remarkable as high-ranking jurists played an important role in the political life of Shi'i Iran, strongly resisting foreign economic and political influence, and collaborated with Iranian liberal forces to serve the cause of justice and constitutionalism and balanced monarchical absolutism in Iran (Avery, Hambly, & Melville, 1991, p. 732).

It was also typical of this type of non-institutionalised religious plurality of the Shi'i religious scholars (*'ulamā*) that their participation in the political affairs of the country was dependent on individual initiatives. This meant that the *'ulamā* consisted both of active scholars, calling for participation in the political affairs of the country and of scholars who preferred the more quietist path of teaching in religious schools without active political engagement, such as grand Ayatollah Abd al-Karim Ha'iri (d. 1936) and Aqa Husain Burujirdi (d. 1961), the latter being not only the person chiefly responsible for the teaching institution in Qum but also the supreme grand jurist, *marja'-i taqlīd*. However, the political setting in the Iran of the 1960s was such as to lead the religious scholars on a final collision course with the governing authority, the Shah, which led to the Islamic Revolution in 1979 and the institution of the governance of the jurist (*vilāyat-i faqīh*) (Ibid.).

4.3. From Vilāyat-i Faqīh to the absolute authority of the guardian jurist

The practical realisation of the universal authority is greatly due to Ayatollah Khomeini, who revived the works of Mulla Ahmad Naraqī (d. 1830). According to Naraqī, religious scholars (*'ulamā*) were authorised by the Imam's privilege, it being the right of the jurist to act as a successor to the Imam and to be vested with all the power of the Imam (Moussavi, 1996, p. 273). In 1944, Khomeini wrote *Kashf al-Asrār* (The Unveiling of Secrets), whose political component not only attacked the policies of the Shāh but also provides for the first steps towards governance of the jurist: the monarchy would be provisional 'as long as no better system can be established'; the monarch should be chosen by an assembly of properly qualified jurists and adhere to Islamic law (Khumeinī, 2009, p. 186).

In the early 1970, in his bid to overthrow the Shah from his position in exile, Ayatollah Khomeini started to argue only for the sole governance of qualified religious scholars, who should become more active participants in political life and not only isolate themselves in religious worship. According to Khomeini's book on the *Governance of the Jurist*, which is a compendium of his thirteen speeches delivered during his stay in Najaf from 21 January to 8 February 1970; qualifications for the ruler are derived directly from the nature and form of Islamic government: in addition to general qualifications such as intelligence and administrative ability, two other essential qualifications are: knowledge of the provisions and ordinances of Islam and justice, i.e. the ruler's excellence in beliefs and morals (Khumeinī, 2008; p. 41). The qualified *'ulamā* refers to the jurists (*fuqahā*) of whom many possess the qualities required of the ruler. Khomeini himself became the first ruling jurist of the newly founded Islamic Republic. Khomeini was also a grand jurist, *'marja'-i taqlīd*. The doctrine of *vilāyat* was crystallised in several articles of the new 1979 Constitution (Papan-Matin, 2013). The qualities and the attributes of the leader were defined as follows (Art. 5):

Art. 5: In the Islamic Republic of Iran, during the absence (*ghayba*) of his holiness, the Lord of Age, May God all mighty hasten his appearance, the sovereignty of the command [of God] and religious leadership of the community [of believers] is the responsibility of the jurisprudent who is just, pious, courageous, knowledgeable about his era (Mallat, 1993, p. 84),⁹ and capable administrator, and is recognised and accepted by the majority of people as leader

The qualifications of the leader or members of the Leadership Council are, as follows (Art. 109):



- (1) scholarly qualification and piety for issuing religious ruling (*fatwā*) and serving as the *marja'*;¹⁰
- (2) political and social insight, courage, power and sufficient administrative abilities for leadership.

It is interesting to observe that there is multiplicity in the *vilāyat* doctrine. Accordingly, there is no hierarchy ranking one jurist (*faqīh*) higher than another, or endowing one with more authority than another. The guardianship of the jurists during greater absence is a general designation, which means that no jurist (*faqīh*) is exclusively appointed as the guardian; all Imami jurists who are just and qualified in Islamic jurisprudence have the right to exercise the Imam's authority as his deputies (Vaezi, 2004). This multiplicity stems also from Usuli jurisprudence, according to which the jurist may not claim absolute authority for himself, since the result of rational judgement is never more than *zann* – a contestable expression of personal opinion so that jurists may pronounce different or contradictory rulings on the same matter. Hence, juristic disagreement (*ikhtilāf*) is admitted (Hallaq, 2009, p. 117). In the political realm, this multiplicity is acknowledged in Art. 107 of the (1979) Constitution, as follows:

Whenever one of the jurisprudents who fulfills the qualifications discussed in Article 5 of this constitution is acknowledged and accepted by the undisputed majority of the people as the leader and the exalted source of religious conduct (*marja'-i taqlīd*) ... this leader is in charge of the sovereignty of the command and all the responsibilities that derive from that. Otherwise, the Experts, who are elected by the people, consider and consult with each other about all the persons who have the qualifications to be the *marja'* and the leader. If they find one *marja'* possessing of special significance for leadership, they introduce him to the people as the leader; otherwise, they designate three or five *marja'*s, who are qualified for the leadership, and introduce them to the people as members of the Leadership Council (Papan-Matin, 2013).

Hence, since 1979, religious authorities had to accommodate another decision-maker, the guardian jurist. It is fair to note that the power transition from the realm of religious to the political did not receive the unanimous support of the clerical institution. Those disagreeing encountered a firm response (Arjomand, 1988, p. 176; Walbridge, 2001, p. 5). As far as competing spheres of competence are concerned, it is useful to make the following distinction: as a grand jurist, Ayatollah Khomeini could issue a *fatwā*, a religious ruling inferring and indicating the Islamic junctions from its sources and applying them to the case at hand. If the matter had nothing to do with the government or the administration of the affairs of society, the Ayatollah's opinion would be binding only on those who submitted to his religious authority. If the ruling jurist's *fatwā* was intended to refer to the government and administration or related to the affairs of Muslims or Islam, such a *fatwā* would be binding on all, even on other jurists.¹¹ In fact, several grand jurists (e.g. Ayatollahs Makarim Shirazi and Jawadi-ye Amoli) have made explicit statements to this effect on their websites. It seems that in the political sphere, theologically accepted juristic disagreement (*ikhtilāf*) could not be accommodated.

The consolidation of authority did not stop here. Ayatollah Khomeini also introduced a revolutionary doctrine regarding the absolute authority of the jurist (*vilāyat-i muṭlaqa-i faqīh*). According to Vaezi, Khomeini was perhaps the first Imami jurist who explicitly and publicly discussed the connection between governmental orders (*aḥkām-e ḥokūmatī*) and Islamic laws (*aḥkām Shari'*) (Vaezi, 2004). In normal situations, the jurist has no right to issue orders in opposition to obligatory first-order laws, in opposition to peripheral or second-order laws), even if the interests of the Muslims demand this (Tamadonfar, 2015, p. 36). First-order laws are central and public, such as drinking laws. Second-order laws cover such things as personal devotional matters and labour laws, and are imprecise and subject to interpretation and the doctrine of necessity. Khomeini clearly departed from this interpretation by considering that although the implementation of Islamic law is very important, it is not the ultimate goal. For Ayatollah Khomeini, the Islamic State is Islam itself and, hence, Islamic laws' significance was overshadowed by the significance of protecting the Islamic system and the interest of Islam (Vaezi, 2004). Khomeini's interpretation boosted the primacy of the Government while at the same time serving to underscore the absolute authority of the ruling jurist who has the final say in all legal matters.

Tamadonfar discusses Khomeini's view as an extension of the traditional *maslahat* (interest and welfare) doctrine, which, as a legal method, aims to determine man's best interest and promote that interest by applying it to the case at hand in harmony with the objectives of Islamic law. According to the traditional doctrine, *maslahat* is only valid when the necessity is certain (and not only probable), when it benefits the public at large, is rational and acceptable to people of sound intellect and removes or prevents hardship on the part of the people (Tamadonfar, 2015, p. 36). In Farsi, the term *zarurat* (necessity) is commonly used as an equivalent to *maslahat*, and according to Tamadonfar there is no clear legal distinction between the two concepts in the Shi'a and Iranian legal traditions (Ibid.).

Governmental primacy is well-evidenced in Khomeini's letter (1988) to Khamenei, then the President of Iran, Ayatollah Khomeini asserts his view of the *vilāyat-i faqīh* to the effect that all laws are subject to governmental actions:

It appears, [Khomeini writes to Khamene'i] from your Excellency's remarks at the Friday prayer meeting that you do not recognise government as a supreme deputyship bestowed by God upon the Holy Prophet (S) and that it is among the most important of divine laws and



has priority over all peripheral divine orders. Your interpretation of my remarks ‘that government exercises power only within the bounds of divine statutes’ is completely contrary to what I have said. If the government exercises power only within the framework of peripheral divine laws, then the entrustment of divine rules and absolute deputyship to the Prophet of Islam ... would be hollow and meaningless (Vaezi, 2004).

Ayatollah Khomeini considers (contrary to Khamene'i) that there is no distinction between central or peripheral laws, asserting that: The government is empowered to unilaterally revoke any *sharī'a* agreements which it has concluded with the people when those agreements are contrary to the interest of the country or Islam [T]he government can also prevent any devotional (*ibadi*) and non-devotional affair if it is opposed to the interests of Islam or so long as it is so. The government can prevent pilgrimage (*hajj*), which is one of the most divine obligations on a temporary basis, if that practice is contrary to the interest of the Islamic country (Ibid.).

In sum, concerns of governmental primacy and expediency became part of the Iranian leadership's primary toolkit, meaning that the argument of necessity, available to the Supreme Leader, would be the primary norm against which other principles would have to be balanced. However, it was not during Khomeini that these principles were fully brought into practice. It was during his successor's, Ali Khamenei's, time, during which a process of centralisation of powers (incl. religious) in the person of the Supreme Leader took place (Ansari, 2013).

5. Vilāyat-i Faqīh in the context of CW: balancing of principles

In Section 3 it was stated that diverse Islamic legal prohibitions (on the non-use of poison, prohibition on polluting the environment, principle of separation and prohibition to cause unnecessary suffering) were cited both by Ayatollah Khomeini and senior religious scholars against CW. Furthermore, the guardian jurist's speeches clearly evidenced his reluctance about these types of weapons as a means of general destruction and oppression of peoples of the world. The exact contents of these religious injunctions, their interpretation and proper references by different legal schools of jurisprudence have been discussed, for instance, by Harbour (1995), Hashmi (2004) and Khadduri (2010). What is interesting for our discussion, is the fact that Twelver Shia permit the dynamic and contextual interpretation of such principles by a multiplicity of senior Shi'i scholars, in addition to the political decision-maker, Ayatollah Khomeini. It is also clear that these principles are potentially capable of affecting negatively the view on CW, from their development to the storage and use.

However, any contextual interpretation also includes the concept of necessity, which serves to justify actions against which there are strong moral presumptions. Necessity is a concept open to interpretation, and, hence, the threshold for its application has been debated over time. For instance, Hashmi refers to the twelfth century sage Al-Ghazali's view of the general welfare of the whole Muslim community (*maslaha mursala*), which set a high threshold for invoking necessity as a justification for suspending normal moral prohibitions (Hashmi, 2004, p. 330). Yet, the example of Al-Ghazali's has been invoked, for instance, to sanction a possible nuclear attack by Pakistan against India, in spite of the fact that millions of Indian Muslims would certainly perish at the hands of their Pakistani coreligionists (Ibid.). In the context of CW and necessity, Harbour refers to the difficulties in appraising necessity in the context of the military utility of CW in the Iran–Iraq War (Harbour, 2001, p. 82). No consensus has emerged from these debates. She concludes that the existence of such acrimonious disagreement suggests that true military necessity, as opposed to mere utility, would be very difficult to demonstrate.

However, in Khomeini's Iran the starting point for interpretation was governmental primacy and the survival of the Islamic State, which was a (if not 'the') key priority for Khomeini. The Guardian jurist would have the final say in legal matters. Regardless of the multiplicity of authoritative interpreters of law, Khomeini's doctrine of the absolute authority of the guardian jurist would sideline dissenting Ayatollahs from governmental decision-making. These developments, especially as far as relaxing the Iranian CW policy was concerned, were not accepted by all. In the mid-1980s, several senior scholars, including Ayatollahs Hassan Qomi, Golpayegani, Morteza Haeri, Meshkini, Azeri Qomi and Tabatabai, voiced their opposition to the conduct of the war, in some cases calling it religiously unlawful (Chubin & Tripp, 1988, p. 82). While Khomeini dismissed such charges, similar criticism would be aimed at his approval of CW use (Giles, 2000, p. 83).

Nevertheless, arguments for necessity and governmental primacy for CW justification could be based on real concerns: with the continuation of the war effort, Iran's economy was heavily burdened, whilst its relatively weak non-conventional capabilities were not able to deter Saddam (Tuohy, 1988). It may be realistically asked whether in a wartime situation in which one's survival was at stake, self-defence by *all possible means* would not be permitted? The application of *maslahat/zarurat* over Islamic rules on just warfare could have provided the legitimate vehicle for justification by the Government. However, having said that, one has to remember, also, that by 1987 Khomeini was in ill health, and his authority to function as commander-in-chief of the Iranian military was uncertain (Hashmi, 2004, p. 332). By that time, he had also been reported to have come under serious pressures from the regular military as well as the IRGC for change of CW policy (Giles, 2000, p. 83).



In this context, it is also useful to point out that a decision to develop CW would not have signified any violation of Iran's *international* obligations regarding these weapons, since their mere production was not prohibited. However, their use would have violated Iran's obligations under the 1925 Geneva Protocol. It would also have signified the weakening or loss in international *fora* of the moral high ground Iran hoped to have over Saddam's non-discriminate use of CW. Then again, any decision to develop CW (warfare) capability might have boosted the internal morale of the Iranians in an environment in which Saddam's war on the cities ended up by creating terror and mass exodus (DeYoung, 1988).

Hence, it seems that the Governments's CW policy changed during the war. We may remember from Section 3 that by 1984, Iranian troops had begun using captured stocks of Iraqi chemicals against Iraqis and that it was also during this period that Iran's attitude to NW began to change, too (Hashmi, 2004, p. 343). Moreover, during the final stages of the war and in the years immediately following it, Iran had an active CW armament programme (Maneshi, 2015, p. 5; Zanders, 2001a). It is unclear whether Ayatollah Khomeini was sidelined in the decision-making on CW towards the end of the war, or whether Khomeini decided on the matter, attaching more weight to concerns of necessity and governmental primacy than to religious injunctions prohibiting CW. A number of other grand Ayatollahs did not accept the lawfulness of CW use.

6. Conclusions

Islamic law is an integral part of the Islamic government in Iran. As far as CW are concerned, Ayatollah Khomeini and a number of senior legal scholars considered these weapons to be prohibited and contrary to different rules on just warfare, i.e. discrimination in targeting, prohibition of poison, prohibition on polluting the environment and the prohibition of unnecessary suffering and the principle of separation. Such reluctance by both the guardian jurist as well as senior religious scholars affected Iran's policy regarding the development and use of CW at the beginning of the war. Initially, Tehran's reaction to Iraq's unhampered use of CW was diplomatic rather than military. Iran attempted to interest the international community in bringing pressure to bear on Baghdad in order for the latter to stop its use of CW. The weak international response greatly disappointed Iran and encouraged it to consider and realise military solutions involving CW.

Senior religious scholars' arguments were ignored in governmental decision-making., if they were in conflict with the views of the guardian jurist. Doctrinal justifications for the guardian jurist's exclusive authority were introduced. At the same time, concerns for governmental primacy brought in the legal argument of necessity, which could be used to justify actions against which there are strong moral or legal presumptions. Such developments did not go without protests as senior religious scholars continued to protest against any use of CW as illegal.

All in all, Islamic rules on just warfare played a concrete (though not a decisive) role in restraining Iran's CW policy before, during and after the war. Yet, the case's value as a precedent has received meagre attention western legal literature. This is not surprising, in the light of the international community's lukewarm reaction to Iraq's unhampered CW use, even after the crime of Halabja. At the same time, Islamic ethical and legal circles have also been mostly silent, not only about the Iran-Iraq War, but also more generally about weapons of mass destruction and just warfare. All in all, the potential of Islamic rules on just warfare to affect policy in today's Iran, as well as in other Muslim countries, is not well known.

Hence, in the interest of contributing to non-proliferation and disarmament, to enhancing knowledge, dialogue and restraint in war, it is proposed that the lessons of Iran's CW precedent should be studied further and the results disseminated through Western and Islamic academic circles. More questions will obviously emerge, since Khomeini's Iran is different from Khamenei's, meaning that jurists' capabilities to affect policy depends on their involvement in the Government. Also, drawing parallels between Iran and other Muslim countries is not possible, considering that the Twelver Shi'ism's receipt for the attribution of authority differs from other Islamic schools. Even though much paper and ink will be needed to analyse e.g. Turkish, Saudi or Egyptian experiences, already the acknowledgement of this plurality is a step forward in understanding better the Islamic world and Islamic law's potential in each State under study.

When contemplating arms control, better understanding of the role and potential of Islamic norms on just warfare will pave the way for their inclusion in contemporary policy debates in arms control. This is not totally uncommon in Islamic circles, as pointed out by Harbour, since traditional Islamic values seemed to have played a central role in shaping governmental attitudes towards the CWC (Harbour, 1995, p. 86). Perhaps the inclusion of Islamic law's morality norms will also reinvigorate the seemingly forgotten western conceptions of just warfare?

Iran's CW precedent involves yet another aspect, which needs to be addressed in the arms control context: that of the passivity of the international community. The need to discuss this type of passivity and especially its effect on *policy* lies in the fact that religious injunctions do not operate in a vacuum. Their power to affect policy depends on how much weight is given to underlying values, such as the protection of human beings and the environment. The



defence of values was not only an Iranian internal issue. It should have been the concern of all those aware of Iraq's use of CW. Giving priority to other concerns weakened the restraining effect of religious norms on Iran's CW policy. Even if the international community's passivity is regrettable, its lessons could still be used to make better, more humane decisions in the future.

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Tungsten oxide: a catalyst worth studying for the abatement and decontamination of chemical warfare agents

By Daniele Costenaro, Chiara Bisio, Fabio Carniato, et al.

Global Security: Health, Science and Policy | Volume 2, 2017 - Issue 1

Source: <https://www.tandfonline.com/doi/full/10.1080/23779497.2017.1330662>

Abstract

Tungsten(VI) oxide, WO₃, was studied and used as a heterogeneous catalyst for the liquid-phase oxidative abatement and solid-phase decontamination of simulants of chemical warfare agents, CWAs. The catalytic performance of WO₃ was compared to the one of a soluble W-containing model catalyst, W(IV)-heptaisobutyl polyhedral oligomeric silsesquioxane, W-POSS. In liquid-phase abatement tests, WO₃ promoted a complete degradation of the toxic agent simulant within 24 h, in the presence of aqueous hydrogen peroxide, at room temperature. In solid-phase decontamination tests, when WO₃ was mixed with sodium perborate as a solid oxidant, it was also tested in the decontamination of a cotton textile support from organosulfide and organophosphonate agents (simulants of blistering and nerve CWAs, respectively), showing promising performances comparable to, or sometimes better than, a nanostructured TiO₂ catalyst, taken as a reference material. The environmental impact of the WO₃ catalyst was assessed on bioluminescent *Photobacterium leiognathi* Sh1 bacteria, over which no acute nor chronic detrimental effects were recorded. Then, when in contact with a vegetable species such as *Phaseolus vulgaris* L. (common bean), WO₃ did not cause damage to the photosynthetic apparatus of the plant, whereas a clear inhibition of the seed germination was evidenced.

Industrial Chemical Misuse

Source: <https://www.aa.com.tr/en/africa/somalia-sulfuric-acid-on-way-to-al-shabaabseized/2005841>

Oct 14 – Nearly 80 tons of sulfuric acid was seized in Somalia on Wednesday, with authorities saying the chemical was being smuggled to the al-Shabaab militant group. “A total of **79 tons of sulfuric acid** have been seized and the individuals who were smuggling it to the al-Shabaab mafia will face the law,” Somalia's National Intelligence and Security Agency (NISA) said in a statement, without disclosing any more details.

Probe as scores of hazardous chemical containers dumped at former Fife gas plant

Source: <https://www.thecourier.co.uk/fp/news/local/fife/1616527/probe-as-scores-of-hazardous-chemical-containers-dumped-at-former-fife-gas-plant/>

Oct 02 – Calls have been made for immediate action to be taken after scores of rusting containers full of hazardous chemicals were abandoned at a derelict former gas plant in Fife.

Dozens of oil drums, plastic containers and chemical vats, many with hazardous labels attached, have been discovered in buildings at [the former Westfield gas plant on the outskirts of Ballingry](#).



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Scores of leaking containers have been discovered in derelict hangers on the site.

Gas canisters, tin drums and other hazardous items have also been found in buildings at the site which gained notoriety in May after The Courier revealed the site was the worst for illegal fly-tipping in Fife.



The largest collection of containers, many of which have already leaked their contents out across the ground, have been dumped in a disused storage hanger close to the Westfield Road entrance to the site.



Full containers of Microbeat 2500, a category 1 hazardous chemical which can cause serious eye damage as well as being corrosive to skin and metal, have also been found at the site.

In the worst of the contaminated areas, chemicals and oil-like substances, including Microbeat 2500 – a Category 1 hazardous substance which is corrosive to metals and skin and can cause

serious eye damage – have spilled and form a layer as much as four inches deep.

With some of the contents now running to nearby drains, local councillor Lea McLelland said the area poses a “significant and worrying environmental problem” that needs “immediate action”. SEPA officers are to investigate the site after being informed of the potential dangers at the site.

“I’m truly appalled by the discovery of such a large quantity of chemicals that seem to have been abandoned,” she said.

“The smell is overpowering and the major concerns are that the containers could pose a threat both to individuals who may come into contact with them and the threat of long-term environmental damage.”



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The councillor said she has alerted the Scottish Environmental Protection Agency (Sepa) urging the watchdog to take swift action. “This amount of discarded chemicals is by far the worst I’ve ever come across and clearly needs to be addressed without delay. “I immediately informed Sepa of the problems, who assured me that officers will be out to visit the site this week. “While Sepa is already carrying out a criminal investigation into illegal dumping at the site, which is being carried out on a vast scale, this issue is entirely separate and seemingly stems from the time when the site was in industrial use. “Immediate action needs to be taken to establish just what we are dealing with and the safest and quickest way to dispose of it before someone is harmed.”

A spokesperson for Sepa said that it had been made aware of the concerns and would be sending officers to investigate. It’s understood the agency was also attempting to contact the landowner to discuss the problem.

House in Skripal Nerve Agent Attack Declared Safe, Ending 13,000-Hour Cleanup

Source: <https://www.nytimes.com/2019/03/01/world/europe/novichok-salisbury-skripal-attack-house.html>



The roof of Sergei V. Skripal’s house in Salisbury, England, was removed as part of decontamination efforts. Credit: Vickie Flores/EPA, via Shutterstock

March 2019 — It has a lot going for it: a two-story house on a leafy cul-de-sac, a short walk from schools, parks and a train station. And then there’s the downside.

A year after a nerve-agent attack nearly killed a Russian former spy and his daughter, the enormous job of decontaminating his former home in Salisbury, England, is complete, the government announced on Friday.

Hundreds of specialists spent a total of 13,000 hours cleaning up 13 sites in and around Salisbury that had been tainted by the nerve agent, the Department for Environment, Food and Rural Affairs said. The house where [Sergei V. Skripal](#) lived, and where he and his daughter, Yulia S. Skripal, were poisoned, was the last to be pronounced decontaminated.

Though Mr. Skripal appears to have been the target of the attack, five people were sickened by exposure to the chemical, [including one who died](#).

Breathing through respirators and clad in sweltering hazardous materials suits, the decontamination workers — including 190 British Army and Royal Air Force personnel —



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combed through each of the sites and sent about 5,000 samples for testing at the nearby government laboratory at Porton Down, many of which had to be destroyed. They even removed the roof of the Skripal house.

Backing them up were contractors and people from multiple local, county and national government agencies. On Twitter, Tyrone Urch, an Army lieutenant general, called it “a monumental and courageous effort by thousands of people.”

The environment department said it had turned over control of the house to Wiltshire Council, the local government for the county that includes Salisbury.

“Work will begin shortly to reconstruct and refurbish the house so it can return to being a home again,” Alistair Cunningham, who is leading the council’s recovery efforts, [said in a statement](#). The council is talking with people in the neighborhood “as it is important their views are taken into account on how it is used in the future.”

It remains to be seen whether they will have trouble persuading people who might live in the house, or use it in some other way, that every last microscopic trace of one of the deadliest toxins devised by science has really been removed.

The announcement that the work was done, and that the house had been handed over to the county council, ended one chapter in a bizarre and lethal story, straight out of a Cold War espionage novel, that has badly strained relations between Russia and the West.

An army specialist removes bricks and rubble from the home of the Russian former spy Sergei Skripal in Salisbury, England, Monday, Feb. 4, 2019. British military specialists started to remove the roof of the house where a former Russian spy and his daughter were exposed to the deadly nerve agent Novichok. Credit: Ben Birchall/Press Association, via Associated Press



and settled in Salisbury, a small cathedral city southwest of London.

On March 4, 2018, he and his daughter, who was visiting from Russia, were found unresponsive on a park bench in Salisbury. British scientists identified the poison involved as a Novichok, a type of nerve agent developed by the Soviet Union.

Britain contends that [agents of Mr. Skripal's former employer](#) flew to London under assumed names, took a train to Salisbury, applied the Novichok to the front door handle of his home, returned to London and flew home, all in the span of two days. Britain’s allies have backed up the findings of London’s investigation, which produced substantial evidence that was made public.

The Kremlin denied any involvement, floating various theories, ranging from the plausible to the contradictory to the absurd, but offered no evidence.

The incident led to sanctions against Russia, the expulsion of [about 150 Russian government employees](#) from Britain and its allies, and the expulsion from Russia of a similar number of people working for those countries.

Detective Sgt. Nick Bailey, the first police officer to enter the Skripal home on the day the first victims were found, was exposed, despite wearing protective gear, and became very ill. He recovered, but he and his family had to [give up their home and everything in it](#), rather than take the risk that he had brought traces of the deadly chemical home with him.



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Places the Skripals and Sergeant Bailey had visited were cordoned off and tested for contamination, the police gave instructions to the public not to pick anything up off the ground, and a sense of dread gripped Salisbury. Tourism, a pillar of the local economy, plummeted.

Nearly three months after the Skripals took ill, two more people, Dawn Sturgess and Charlie Rowley, were sickened at Mr. Rowley's house in Amesbury, a nearby town, and the cycle of fear, quarantines and public warnings began again.

Investigators said Mr. Rowley had found [a discarded perfume bottle](#) and had given it to Ms. Sturgess, his girlfriend — but it was the vessel the Russians had used for the Novichok. [She died and he survived.](#)

In the end, officials said, traces of Novichok were found in homes, stores, a shopping center, a pub, a restaurant, a church, offices, a police station and two ambulance stations.

Through it all, Mr. Cunningham said, "Salisbury has proved it is resilient, positive and looking forward."

EDITOR'S COMMENT: It is easy to understand the thorough decontamination of public spaces but the house? WHY? Unless it was a very expensive training operation for labs and first responders. Otherwise, how clean is too clean? Remember the US postal facility in New Jersey that was contaminated with anthrax spores – cleanup cost: \$65 million?



Biomedicine & Prevention

An Open Access Transdisciplinary Journal

Mass Decontamination of Vulnerable Groups Following an Urban CBRN (Chemical, Biological, Radiological, Nuclear) Incident

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Source: <http://www.biomedicineandprevention.com/manuscript/mass-decontamination-fragile-and-disabled-groups-following-urban-cbrn-chemical-biological>

EDITOR'S COMMENT: During the CBRN planning process, it is wise to remember that a number of the victims might belong to either special groups (i.e., children; pregnant women; elderly citizens) or are physically or mentally affected that require a specialized decon approach that might be difficult to implement in a chaotic environment. Testing plans together with these people will surely help understand their needs and be familiar with handling people of all ages with certain peculiarities – i.e., blind and deaf people; individuals in wheelchairs, etc.

Journal Highlights Groundbreaking DHS S&T Research on Chlorine Spread

Source: <https://www.hstoday.us/subject-matter-areas/infrastructure-security/journal-highlights-groundbreaking-dhs-st-research-on-chlorine-spread/>

Nov 14 – Imagine billowing clouds of deadly, yellow-green gas gushing with force from a tank, undulating, pulsating and spreading in waves over the ground, resembling surging foamy water. Imagine you are a resident in a nearby home—is it safe to remain where you are? Do you need to evacuate? Imagine you are a first responder called to the scene—what protective gear do you need? How can you secure the surrounding area?



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That billowing cloud you are picturing is chlorine, the scent of which we all know from our community pools or laundry rooms. Did you know it can kill in minutes if inhaled in high concentration?

Since 2010, the Department of Homeland Security (DHS) [Science and Technology Directorate](#) (S&T), the [Defense Threat Reduction Agency](#) (DTRA) and other U.S. and international partners from across government, industry and academia have collaborated on Project [Jack Rabbit](#)—a groundbreaking field and laboratory research program on toxic inhalation hazards of industrial chemicals like ammonia and chlorine. As part of this program, S&T led the Jack Rabbit II project, involving multiple large-scale chlorine release experiments at the U.S. Army Dugway Proving Ground in 2015 and 2016. Nine chlorine release trials were successfully performed, and now the research conducted for Jack Rabbit II is in such demand worldwide that it is featured in a special edition of the prestigious peer-reviewed [Journal of Atmospheric Environment](#).

Why do we need such large-scale research on chlorine? Rarely encountered in pure form, chlorine is important as it is used in the production of multiple products we need in our everyday lives, such as cleaning and sanitizing solutions, plastic building materials (polyvinylchloride or PVC), and in some medicines. We also use it in those swimming pools we swim in and in the tap water we drink. Millions of tons of chlorine are produced and transported to industrial plants and factories via road, water and rail across the globe every year. And there lies the danger. En route, while travelling to these facilities, incidents can happen by accident or intentionally by bad actors, threatening civilian lives, especially in densely populated areas.

Recent events highlight the need for responders to be prepared with the best information possible for this type of hazard. For instance, in June 2020, dozens of people were treated for chlorine exposure during an incident at a hazardous material storage facility at a U.S. military base in Okinawa, Japan. Another 25 were hospitalized in June after a chlorine gas leak at waterworks in Mohali, India. In July 2020, 70 people were injured by chlorine inhalation after a fire at a power plant in Iran.

“Large scale releases of chlorine have never been tested and studied at the volumes representative of shipments via tanker truck (20 tons) or railcars (90 tons),” said Dr. Shannon Fox, Jack Rabbit II principle investigator and director of S&T’s [Chemical Security Analysis Center](#) (CSAC). “Outdoor field testing affords the unique opportunity to study this type of release scenario and directly address critical data and knowledge gaps to improve hazard prediction modeling, emergency response, and industrial safety and security.”

“We do a substantial environmental assessment before the large-scale outdoor release and coordinate with the test site state authority, so no one is injured, and environmental impacts are minimized,” added Dr. Sun McMasters, CSAC physical chemist and current Jack Rabbit program manager.

Special journal issue highlights an extraordinary collaborative accomplishment

The special issue of the *Journal of Atmospheric Environment* will contain a cluster of 18 articles, with two co-authored by CSAC involving the Jack Rabbit II [field and lab tests](#). Subject matter experts submitted an additional 16 manuscripts presenting summary test results used for model inter-comparisons, results from comparisons of different dispersion models, as well as some results of related research on flow fields around obstructions and chemical reactions with surface materials.

The first CSAC-authored article in the special issue presents an introduction and overview of the Jack Rabbit II field experiments involving releases of 5-20 tons of liquefied chlorine. The article describes the chlorine releases for which the researchers arranged a combination of over 80 shipping containers at the test site to represent an urban area with one- and two-story buildings, capturing the releases with LIDAR (similar to radar but uses laser light instead of radio waves), video and still cameras.

The second article co-authored by CSAC focuses on lab experiments conducted at the University of Arkansas to measure the degree to which plants and soil absorb chlorine to help decrease the spread of the gas. During a release, chlorine reacts with plants, destroying their tissue.

“If you have more vegetation, more soil, more environmental material that absorbs the chlorine, this means there is likely less downwind hazard,” said McMasters. “The purpose of this study was to investigate potential mitigation strategies using environmental materials and learn how much of chlorine can be removed. This will also help modeling better predict the actual spread of chlorine.”

The remaining articles were authored by researchers from the US, UK, Sweden, France, Finland, China and the European Commission. The feature inter-comparison article compares 17 widely-used dense-gas prediction modeling tools using the Jack Rabbit II field trial data (mass release rate, wind speed, wind direction and detection concentrations) with the goal of analyzing hazardous gas releases and identifying gaps to be addressed in future analysis and studies. This will help improve harmonization of the models and provide guidelines to response in the event of a chlorine release.

“The special issue of *Atmospheric Environment* is an extraordinary collaborative accomplishment that highlights the far-reaching impact of Jack Rabbit II,” said Fox. “This demonstrates and validates a highly successful model of S&T leading a groundbreaking



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multifaceted program, securing extensive interagency partnerships, and mutually sharing data and resources to greatly enhance the program's impact and return on investment.”

Jack Rabbit's impacts and future efforts



A 10-ton chlorine release during Jack Rabbit II, Phase 1, 2015. (DHS S&T)



The Jack Rabbit research has greatly improved and will continue to improve hazard prediction modeling, emergency planning and response strategies against chemical release incidents. CSAC used Jack Rabbit II findings to update modeling for [Pamphlet 74](#), a product furnished by the Chlorine Institute to help chlorine producers, local emergency planning committees, fire departments and municipalities estimate areas affected by potential chlorine release incidents. Also, the project findings informed the U.S. Department of Transportation's work related to large-scale chlorine releases, guided improvements to DTRA's atmospheric transport and dispersion and hazard prediction models, and informed

DHS agencies how to train first responders for large chlorine incidents.

Next year, CSAC researchers will embark on a new round of Jack Rabbit research—Jack Rabbit III—which will focus on developing strategic technology solutions for chemical incident countermeasures, decontamination, protection, emergency response, training and



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national level exercises. Planned experiments include laboratory, wind tunnel and chamber testing, and large-scale open-field tests with Anhydrous Ammonia, the foundation of nitrogen fertilizers.

“Jack Rabbit III will expand on previous work and build security, safety and resilience in the chemical supply chain through experimentation over the next five years,” said Fox. “Jack Rabbit III is building on the success of the Jack Rabbit II trials and significant impacts made in securing the homeland from persisting chemical threats.”

►► Read also: <https://www.sciencedirect.com/science/article/abs/pii/S0950423018308465>



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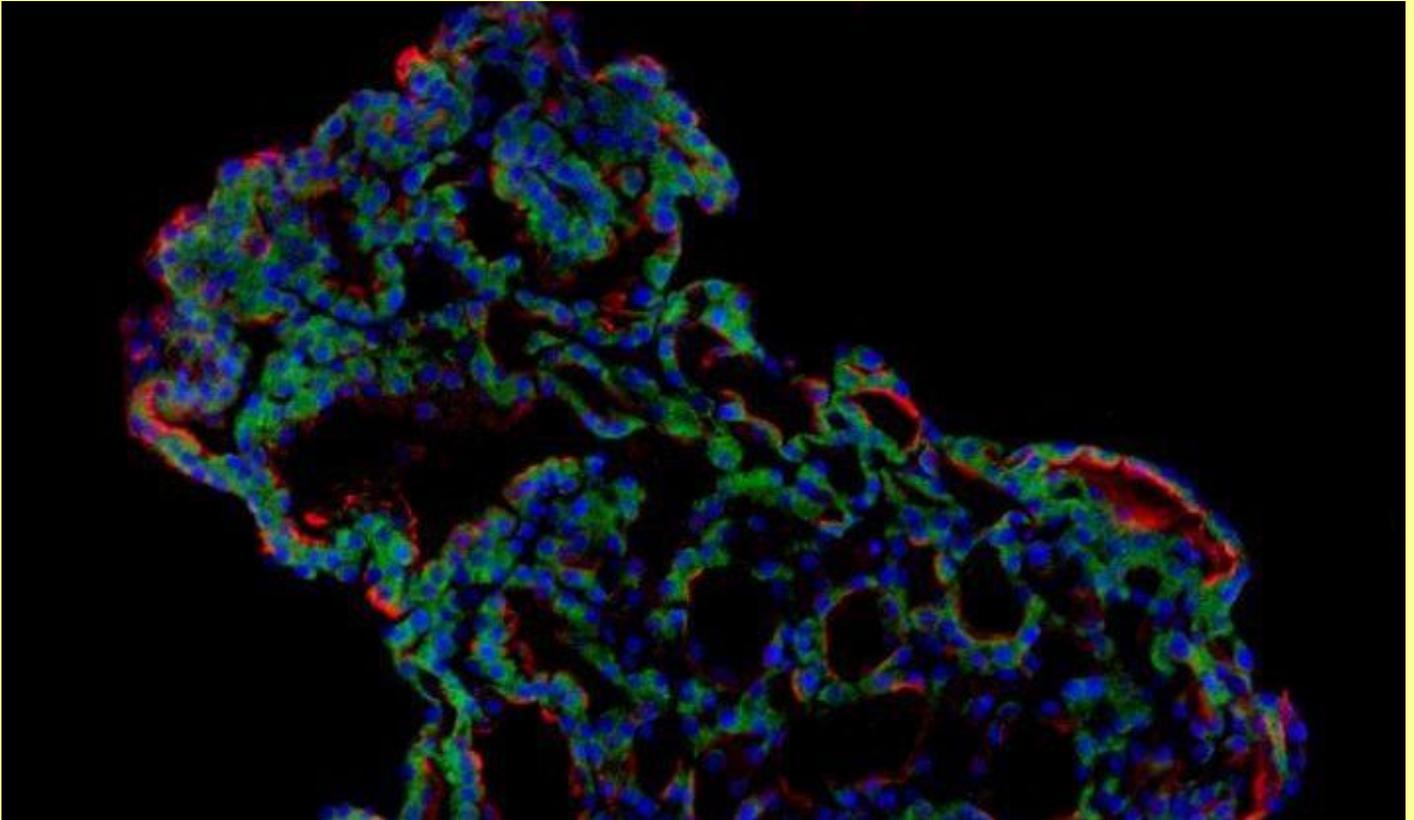
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BIO NEWS



SARS-CoV-2 Infection Modeled in 3-D Stem Cell Culture Model

Source: <https://www.genengnews.com/news/sars-cov-2-infection-modeled-in-3-d-stem-cell-culture-model/>



Representative image of three-dimensional human lung alveolar organoid showing alveolar stem cell marker, HTII-280 (red) and SARS-CoV-2 entry protein, ACE2 (green) [Jeonghwan Youk, Taewoo Kim, and Seon Pyo Hong]

Oct 23 – Understanding how SARS-CoV-2 infection damages the lungs is paramount to developing better treatments. Now, “mini-lungs” grown from tissue donated to Cambridge hospitals has provided a team of scientists with important insights into how COVID-19 damages the lungs. In new work, the researchers detail the mechanisms underlying SARS-CoV-2 infection and the early innate immune response in the lungs.

This work is published in *Cell Stem Cell* in a paper titled, [“Three-dimensional human alveolar stem cell culture models reveal infection response to SARS-CoV-2.”](#)

The main target tissues of SARS-CoV-2, the virus that causes COVID-19, especially in patients that develop pneumonia, are thought to be alveoli—tiny air sacs in the lungs that take up the oxygen we breathe and exchange it with carbon dioxide to exhale.

To better understand how SARS-CoV-2 infects the lungs and causes disease, a team of scientists from the U.K. and South Korea turned to organoids—“mini-organs” grown in three dimensions to mimic the behavior of tissue and organs.

The team used tissue donated to tissue banks at the Royal Papworth Hospital NHS Foundation Trust and Addenbrooke’s Hospital, Cambridge University NHS Foundations Trust, and Seoul National University Hospital to extract a type of lung cell known as human lung alveolar type 2 cells. By reprogramming these cells back to their earlier “stem cell” stage, they were able to grow self-organizing alveolar-like 3D structures that mimic the behavior of key lung tissue.

Joo-Hyeon Lee, PhD, co-senior author, and a group leader at the Wellcome-MRC Cambridge Stem Cell Institute, University of Cambridge, said: “We still know surprisingly little about how SARS-CoV-2 infects the lungs and causes disease. Our approach has allowed us to grow 3D models of key lung tissue—in a sense, ‘mini-lungs’—in the lab and study what happens when they become infected.”

The team infected the organoids with a strain of SARS-CoV-2 taken from a patient in South Korea who was diagnosed with COVID-19 on January 26, after traveling to Wuhan, China. Using a combination of fluorescence imaging and single cell genetic analysis, they were able to study how the cells responded to the virus.



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When the 3D models were exposed to SARS-CoV-2, the virus began to replicate rapidly, reaching full cellular infection just six hours after infection. Replication enables the virus to spread throughout the body, infecting other cells and tissue.

Around the same time, the cells began to produce interferons—proteins that act as warning signals to neighboring cells, telling them to activate their antiviral defenses. After 48 hours, the interferons triggered the innate immune response—its first line of defense—and the cells started fighting back against infection.

Sixty hours after infection, a subset of alveolar cells began to disintegrate, leading to cell death and damage to the lung tissue.

Although the researchers observed changes to the lung cells within three days of infection, clinical symptoms of COVID-19 rarely occur so quickly and can sometimes take more than ten days after exposure to appear. The team said there are several possible reasons for this. It may take several days from the virus first infiltrating the upper respiratory tract to it reaching the alveoli. It may also require a substantial proportion of alveolar cells to be infected or for further interactions with immune cells resulting in inflammation before a patient displays symptoms.

“Based on our model we can tackle many unanswered key questions, such as understanding genetic susceptibility to SARS-CoV-2, assessing relative infectivity of viral mutants, and revealing the damage processes of the virus in human alveolar cells,” said Young Seok Ju, MD, PhD, co-senior author, and an associate professor at Korea Advanced Institute of Science and Technology. “Most importantly, it provides the opportunity to develop and screen potential therapeutic agents against SARS-CoV-2 infection.”

“We hope to use our technique to grow these 3D models from cells of patients who are particularly vulnerable to infection, such as the elderly or people with diseased lungs, and find out what happens to their tissue,” added Lee.

Published in the same edition of *Cell Stem Cell*, a second paper describes how a team of Duke University researchers has developed a lab-grown living lung model that mimics the tiny air sacs of the lungs where coronavirus infection and serious lung damage take place. This advance has enabled them to watch the battle between the SARS-CoV-2 coronavirus and lung cells at the finest molecular scale.

“This is a major breakthrough for the field because we were using cells that didn’t have purified cultures,” said Ralph Baric, PhD, a co-author on the paper and who is a distinguished professor of epidemiology, microbiology, and immunology at UNC and a world authority on coronaviruses. The Duke mini-lungs are 100% human with no supporting cells that could confuse findings. “This is incredibly elegant work to figure out how to purify and grow AT2 cells in culture in pure form,” Baric said.

Daycares in Finland Built a 'Forest Floor', And It Changed Children's Immune Systems

Source: <https://www.sciencealert.com/daycares-in-finland-built-a-backyard-forest-and-it-changed-children-s-immune-systems>

Oct 22 – Playing through the greenery and litter of a mini forest's undergrowth for just one month may be enough to change a child's immune system, according to a small new experiment.

The engines of SARS-CoV-2 spread

By Elizabeth C. Lee, Nikolas I. Wada, M. Kate Grabowski, Emily S. Gurley, and Justin Lessler

Science 23 Oct 2020: Vol. 370, Issue 6515, pp. 406-407

Source: <https://science.sciencemag.org/content/370/6515/406.full>

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread rapidly across the globe, causing epidemics that range from quickly controlled local outbreaks (such as New Zealand) to large ongoing epidemics infecting millions (such as the United States). A tremendous volume of scientific literature has followed, as has vigorous debate about poorly understood facets of the disease, including the relative importance of various routes of transmission, the roles of asymptomatic and presymptomatic infections, and the susceptibility and transmissibility of specific age groups. This discussion may create the impression that our understanding of transmission is frequently overturned. Although our knowledge of SARS-CoV-2 transmission is constantly deepening in important ways, the fundamental engines that drive the pandemic are well established and provide a framework for interpreting this new information.

The majority of SARS-CoV-2 infections likely occur within households and other residential settings (such as nursing homes). This is because most individuals live with other people,



and household contacts include many forms of close, high-intensity, and long-duration interaction. Both early contact tracing studies and a large study of more than 59,000 case contacts in South Korea found household contacts to be greater than six times more likely to be infected with SARS-CoV-2 than other close contacts (1, 2). Household contacts accounted for 57% of identified secondary infections in the South Korean study, despite exhaustive tracking of community contacts. Globally, the proportion of cases attributable to household transmission will vary because of multiple factors, including household size. Contact studies suggest that 17 to 38% of contacts occur in households, implying that 46 to 66% of transmission is household-based (using the standard formula for attributable fraction) (3). This is consistent with household contact being a key driver of transmission for other respiratory viruses.

Even among close contacts within households, there are considerable heterogeneities in transmission risk. Spouses of index cases are more than twice as likely to be infected as other adult household members, and symptomatic index cases may be more likely to transmit the virus (4). Moreover, older age is associated with increased susceptibility to infection, increased transmissibility, and severe disease (4). Older members may face extra risk in multigenerational households if younger members have unavoidable work or school obligations, although young children may be less susceptible to infection and transmit the virus less readily (4).

Just as in households, those who live in congregate residences such as prisons, worker dormitories, and long-term care facilities have intense, long-duration, close contact. There are more potential contacts in these settings, which are often among older age groups. The confluence of these factors can lead to high infection rates in outbreaks (attack rate); for example, 66% of residents were infected in a homeless shelter, 62% in a nursing home, and 80% in a prison dormitory (5, 6). Even when residents rarely leave, these facilities are highly connected to communities through workers and guests.

Although transmission may be easiest and most frequent in households and congregate residences, community transmission connects these settings and is, therefore, essential to sustain the epidemic, even if it directly causes fewer cases. Inevitably, “community contacts” include a heterogeneous mix of interactions. The probability that any of these interactions results in transmission stems from a complex interplay of pathogen attributes, host characteristics, timing, and setting. Hence, the properties of community transmission are difficult to measure, and this is where much of the remaining debate around SARS-CoV-2 transmission occurs.

A crucial factor in community transmission is that infected individuals not experiencing symptoms can transmit SARS-CoV-2. Infectiousness may peak before symptom onset (7). Viral loads appear to be similar between asymptomatic and symptomatic patients (8), although the implications for infectiousness are unclear. People experiencing symptoms may self-isolate or seek medical care, but those with no or mild symptoms may continue to circulate in the community. Because of this, those without severe symptoms have the potential to be “superspreaders” and may have an outsized influence on maintaining the epidemic.

Superspreading events, in which one person infects many, are often as much the result of setting as host characteristics. Apparent superspreading events of SARS-CoV-2 have occurred during choir practice (9), in department stores, at church events, and in health care settings (5). These are all settings where one individual can have many close contacts over a short period of time. Transmission can also be amplified if multiple subsequent infections occur in rapid succession, and outbreaks with high attack rates have occurred in close-contact settings such as schools (14%), meat processing plants (36%), and churches (38%) (5, 10).

Both superspreading events and transmission-amplifying settings are part of a more general phenomenon: overdispersion in transmission. Overdispersion means that there is more variation than expected if cases exhibit homogeneity in transmissibility and number of contacts; hence, a small number of individuals are responsible for the majority of infections. This phenomenon has been described for diseases as diverse as measles, influenza, and pneumonic plague (11). For SARS-CoV-2, studies suggest that ~10% of cases cause 80% of infections (1). Overdispersion is characterized by a large number of people who infect no one, and most people who do transmit infect a low-to-moderate number of individuals. Large superspreading events (such as those infecting 10 or more people) are likely quite rare, although they are far more likely to be detected and reported.

Such events have driven much of the debate around the relative importance of different modes of transmission. In household settings, contacts are so long and intense that it matters little whether large droplets, fomites (contaminated surfaces), or aerosolized particles are driving spread; all have ample opportunity. In community settings, where there is greater variety in the nature of infectious contacts, these distinctions become more important, particularly because they affect policy. Aerosolization of fecal matter caused one of the largest superspreading events of the 2003 SARS-CoV epidemic (12), and aerosolizing medical procedures facilitate the spread of coronaviruses (12, 13). Several SARS-CoV-2 transmission events suggest that aerosolized viral particles may play a role in transmission in everyday settings. Although the frequency of aerosolized transmission is uncertain, extended close contact and sharing of spaces poses the greatest risk. It is also difficult to generalize the importance of different modes of transmission across settings because their relative contributions can be modified by environmental conditions. For example, low-absolute humidity environments are associated with influenza virus transmission in temperate regions, probably because



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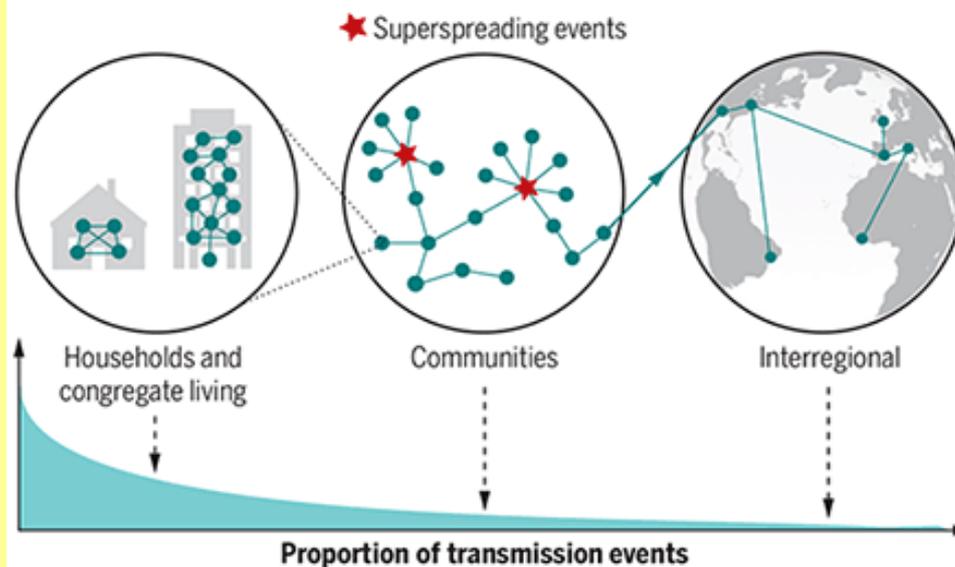
these conditions facilitate small droplet spread, yet influenza outbreaks are still common in tropical regions, with fomites potentially playing a larger role (14).

A mode of transmission need not be frequent to be important, and regardless of the cause, overdispersion has considerable implications. **First**, overdispersion means that most infected individuals who enter a community will not transmit, so many introductions may occur before an epidemic takes hold; likewise, overdispersion also increases the probability of disease extinction as the epidemic recedes and fewer people are infected (11). When large transmission events do occur, epidemics can expand rapidly, but as the epidemic grows, overdispersion will matter less to the trajectory until incidence decreases and case counts are low again. **Second**, overdispersion gives transmission networks “scale-free” properties, in which connectivity in the network is dominated by a few highly connected nodes. Compared with networks with more evenly distributed connections, the connectivity of scale-free networks is less sensitive to random node removal but more susceptible to targeting of highly connected nodes (11). If transmission is highly overdispersed, broad and untargeted interventions may be less effective than expected, whereas interventions targeted at settings conducive to superspreading (such as mass gatherings and hospitals) may have an outsized effect. Although some determinants of overdispersion may not be amenable to targeted interventions, others related to occupation or setting could be. For example, rapidly improved infection control procedures within health care facilities played a critical role in containing the nascent SARS-CoV pandemic of 2003.

Intercity, interregional, and international spread are also essential to sustain the pandemic, even if long-distance transmission events are rare (see the figure). Only a small number of such long-distance connections are needed to create a “small world” network in which only a few infection events can transmit the virus between any two individuals worldwide. This is one reason

SARS-CoV-2 spread across spatial scales

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is mostly transmitted within households and household-like settings. A decreasing proportion of transmission events take place at increasing spatial scales, but these events become more critical for sustaining the pandemic.



why early travel bans could not stop the global spread of SARS-CoV-2, although they may have slowed the pandemic. However, travel restrictions can work: Extreme measures in China played an important part in achieving domestic suppression of the virus.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is mostly transmitted within households and household-like settings. A decreasing proportion of transmission events take place at increasing spatial scales, but these events become more critical for sustaining the pandemic (Graphic: N. Cary/Science).

Phylogenetic data provide some insight into global connectivity and the scale at which intercommunity mixing is most relevant to spread. Major SARS-CoV-2 clades are present in all global regions. Within the United States, where interstate travel continued during lockdowns, the mix of viral lineages was

similar across states (15). This suggests that viral lineages spread quickly throughout the country and that reintroductions are highly probable should an area achieve local elimination of the virus.

The engines of the SARS-CoV-2 pandemic—household and residential settings, community, and long-distance transmission—have important implications for control. Moving from international to household scales, the burdens of interventions are shared by more people; there are few international travelers, but nearly everyone lives in households and communities. Measures to reduce household spread may appear particularly challenging, but because they directly affect so many, they need not be perfect. Household mask use and partitioning of home spaces, isolation or quarantine outside the home, and, in the future, household provision of preventive drugs could have



large effects even if they offer only modest protection. Conversely, control measures at larger spatial scales (for example, interregional) must be widely implemented and highly effective to contain the virus. Indeed, few nations have managed to curb infection without stay-at-home orders and business closures, particularly after community transmission is prevalent.

The impact of accumulated SARS-CoV-2 immunity on transmission will vary across spatial scales. Any immunity conferred by infection or vaccination mitigates transmission in households or communities in near-direct proportion to the number of potential infectees that become immune, plus ancillary benefits due to herd immunity. However, because of overdispersion and small-world network properties, the ability for the virus to spread between communities is less sensitive to accumulating immunity. **If even a few regions exist with a sufficient proportion of susceptible individuals to support viral spread, SARS-CoV-2 can continue to circulate in humans.**

More is learned about SARS-CoV-2 transmission every day, and important uncertainties remain. The relative risk of transmission in different community settings, such as restaurants and retail stores, is still unclear, as is the impact of mitigation measures in these contexts. It is still unknown how seasonality and heterogeneities in the population distribution and duration of immunity will affect future transmission dynamics. Filling these and other knowledge gaps will clarify how the engines of transmission interact to drive the pandemic—and how best to fight back.

The Global Capitalist Cage and the Corona Crisis: “Solutions” by Those Who Have Created “The Problems”

By Hiroyuki Hamada

Source: <https://www.globalresearch.ca/the-global-capitalist-cage-and-the-corona-crisis-solutions-by-those-who-have-created-the-problems/5727349>

Oct 23 – *It's hard to talk about the myriad issues piled in our society in a cohesive way, and when we try, we often get*



*the same response: “What is your solution?” **People get frustrated and demand an instant solution to the structural problem they are very much a part of.** The very insistence on a single, cure-for-all-answer betrays their unwillingness to see the structural and systematic nature of the problem. **Meanwhile they allow themselves “solutions” which are concocted by those who have created the problems.***

*Those “solutions” are bound to be **strictly incremental and reformist**, otherwise the self-serving nature of the overall trajectory becomes blatantly obvious. Confrontation with the flaws of the “solutions” triggers an emotional response: A clear indication that the criticism points to the obvious flaws of the system itself, which in turn resonates as a criticism against the*

self. The emotional burst and the denial to recognize the system for what it is are indications of pathological adherence to abusive power. This is the condition that forces many American people to prop up the capitalist hierarchy and continue to prove their allegiance to it.

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

***Hiroyuki Hamada** is an artist. He has exhibited widely in gallery and non-commercial settings alike. Hamada was the recipient of a Pollock-Krasner Foundation grant, twice received New York Foundation for the Arts Fellowships in sculpture, and was awarded a Guggenheim Fellowship in 2018. Alongside his work in the studio, his writings have appeared through various online outlets.*



What those studies on mouthwash and coronaviruses actually mean

Source: https://www.washingtonpost.com/lifestyle/wellness/mouthwash-inactivate-covid-study/2020/10/22/1735cdd4-13c5-11eb-bc10-40b25382f1be_story.html

Oct 23 – Contrary to some of the recent buzz around mouthwash, a daily gargle is probably not going to protect you from the novel [coronavirus](#). Instead, experts say new research has “promising” implications for the potential of mouthwash to help infected individuals reduce their risk of spreading the deadly virus.

“It’s an exciting avenue, especially as we face many increasing challenges with access to vaccines and different therapeutics,” said Nicholas Rowan, an ear, nose and throat surgeon and assistant professor at Johns Hopkins Medicine. “However, I think it’s also important to realize that it’s not an instant solution and it’s something that we need to do our due diligence on.”



Here’s what those studies on mouthwash and coronaviruses actually mean — and why scientists say we should view their results with cautious enthusiasm.

Studying the effects of mouthwash and other oral antiseptic rinses on infectious viruses is not a novel idea. But amid the ongoing pandemic, fueled by a [contagious pathogen](#) often found in people’s mouths and noses, there is now “great interest in this area,” said Yvonne Kapila, periodontology chair in the Department of Orofacial Sciences at the University of California at San Francisco.

Over the past several months, researchers in the United States and abroad have examined mouthwashes, oral antiseptics and nasal rinses in controlled laboratory settings to see whether they can effectively inactivate the new coronavirus and other viruses within the same family.

A team in Germany found that when several products, including Listerine, were applied to strains of the novel coronavirus for 30 seconds, they “significantly reduced viral infectivity to undetectable levels,” according to [a study published in July](#) in the Journal of Infectious Diseases.

Researchers at Pennsylvania State University College of Medicine recently [released similar findings](#), reporting that **Listerine and Listerine-like products could inactivate more than 99.9 percent of a virus similar to the one that causes covid-19 with just 30 seconds of exposure. In a study published in the Journal of Medical Virology, the scientists wrote that their results suggest mouthwash could potentially decrease the risk of transmission of the novel coronavirus and “provide an additional level of protection.”**

“The data suggests that if you have virus in your mouth, it would kill it” and could reduce your ability to spread it to others, said Craig Meyers, the study’s lead researcher and a professor in the university’s departments of microbiology and immunology and obstetrics and gynecology.

A 1 percent solution of baby shampoo, which is often used by head and neck doctors to rinse sinuses, was also shown to effectively inactivate the virus tested after two minutes of exposure, according to the study.

Meyers noted that the focus of the research was to find a way to lower transmission in situations where masking and being more than six feet apart might not be an option, for instance, during dental procedures.

But the findings do not necessarily mean using mouthwash or nasal rinses will protect you from getting infected, Rowan said.

“I do not think that they’re a good protective measure,” he said. “We’re looking at how it actually works on the virus itself rather than what it does to the body. I think those are two separate questions. . . . The question that we’ve asked so far is does this medication, does this thing that we’re giving, kill the virus? That’s the question that we’re answering right now.”

And based on existing research, experts say, people should not change how they [approach pandemic safety](#), emphasizing that the available studies have notable limitations.

First, the experiments were conducted in labs, and while attempts were made to mimic the environment of a human mouth, Kapila said those efforts don’t “really give you the full picture of what the virus might encounter” in living people.

“There’s many interactions that happen in the oral cavity,” she said. “There’s the bacteria. There’s the viruses. There’s fungi. There’s a whole community of other members in that saliva.” Researchers also don’t know how long an infected person’s mouth might stay virus-free after using mouthwash.



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“The virus is inside the cells and it’s producing virus and pumping it out . . . and it would be nice to know that if we can knock down the viral load in the mouth, how long does it take for it to return to that level?” Meyers said. “Is it 12 hours? Is it a day? Two days?”

Although the findings are “intriguing,” they are “not yet at the point where the average person can use them,” said Hana Akselrod, an infectious-disease physician at George Washington University.

“If people were to stop wearing masks and observing social distancing because they think having everyone gargle is going to prevent viral spread — and we don’t yet have evidence that that works — that could be a big mistake, and it would cause more disease and death,” she said.

Instead, the lab studies are a strong indication that more research, specifically clinical trials, needs to be done.

“This is a step toward an answer about how mouthwashes do against this virus in this area of the body,” Akselrod said. She added, “We never make recommendations for people’s behavior and application of new medical methods until there are actual well-designed, well-controlled studies on the record involving human beings.”

About a dozen clinical trials have been registered in a [database](#) run by the U.S. National Library of Medicine that aim to evaluate the virus-killing abilities of various oral and nasal rinses in people who have tested positive for the coronavirus.

“Since some of these products are already available over the counter and proven safe and so forth, it’s easy to move into a human setting to test it,” said Kapila, who is working on a clinical trial out of UCSF.

Stuart Gansky, one of the principal investigators on the UCSF trial, said he and his team are planning to assess whether using an oral rinse before a dental procedure works to reduce virus transmission. The other part of the small pilot trial aims to see whether regular mouthwash use will improve symptoms for people who have the virus, Gansky said. The trial, which is not yet accepting participants, [will test](#) four mouthwashes, including CloSys, Oral-B Mouth Sore, Crest Pro-Health Multi-Protection and Listerine.

In the meantime, Gansky and other experts urged people to follow existing public health guidelines and usage recommendations on mouthwash products.

“If it says rinse for 30 seconds and they’re using it 10 times a day and they’re using it for a minute at a time, there could be problems with their mucosa in their mouths and throats,” Gansky said. “They could be creating a problem that we don’t know about.”

MIT researchers design heated face mask to deactivate coronavirus

Source: <https://www.thenationalnews.com/business/technology/mit-researchers-design-heated-face-mask-to-deactivate-coronavirus-1.1098685>



Researchers at the Massachusetts Institute of Technology have designed a face mask that uses a heated copper mesh to inactivate viruses and neoprene to prevent the mask from getting too hot. Photo: Courtesy MIT researchers

Oct 24 – A team of researchers from the Massachusetts Institute of Technology have created a mask that aims to deactivate viruses using heat.

The MIT researchers have developed a concept mask model that incorporates a heated copper mesh covered in neoprene. As the person wearing the mask breathes in and out, air flows across the mesh and any viral particles in the air are deactivated by the high temperatures.

Such a mask could be useful for healthcare professionals and the wider public in situations where social distancing is difficult to achieve, the researchers said.

“This is a completely new mask concept in that it doesn’t primarily block the virus. It lets the virus go through the mask, but slows and inactivates it,” said Michael Strano, the Carbon P. Dubbs professor of chemical engineering at MIT and senior author of the paper.



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Face masks have become a staple globally to restrict the spread of Covid-19. Masks are mandatory in all public places across the UAE, with a Dh3,000 fine levied on anyone who does not adhere to safety regulations.

The MIT researchers have begun building prototypes and hope to begin testing them soon. They described the new concept in a paper to *bioRxiv*, an online server where papers that have not yet been peer-reviewed by scientific or medical experts are posted. Reports on existing masks were researched and it was found that none were designed to kill viruses through heat. Researchers then designed a mask that used copper mesh as the heating element, and performed mathematical modelling to determine the optimal temperature range needed to kill coronaviruses flowing in or out from breathing.

The researchers found that a temperature of about 90 degrees Celsius could achieve between a thousand-fold and million-fold reduction in viral particles. That temperature can be achieved by running an electrical current across a 0.1-millimeter thick copper mesh, powered by a small battery. The current prototype includes a 9-volt battery, which would provide enough power to heat the mask for a few hours.

“We need to be mindful of the safety and comfort of mask users,” said MIT graduate student Samuel Faucher, who is also the paper’s lead author. “The air will be cooled after viral inactivation to make the mask comfortable and safe to use.”

The copper mesh is surrounded by neoprene, an insulating material that prevents the outside of the mask from becoming too hot. One major advantage of heated masks is that as they render a virus inactive, they don’t need to be decontaminated or thrown away after use.

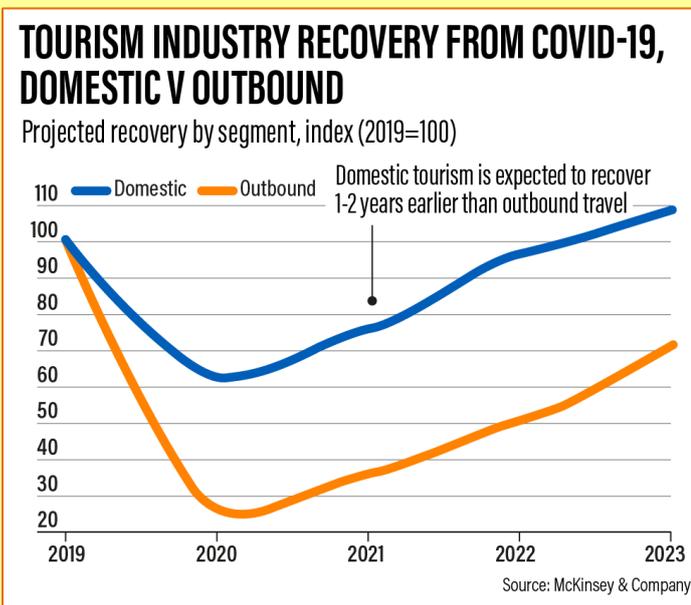
Heated masks would be more expensive than cloth masks or surgical masks, but could be useful in situations where exposure risk is high, researchers say. A patent for the heated mask design has already been filed and prototypes are already being built and tested at MIT.

Covid-19 could cost global tourism industry up to \$8.1tn

Source: <https://www.thenationalnews.com/business/travel-and-tourism/covid-19-could-cost-global-tourism-industry-up-to-8-1tn-1.1098551>

Oct 24 – Recovery to 2019 levels could be delayed until 2024, says new McKinsey report

The global tourism industry might face a cumulative drop of \$8.1 trillion in spending as a result of the Covid-19 pandemic, a new report from global consultancy McKinsey found.



The world’s tourism industry is also unlikely to see the same level of spending achieved last year until 2024, the consultancy said.

“Our tourism recovery model forecasts a cumulative drop of \$3tn to \$8tn before tourism expenditure returns to pre-Covid-19 levels,” the McKinsey report said. “Recovery will be slow and driven by the underlying dependencies countries had on domestic and non-air travel. Different countries should prepare for their own recovery curves.”

The pandemic has severely disrupted the travel and tourism industry across the world. Renewed lockdown measures in some countries, travel restrictions, reductions in consumers’ disposable income and low confidence levels could significantly slow the sector’s recovery globally.

The United Nations Conference on Trade and Development forecast in July that the pandemic could cost the global tourism industry losses worth \$2.2tn, or 2.8 per cent of the world’s gross domestic product if the break in international tourism lasts for eight months.

The McKinsey report estimated a recovery to 85 per cent of 2019 tourism volumes by 2021 and a full recovery by 2023 in an optimistic scenario that assumes a rapid containment of the virus and rebounding economies. In a more pessimistic recovery scenario, 2021 global tourism levels could be as low as 60 per cent of 2019 levels.



Factors that could affect tourists' decisions on where to travel include the attractiveness of domestic destinations, health standards in destination countries and health concerns and supply reductions in air travel, the report said.

McKinsey said dependence on domestic travel and non-air travel will likely determine tourism recovery in each country.

The consultancy predicted that domestic tourism will return to pre-crisis levels around one to two years earlier than outbound travel. This is because it is easier to travel by methods other than flying, such as cars and trains.

"In addition, domestic travel is expected to recover faster than hotels as we see a substitution toward vacation rentals and friends and family in certain markets," according to McKinsey.

In terms of recovery rates within countries, tourism in Germany is expected to recover faster than in other markets, driven by a strong health system, its effective Covid-19 response, a strong economy and land-based tourism options. Domestic tourism has also rebounded quickly in China, but outbound recovery is expected to be slower as travel restrictions remain in place and many Chinese tourists fear catching the virus abroad.

Meanwhile, the UK tourism industry is expected to recover only in 2024 because of a slow Covid-19 response combined with Brexit and its heavy reliance on business travellers and air travel, the report added.

"Industry leaders can seek to improve their rate of recovery through a variety of measures, including improving [the] perception of air travel safety, actively promoting domestic destinations, and ensuring government and insurance policies guarantee access to healthcare – even away from home," the report said.

CDC expands definition of 'close contacts,' after study suggests Covid-19 can be passed in brief interactions

Source: <https://www.statnews.com/2020/10/21/cumulative-time-covid-19-spread/>

Oct 21 – The Centers for Disease Control and Prevention on Wednesday expanded how it defines a "close contact" of someone with Covid-19 as it released new evidence showing the coronavirus can be passed during relatively brief interactions.

Previously, the CDC described a close contact as someone who spent 15 minutes or more within six feet of someone who was infectious. **Now, the agency says it's someone who spent a cumulative 15 minutes or more within six feet of someone who was infectious over 24 hours, even if the time isn't consecutive, according to an agency spokesperson.**

Close contacts are those who are tracked down during contact tracing and are recommended to quarantine.

The announcement from the CDC comes as scientists described in [a new study](#) how a correctional officer in Vermont appears to have contracted the coronavirus during "multiple brief encounters" with six incarcerated people who had Covid-19. The infected people were awaiting the results of their Covid-19 tests while the interactions happened.

In the study, the authors — including officials from the CDC and Vermont's health and corrections departments — noted that the data for defining a close contact have been limited. "A primary purpose of contact tracing is to identify persons with higher risk exposures and therefore higher probabilities of developing infection, which can guide decisions on quarantining and work restrictions," they wrote, adding that "public health officials should consider transmission-risk implications of cumulative exposure time within such settings."

Experts have long noted that the 15-minute, within-six-foot rule was not some sort of threshold that needed to be hit for transmission to occur. So much about whether spread happens depends on how infectious a person is, how well-ventilated the room that people are in is, how the virus might move through the air in a particular setting, whether people are wearing masks, and more. The 15-minute window had just been used as a benchmark to prioritize who should be followed up with for contact tracing and quarantine.

One reason why the length of interactions might matter, experts think, is because people need to be exposed to a certain level of virus if they're going to get infected. Researchers still aren't sure what that "infectious dose" is — and if a higher dose corresponds to how sick people are likely to get — but the thought is that the longer someone is around someone else who is infectious, the higher level of virus they will be subjected to, and the more likely they are to get Covid-19.

After the officer was diagnosed with Covid-19 in August, health officials and staff at the correctional facility reviewed surveillance footage of his interactions with the six incarcerated people. Though he never spent 15 straight minutes within six feet of any one of them, he was within six feet of them at least 22 times during one eight-hour shift, totaling at least 17 minutes of exposure. During their interactions, the incarcerated people were wearing masks most, but not all, of the time, while the officer always had a microfiber cloth mask, gown, and eye protection on.

The correctional officer had no known contact with anyone else with Covid-19 and coronavirus cases were low in his home county and in the rest of the correctional facility at the time, leading researchers to rule that his case most likely came over the brief encounters.



The new study “adds to the scientific knowledge of the risk to contacts of those with Covid-19 and highlights again the importance of wearing face masks to prevent transmission,” the CDC spokesperson said.

Study in 19 Countries Shows We May Struggle to Get High Uptake of a COVID-19 Vaccine

Source: <https://www.sciencealert.com/huge-amounts-of-people-will-refuse-the-coronavirus-vaccine-global-survey-suggests>

Oct 23 – While the world waits as patiently as it can for a [COVID-19](#) vaccine to materialise, no shortage of questions remain. When will we have a vaccine? How will it be distributed? Will it be as effective as we hope?

Amid these pressing unknowns, there's another important question we need to be asking. How many people will choose to receive [coronavirus](#) vaccinations when they become available? The answer might surprise you.

In the face of such a deadly [virus](#) – a [pandemic](#) unprecedented in living memory – it'd be easy to assume that the clear and overwhelming dangers of COVID-19 would cancel out people's [reluctance or refusal to get vaccinated](#). Such an assumption would be wrong, though.

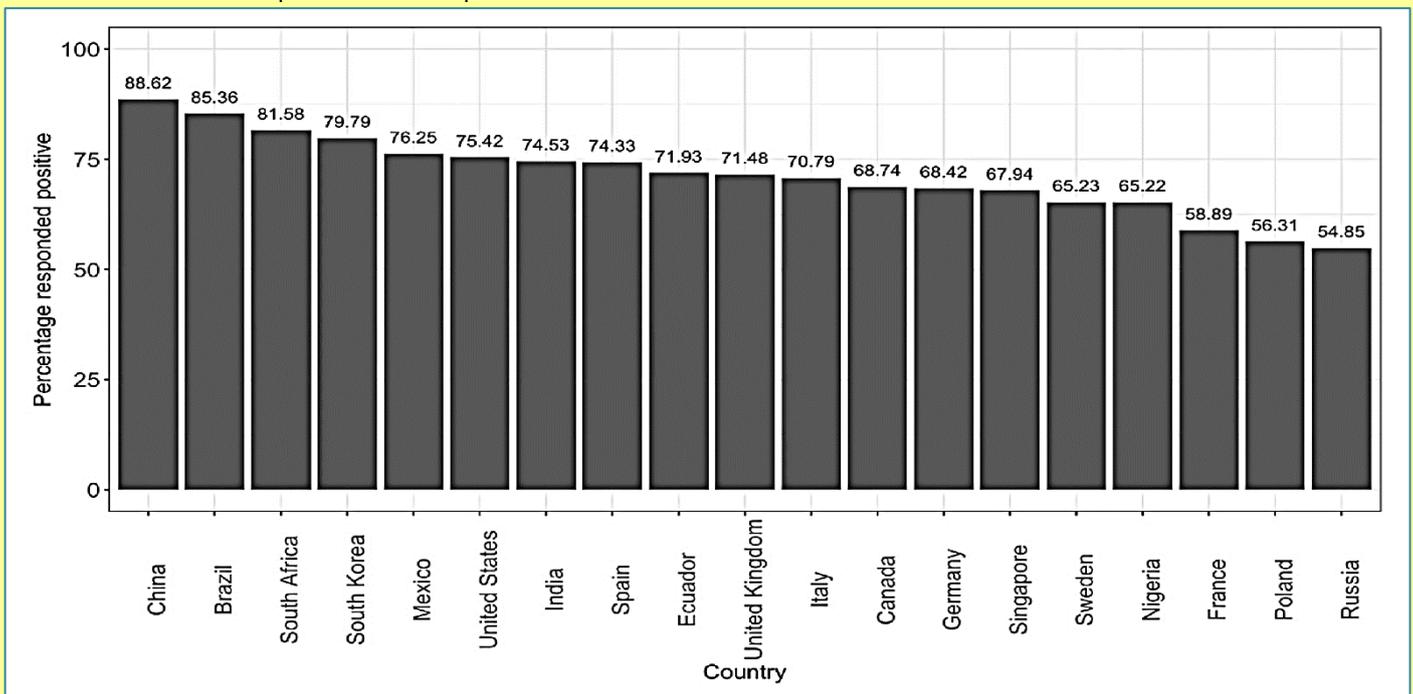
The anti-vaccination phenomenon – called [vaccine hesitancy](#) – is officially considered one of the [most dire global health threats](#) (and that was in a pre-pandemic world).

Today, the risks that come with vaccine hesitancy stand to present an even more serious issue, and a [new study](#) underlines the extent of the problem we're facing.

In a [global survey conducted in June](#) involving **over 13,000 people from 19 countries**, the majority of people indicated they would be very or somewhat likely to take a COVID-19 vaccine proven to be safe and effective. That's the good news.

The bad news is the majority of people only amounted to 71.5 percent of the participants in the survey. In other words, almost **three out of every 10 people said they either wouldn't take the vaccine (indicating refusal), or were neutral (indicating hesitancy)**.

Even more concerning is that the 19 countries the researchers surveyed were chosen because they were among the hardest-hit nations at the time of the poll in terms of reported numbers of COVID-19 cases.



Percent of respondents in each country who responded positively to the question **'If a COVID-19 vaccine is proven safe and effective and is available, I will take it'**. (Lazarus et. al, *Nature Medicine*, 2020)

As the researchers point out, these kinds of numbers could potentially translate into tens of millions of potential vaccine avoiders in the real world if the same decisions were made; that



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said, surveys such as this aren't necessarily a firm predictor of what actual vaccine uptake will be, as vaccine decisions depend on numerous factors and can change over time, the researchers acknowledge.

Overall, vaccine acceptance varied broadly between different countries, with people in China indicating the highest acceptance (88.6 percent), while Russia demonstrated the lowest acceptance (54.9 percent) and Poland showed the highest proportion of negative responses (27.3 percent).

Generally, people with higher incomes and more education were more likely to respond positively to vaccines, as were women compared to men, and older people compared to younger people.

Invariably, vaccine confidence was higher in countries where people had more trust in their government, whereas it was lower in a question asking about vaccination being mandated by employers.

"All respondents, regardless of nationality, reported that they would be less likely to accept a COVID-19 vaccine if it were mandated by employers," the authors of the study, led by infectious diseases researcher Jeffrey Lazarus from the University of Barcelona, [explain in their paper](#).

"This finding across all countries with both high and low reported vaccine acceptance proportions suggests that promoting voluntary acceptance is a better option for employers."

Overall, the researchers say their results show governments and health authorities need to be prepared to address vaccine hesitancy and build vaccine literacy among the public, so that people choose to accept COVID-19 immunisation measures when they become available.

Clear and consistent communication from a variety of trusted sources will be crucial in building public confidence in vaccine programs, and time is of the essence. Subsequent polling conducted after this survey suggests [vaccine hesitancy might actually be growing](#), even as we draw closer to vaccines being released.

Against the backdrop of all this hesitancy, doubt, and confusion, [COVID-19 cases worldwide are still rising](#), and the stakes are higher than ever.

"The far-from-universal willingness to accept a COVID-19 vaccine is a cause for concern," [the researchers write](#).

"Unless and until the origins of such wide variation in willingness to accept a COVID-19 vaccine is better understood and addressed, differences in vaccine coverage between countries could potentially delay global control of the pandemic and the ensuing societal and economic recovery."

►► The findings are reported in [Nature Medicine](#).

Aspirin use reduces risk of death in hospitalized COVID-19 patients

University of Maryland School of Medicine | *ScienceDaily*

Source: <https://www.sciencedaily.com/releases/2020/10/201022195637.htm>

Oct 22 – Hospitalized COVID-19 patients who were taking a daily low-dose aspirin to protect against cardiovascular disease had a significantly lower risk of complications and death compared to those who were not taking aspirin, according to a new study led by researchers at the University of Maryland School of Medicine (UMSOM). Aspirin takers were less likely to be placed in the intensive care unit (ICU) or hooked up to a mechanical ventilator, and they were more likely to survive the infection compared to hospitalized patients who were not taking aspirin. The study, published today in the journal *Anesthesia and Analgesia*, provides "cautious optimism," the researchers say, for an inexpensive, accessible medication with a well-known safety profile that could help prevent severe complications.



The researchers found aspirin use was associated with a 44 percent reduction in the risk of being put on a mechanical ventilator, a 43 percent decrease in the risk of ICU admission and -- most importantly -- a 47 percent decrease in the risk of dying in the hospital compared to those who were not taking aspirin. The patients in the aspirin group did not experience a significant increase in adverse events such as major bleeding while hospitalized.



How a Virus Can Trigger Diabetes

A recent mouse study by researchers at the Spanish National Cancer Research Centre (CNIO) reveals how the enterovirus coxsackievirus type B4 (CVB4) could induce diabetes. Their findings could be of relevance for the COVID-19 pandemic, since clinical information indicates a possible relationship between SARS-CoV-2 viral infection and diabetes. [+ MORE](#)

COVID-19 Can Make Patients' Immune Systems Attack Their Own Bodies, Study Shows

By Matthew Woodruff

Source: <https://www.sciencealert.com/covid-19-triggers-an-immune-overaction-in-patients-with-severe-illness>

Oct 26 – Across the world, immunologists who retooled their labs to join the fight against [SARS-CoV-2](#) are furiously trying to explain why some people get so sick while others recover unscathed. The pace is dizzying, but some clear trends have emerged.

One area of focus has been the production of [antibodies](#) – powerful proteins capable of disabling and killing invading pathogens like [viruses](#). Of great concern has been the sporadic identification of so-called autoreactive antibodies that, instead of targeting disease-causing microbes, target the tissues of individuals suffering from severe cases of [COVID-19](#).

Early studies implicated these [autoantibodies in dangerous blood clots](#) forming in patients admitted to intensive care. More recently, they have been linked to severe disease by [inactivating critical components of viral immune defenses](#) in a significant fraction of patients with severe disease.

[As an immunologist](#) within the [Lowance Center for Human Immunology at Emory University](#), I have been investigating the immune response responsible for producing antibodies in COVID-19. Under the direction of [Dr. Ignacio Sanz](#), our group has previously investigated immune responses contributing to [autoantibody production in autoimmune disorders like lupus](#), and more recently [in severe cases in COVID-19](#).

However, while we were able to characterize the response in COVID-19 patients as autoimmunelike, we could not confirm the production of autoantibodies hidden within their antiviral responses.

Now we can.

In a [newly released study awaiting peer-review](#), we describe the alarming finding that in the sickest patients with COVID-19, autoantibody production is common – a finding with large potential impact on both acute patient care and infection recovery.

Severe infection is linked with autoantibody production

Autoantibodies come in "flavors" that are usually associated with specific disease types. Patients with lupus, for example, will often have [antibodies that target their own DNA](#) – the molecules that make up the human genome.

Patients with the autoimmune disorder [rheumatoid arthritis](#) are less likely to have those antibodies, but more likely to show positive tests for rheumatoid factor – antibodies that target other antibodies.

In this study, the Lowance Center group analyzed the medical charts of 52 patients in intensive care who were diagnosed with COVID-19. None of them had a history of autoimmune disorders. However, they were tested during infection for autoantibodies found in a variety of disorders.

The results are stark. More than half of the 52 patients tested positive for autoantibodies. In patients with the highest levels of c-reactive protein (a marker of inflammation) in the blood, more than two-thirds displayed evidence that their immune system was producing antibodies attacking their own tissue.

While these findings raise concerns, there are things that our data don't reveal. Although patients with severe disease clearly display autoantibody responses, the data don't tell us to what extent these autoantibodies contribute to the most severe symptoms of COVID-19.

It could be that severe viral illness routinely results in the production of autoantibodies with little consequence; this could just be the first time we're seeing it. We also don't know how long the autoantibodies last. Our data suggest that they are relatively stable over a few weeks. But we need follow-up studies to understand if they are persisting routinely beyond infection recovery.

Importantly, we believe that the autoreactive responses we have identified here are specific to the SARS-CoV-2 infection – there is no reason to believe that similar results would be expected through vaccination against the virus.



Understanding the role of autoantibodies in COVID-19

However, while it is possible that these autoantibodies are benign, or even helpful in a yet-unidentified manner, it's also possible that they aren't. Maybe these self-targeted antibody responses do indeed contribute to disease severity, helping explain the delayed onset of severe symptoms in some patients that may correlate with antibody production.

This could be a reason that [treatment with dexamethasone](#), an immunosuppressant often used to quell "flare-ups" of autoimmune disorders, might be effective in treating patients with only the most severe disease. It is also possible that these responses are not short-lived, outlasting the infection and contributing to [ongoing symptoms now experienced by a growing number of "long-hauler" COVID-19 patients](#).

Most concerning, it is possible that these responses could self-perpetuate in some patients, resulting in the emergence of new, permanent autoimmune disorders.

My colleagues and I sincerely hope that this is not the case – rather, that the emergence of autoantibodies in these patients is a red herring, a quirk of a viral immune response in some patients that will resolve on its own.

But we need to do better than hope – we need to ask the right questions and figure out the answers. Fortunately, this study also gives us the tools to do that.

Autoreactive antibody test may reveal better treatments

The tests that were run on these patients to determine their "autoreactive profile" are not specialized. They are available to most hospital labs across the country.

Indeed, the two most common antibodies that we find in these patients, antinuclear antibodies and rheumatoid factor, are detected by common tests used by rheumatologists.

[Our study shows](#) that by testing for just these two autoantibodies, and the inflammatory marker c-reactive protein, we may be able to identify patients more likely to be experiencing potentially dangerous immune responses that might benefit from more aggressive immune modulation.

Further, autoreactivity testing might help identify patients who might benefit from rheumatological follow-up to monitor recovery, and help us understand whether some cases of "long-hauler" COVID-19 might be related to persisting autoantibodies. If so, these patients might respond to the same immune-targeted therapies that [have been successful](#) in MIS-C where autoantibody production has now been documented.

Finally, by testing patients immediately following COVID-19 recovery, we can establish baselines and begin to track the possible emergence of new cases of autoimmunity following this terrible disease, and plan early rheumatological intervention if needed.

We now have the tools. It's time to start using them.

Matthew Woodruff is Instructor @ Lowance Center for Human Immunology, Emory University.

Worst-hit coronavirus patients 'suffer IQ drop as brains age up to 10 years'

Source: <https://www.mirror.co.uk/news/uk-news/worst-hit-coronavirus-patients-suffer-22900572>

Oct 24 – The brains of some Covid-19 survivors have aged by up to ten years, a UK study has found.

Results of a major test into people's cognitive abilities found coronavirus sufferers scored worse than those who had not caught the disease – and even victims who recovered at home with only mild symptoms were affected.

Scientists believe mental impairment may be one of the symptoms of what is now being called Long Covid.

The research, led by Dr Adam Hampshire of Imperial College London, saw a team analyse cognitive test results from 84,285 people who took part in a study called the Great British Intelligence Test.

The worst-affected patients who took part in the collaborative project with BBC Two programme Horizon suffered the equivalent of an 8.5-point drop in their IQ.

The team from Imperial College, the University of Cambridge, University of Chicago and King's College London also found that Covid-19 survivors who had been in intensive care suffered more severe mental problems.

Coronavirus victims scored poorly on tests for logic and the meaning of words, spatial orientation, maintaining attention and processing their emotions, the study found.

Even people who had seemingly fully recovered – including those no longer reporting symptoms and suffering no breathing difficulty – showed "significant cognitive deficits".



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The report concluded that its detailed tests and the questionnaire that participants filled in backed up fears that “there are chronic cognitive consequences of having Covid-19”.

It added: “Individuals who recovered from suspected or confirmed Covid-19 perform worse on cognitive tests in multiple domains than would be expected, given their detailed age and demographic profiles.

“This deficit scales with symptom severity and is evident amongst those without hospital treatment.”

As we revealed last month, there are believed to be up to 500,000 Long Covid sufferers in the UK.

But because it is a new phenomenon, medics have not yet defined a list of symptoms.

Patients have reported a wide range of issues, however.

The most common is crippling fatigue, while other symptoms include breathlessness, a persistent cough, joint pain, muscle aches, hearing and eyesight problems, headaches, loss of smell and taste, as well as damage to the heart, lungs, kidneys and gut.

Mental health problems have also been reported, including depression, anxiety and struggling to think clearly.

Some survivors have described having ‘brain fog’ – and many have a combination of symptoms.

People were encouraged to take part in the nine challenges posed by the Great British Intelligence Test to find out what their personal cognitive strengths were.

There was a Covid-19 questionnaire afterwards so any coronavirus survivors could be identified.

Of the 84,285 people who took part, 60 reported being put on a ventilator due to Covid-19 and 147 were cared for in hospital without a ventilator.

A further 176 needed medical care at home for breathing difficulties, 3,466 had breathing difficulties but received no medical aid and 9,201 reported being ill without breathing symptoms.

The report said: “There was a significant main effect, with increasing degrees of cognitive under-performance relative to controls dependent on level of medical assistance received for Covid-19 respiratory symptoms.

“People who had been hospitalised showed large-medium scaled global performance deficits dependent on whether they were put on a ventilator.

“Those who remained at home showed small, statistically significant global performance deficits.” The report, which has not yet been peer-reviewed, said the results “should act as a clarion call for more detailed research” to investigate the mental problems being faced by Covid-19 survivors.

Last month, the Sunday People spoke to Covid-19 sufferers who were still in physical pain months after catching the disease, and some had mental issues.

In September, Health Secretary Matt Hancock told Parliament: “There is absolutely no doubt of the severity of the consequences of Long Covid.”

He claimed Long Covid clinics had been set up – but so far only one clinic, in Surrey, is understood to be fully up and running.

The head of NHS England, Sir Simon Stevens, said £10million would be spent on creating Long Covid clinics across England this year, providing one-stop services for physical and mental health.

He said there were “tens of thousands, probably hundreds of thousands” of people with Long Covid symptoms.

Estimates suggest one in 10 of Covid-19 survivors could be affected.

Asymptomatic Cases of Coronavirus Seem to Lose Antibodies Sooner, Study Finds

Source: <https://www.sciencealert.com/those-with-asymptomatic-covid-19-may-lose-antibodies-sooner-says-study>

Oct 27 – Asymptomatic [coronavirus](#) sufferers appear to lose detectable [antibodies](#) sooner than people who have exhibited [COVID-19](#) symptoms, according to one of the biggest studies of its kind in Britain [reported on Tuesday](#).

The findings by Imperial College London and market research firm Ipsos Mori also suggest the loss of antibodies was slower in 18–24-year-olds compared to those aged 75 and over.

Overall, samples from hundreds of thousands of people across England between mid-June and late September showed the prevalence of [virus](#) antibodies fell by more than a quarter.

The research, commissioned by the British government and released ahead of peer-review on [Tuesday by Imperial](#), indicates people's immune response to COVID-19 reduces over time following infection.

James Bethell, [a junior health minister, called it](#) “a critical piece of research, helping us to understand the nature of COVID-19 antibodies over time”.

But scientists involved cautioned that a great deal remains unknown about people's long-term antibody response to the virus.



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"It remains unclear what level of immunity antibodies provide, or for how long this immunity lasts," [said Paul Elliott, of Imperial's School of Public Health.](#)

The study involved **365,000 randomly-selected adults** administering at home three rounds of finger prick tests for coronavirus antibodies between June 20 and September 28.

The results showed the number of people with antibodies fell by 26.5 percent over the approximate three-month period.

Scaled up to a nationwide level, it meant the proportion of the English population with antibodies dropped from 6.0 percent to 4.4 percent, according to the study.

The decline coincided with the prevalence of the virus falling dramatically across England - and the rest of Britain - following a months-long national shutdown which was eased over the summer.

However, the research found the number of health care workers testing positive for antibodies did not change over time, potentially reflecting repeated, or higher initial, exposure to the virus.

"This very large study has shown that the proportion of people with detectable antibodies is falling over time," [said Helen Ward, one of the lead authors.](#)

"We don't yet know whether this will leave these people at risk of reinfection with the virus that causes COVID-19, but it is essential that everyone continues to follow guidance to reduce the risk to themselves and others."

COVID-19: Are the Statistics Telling us Anything?

By Ophélie Guillouet-Lamy

NCT Magazine | Oct 2020

Source: <https://nct-magazine.com/nct-magazine-october-2020/covid-19-are-the-statistics-telling-us-anything/>



Ever since the start of this pandemic, scientists, researchers but also polling organizations and media have tried to follow the trend curve of this disease. By looking at all the numbers, by following the evolution of the virus in different countries of the world, by comparing the most up-to-date data, by measuring and interpreting trends, they all have been trying to find answers, or at least a better understanding of what is happening to our society. This data race might have left you with more questions than before. Without pretending to bring the scientific truth or to clarify everything, this article will try to sum up some of the most interesting statistics and data about COVID-19 and provide food for thought. After all, this virus remains a mystery.

Before getting into numbers, one should remember the main figures of this pandemic:

- Number of COVID-19 Cases worldwide, as of October 19, 2020: 40.281.741 (To help you visualize, that is two times the population of Beijing.)
- Number of deaths from COVID-19 Worldwide, as of October 19, 2020: 1.118.328
- Total recoveries from COVID-19 Worldwide, as of October 19, 2020: 30.116.676
- Estimated COVID-19 Infection Rate: 2,5 per infected person (Probability or risk of an infection in a population: 1 infected person can, in turn, contaminate 2,5 other people)

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

Ophélie currently serves as a Consultant at IB Consultancy. In 2019, she graduated from Sciences Po Lille with a Master's degree in Strategy, Intelligence and Risk Management. She draws her expertise in security and international affairs from different working experiences at the French Ministry of Interior, the European Union Agency for Law Enforcement Cooperation (Europol), or the French Embassy in Belarus.

Some Covid Survivors Have Antibodies That Attack the Body, not Virus

Source: <https://www.nytimes.com/2020/10/27/health/covid-antibodies-autoimmunity.html>

Oct 27 – Some survivors of [Covid-19](#) carry worrying signs that their immune system has turned on the body, reminiscent of potentially debilitating diseases like [lupus and rheumatoid arthritis](#), a new study has found.

At some point, the body's defense system in these patients shifted into attacking itself, rather than the virus, the study suggests. The patients are producing molecules called "autoantibodies" that target genetic material from human cells, instead of from the virus.



This misguided immune response may exacerbate severe Covid-19. **It may also explain why so-called “long haulers” have lingering problems months after their initial illness has resolved and the virus is gone from their bodies.**

The findings carry important implications for treatment: Using existing tests that can detect autoantibodies, doctors could identify patients who might benefit from treatments used for lupus and rheumatoid arthritis. There is no cure for these diseases, but some treatments decrease the frequency and severity of flare-ups.

“It’s possible that you could hit the appropriate patients harder with some of these more aggressive drugs and expect better outcomes,” said Matthew Woodruff, an immunologist at Emory University in Atlanta and lead author of the work.

The results were [reported Friday](#) on the preprint server MedRxiv, and have not yet been published in a scientific journal. But other experts said the researchers who carried out the study are known for their careful, meticulous work, and that the findings are not unexpected because other viral illnesses also trigger autoantibodies.

“I’m not surprised, but it’s interesting to see that it’s really happening,” said Akiko Iwasaki, an immunologist at Yale University. “It’s possible that even moderate to mild disease may induce this kind of antibody response.”

For months it has been clear that the coronavirus can cause the immune system to run amok in some people, ultimately wreaking more damage to the body than the virus itself. ([Dexamethasone](#), the steroid President Trump took after his Covid diagnosis, has proved effective in some people with severe Covid to tamp down this over-exuberant immune response.)

Viral infections cause infected human cells to die. Sometimes the cells die a quiet death — but sometimes, and especially in the throes of severe infection, they can blow up, stewing their innards. When that happens, DNA, normally cloistered in coiled bundles inside the nucleus, is suddenly scattered and visible.

In the typical response to a virus, cells known as B immune cells make antibodies that recognize pieces of viral RNA from the virus and lock onto them. But in conditions like lupus, some B cells never learn to do this and instead produce autoantibodies that glom onto DNA debris from dead human cells, mistaking them for intruders. Something similar may be happening in patients with Covid-19, the research suggests.

“Anytime you have that combination of inflammation and cell death, there is the potential for autoimmune disease and autoantibodies, more importantly, to emerge,” said Marion Pepper, an immunologist at the University of Washington in Seattle.

Dr. Woodruff and his colleagues [reported earlier](#) this month that some people with severe Covid-19 also have such unrefined B immune cells. The finding prompted them to explore whether those B cells make autoantibodies.

In the new study, the researchers looked at 52 patients within the Emory health care system in Atlanta who were classified as having either severe or critical Covid-19, but who had no history of autoimmune disorders.

They found autoantibodies that recognize DNA in nearly half of the patients. They also found antibodies against a protein called rheumatoid factor and others that help with blood clotting. Among the top half of the most seriously ill patients, more than 70 percent had autoantibodies against one of the targets tested, Dr. Woodruff said.

“It’s not just that these patients have an autoimmune-like immune response,” he said. “It’s that those immune responses are coupled with actual true testable clinical auto-reactivities.” Some of the autoantibodies the researchers identified are associated with blood flow problems, noted Ann Marshak-Rothstein, an immunologist and lupus expert at the University of Massachusetts, Worcester.

“It’s very possible that some of the coagulation issues that you see in Covid-19 patients are being driven by these kinds of immune complexes,” she said.

If the autoantibodies do turn out to be long-lasting, she said, they may result in persistent, even lifelong, problems for Covid-19 survivors. “You never really cure lupus — they have flares, and they get better and they have flares again,” she said. “And that may have something to do with autoantibody memory.”

Dr. Marshak-Rothstein, Dr. Iwasaki and dozens of other teams are closely studying the immune response to the coronavirus. Given the ease of testing for autoantibodies, it may soon become clear whether the antibodies were identified only because the researchers went looking for them, or whether they represent a more permanent alteration of the immune system.

“It’s not clear to me what it all means at this point,” Dr. Pepper said. “It’s going to take a little bit of time to understand if this is something that’s going to lead to downstream pathology.”

Lilly Stops Antibody Trial in Hospitalized COVID-19 Patients, Other Trials Continue

Source: <https://www.medscape.com/viewarticle/939884>

Oct 27 – Eli Lilly announced it will halt its ACTIV-3 trial evaluating the antibody **bamlanivimab in combination with remdesivir** for people hospitalized with COVID-19, after new evidence regarding efficacy emerged.



The new data from the National Institutes of Health suggest that the experimental neutralizing antibody therapy does not offer significant clinical benefit for people with more advanced COVID-19 illness, according to [a company statement](#). Eli Lilly also announced it plans to continue its other trials evaluating the antibody, including those assessing a potential role in treating people in the earlier stages of COVID-19.

"While there was insufficient evidence that bamlanivimab improved clinical outcomes when added to other treatments in hospitalized patients with COVID-19, we remain confident based on data from Lilly's BLAZE-1 study that bamlanivimab monotherapy may prevent progression of disease for those earlier in the course of COVID-19," the statement reads.

The ACTIV-3 trial [was paused](#) on October 13 after a data and safety monitoring board cited safety concerns.

The most recent data update that triggered an end to the trial did not reveal any significant differences in safety, though.

Are Oncologists Ready to Confront a Second Wave of COVID-19?

By Aude Lecrubier, with additional reporting by Medscape Staff

Source: <https://www.medscape.com/viewarticle/939276>

Oct 16 – Canceled appointments, postponed surgeries, and delayed cancer diagnoses — all are a recipe for exhaustion for oncologists around the world, struggling to reach and treat their patients during the pandemic. Physicians and their teams felt the pain as COVID-19 took its initial march around the globe.

▶▶ [Read the full article at source's URL.](#)

Excess COVID-19 Deaths: How Does the US Compare with Other Countries?

By F. Perry Wilson, MD, MSCE

Source: <https://www.medscape.com/viewarticle/938978>

Oct 13 – Welcome to *Impact Factor*, your weekly dose of commentary on a new medical study. I'm Dr F. Perry Wilson from the Yale School of Medicine.

I remember the first time I filled out a death certificate: Hospital of the University of Pennsylvania, medical ICU, 2006.

I'd been following the patient for about a week. He was an older man with heart disease and diabetes. He'd come in with pneumonia, developed severe [sepsis](#), and finally had a cardiac arrest. It was the first time I ran a code, and obviously we didn't get him back. When it was over, my resident handed me a bunch of papers: the death certificate paperwork.

I had to list the cause of death. Was it the sepsis? The pneumonia? Or maybe the diabetes that predisposed him to it all? In the end, it felt somewhat arbitrary. A death is a death. I filled out the form, took a moment to process, and admitted the next patient.



A death is a death, regardless of the cause. And that's why, more than any other number in this pandemic, the "excess deaths" statistic is so compelling.

In a given year, deaths in the US, like most countries, are pretty stable.

Source: [US Death Rate 1950-2020](#). Retrieved October 11, 2020.

They tend to rise a bit in the winter because of respiratory viruses, and they decline a bit in the spring and summer. But more or less, we know what to

expect: around 8.5 deaths per 1000 people per year.

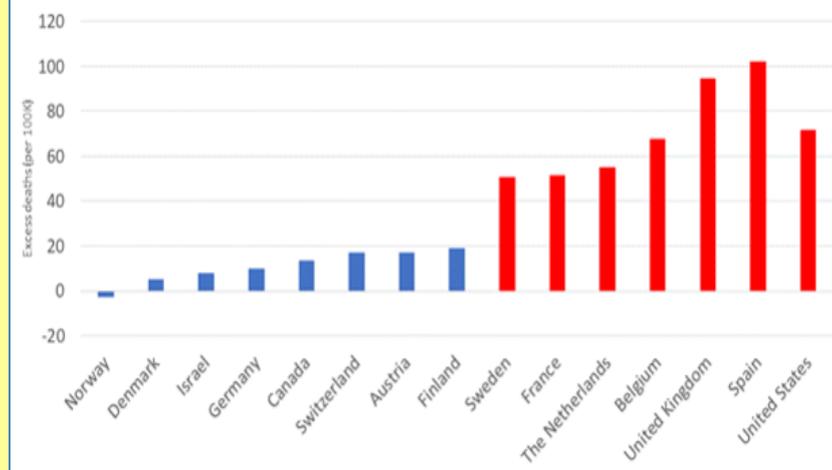
This year, from March to August, the death rate in the US was 9.8 per 1000 people per year. It may not seem like a big change, but this number is actually huge. In the time period of the coronavirus pandemic, we would have expected 1,111,000 deaths in this country. We got 1,337,000. That's 225,000 deaths more than expected, which, of course, is a bit more than the observed COVID death rate.



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The observed-to-expected death rate is a great measure of how hard we are being hit by the pandemic. This statistic is a great equalizer; it doesn't rely on a robust COVID testing infrastructure or what appears on death certificates. A death is a death. Two research letters appearing in *JAMA* this week leverage this statistic to compare how COVID has affected the US vs other countries, and states vs other states.

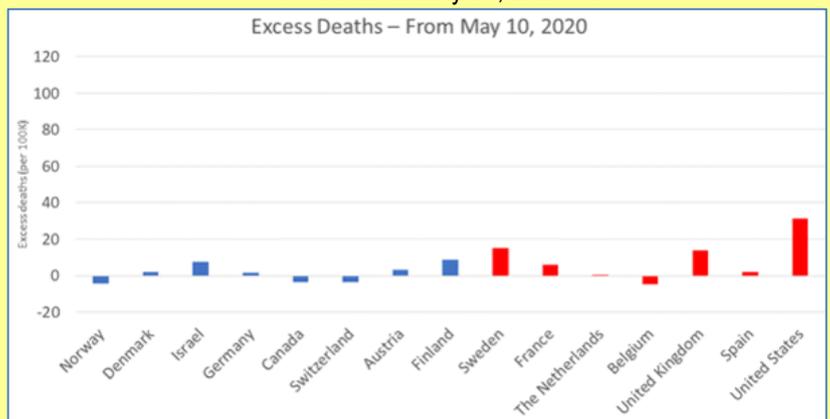
Let's start with a country-by-country comparison. [This letter](#) compares excess death rates in the US to other OECD [Organization for Economic Co-operation and Development] countries that capture data in a similar way.



Here I'm graphing for you the excess deaths per capita across a number of these countries. **Blue are countries with moderate COVID mortality. Red is high COVID mortality.** You can see that the US is on the high end but not the worst. We are outpaced at this point by the United Kingdom and Spain.

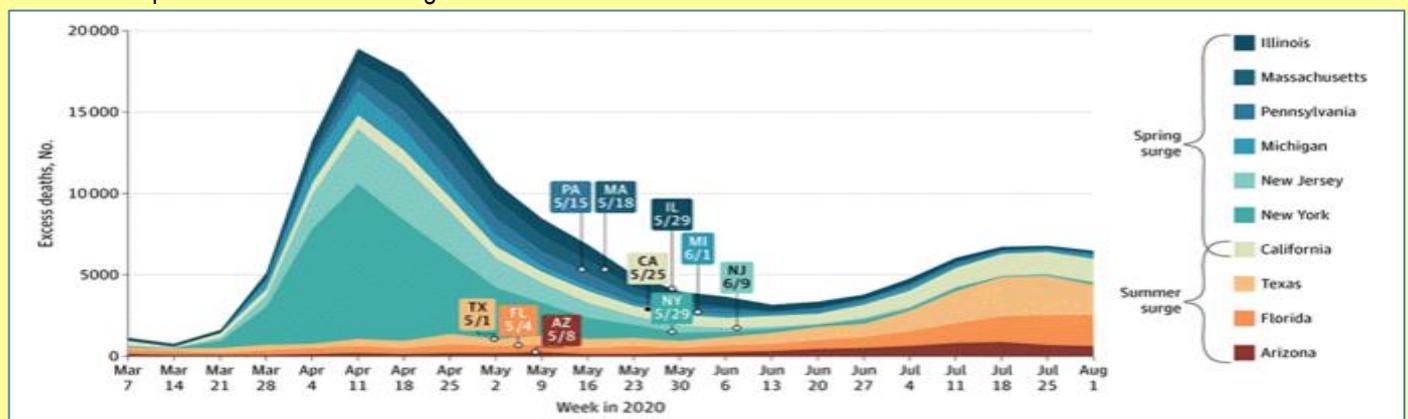
But the picture gets worse when you look at the epidemic over time. See, these high-mortality countries by and large brought their excess death rates down dramatically once they figured out how to best manage public health with COVID-19. Yes, that means masks, distancing, the stuff that works. Look at the same data, but now examining excess deaths from May 10, 2020 ▼.

Across the board, excess death rates have declined significantly, even going negative in some places like Canada. But in this framework, the US has the dubious honor of being number one in excess deaths. The authors acknowledge that countrywide differences may play a role here; the US is younger in general but has more comorbidities. But, of course, they note that our lackluster public health response may also be to blame.



Looking at the variability in excess deaths, it's hard not to imagine what might have been. If the US had managed the pandemic like Norway or Germany, we could have 20,000 excess deaths right now instead of 225,000.

The [other research letter](#) helps us drill down into the states to see where these excess deaths are occurring. There's an explanation for the disturbing trend here.



Woolf SH, et al. *JAMA*. Published online October 12, 2020. doi:10.1001/jama.2020.19545



You can see that early on in the pandemic, there was a really huge spike in excess deaths driven by states like New York, but those numbers dropped off quickly once those states got ahead of their epidemic curves. The ongoing excess deaths are driven by low but stubbornly elevated rates in states that saw cases rising over the summer. In a perverse way, it may be that this low but still elevated overall mortality rate is enough to fly below the public radar and decrease public pressure for public health solutions.

Now, I should mention that excess deaths and COVID deaths are not the same thing. These numbers include deaths from things like [suicide](#), drug overdoses, and deferred care for non-COVID medical issues that have probably increased during the pandemic, and they of course would also reflect reduced deaths from things like traffic accidents that have gone down because of work-from-home policies and limitations on bars.

But as a number that has nothing to do with testing, nothing to do with how we fill out death certificates, excess deaths may be the best tool we have to compare the US response to the pandemic with other parts of the world. And, by this metric, it doesn't look good.

F. Perry Wilson, MD, MSCE, is an associate professor of medicine and director of Yale's Program of Applied Translational Research.

New Coronavirus Survives Nine Hours on Human Skin

Source: <https://www.medscape.com/viewarticle/938759>

Oct 08 – Left undisturbed, the new coronavirus can survive many hours on human skin, a new study has found.

To avoid possibly infecting healthy volunteers, researchers conducted lab experiments using cadaver skin that would otherwise have been used for skin grafts. **While influenza A virus survived less than two hours on human skin, the novel coronavirus survived for more than nine hours.**

Both were completely inactivated within 15 seconds by hand sanitizer containing 80% alcohol.

The U.S. Centers for Disease Control and Prevention currently recommends using alcohol-based hand rubs with 60% to 95% alcohol or thoroughly washing hands with soap and water for at least 20 seconds.

Studies have shown that COVID-19 transmission largely occurs via aerosols and droplets. Still, the authors of the new study conclude in a report published on Saturday in *Clinical Infectious Diseases*, "Proper hand hygiene is important to prevent the spread of SARS-CoV-2 infections."

Brain Scans Show a Whole Spectrum of COVID-19 Abnormalities We Can't Fully Explain

Source: <https://www.sciencealert.com/how-covid-disturbs-brain-waves>

Oct 29 – Among the many serious symptoms of [COVID-19](#), the strange neurological effects experienced by many patients count as perhaps the most mysterious.

A sudden [loss of smell and taste](#) was one of the first unusual symptoms reported by COVID-19 patients, but stroke, seizures, and [swelling of the brain](#) (called encephalitis) have all been described.

Some patients diagnosed with COVID-19 also experience confusion, delirium, dizziness, and have difficulty concentrating, [according to case reports and reviews](#).

For several months, doctors have been relentlessly trying to understand this disease, and its many manifestations that seem to affect the brain in ways we can't fully explain.

To synthesise some of the rapidly accumulating data, two neurologists have now conducted a review of research exploring how COVID-19 disturbs patterns of normal brain function, which can be measured by an EEG.

An EEG, short for [electroencephalogram](#), records electrical activity in different parts of a person's brain, typically by using electrodes placed on their scalp.

In their review, the researchers collated data on nearly 620 COVID-positive patients from 84 studies, published in peer-reviewed journals and pre-print servers, where the EEG waveform data were available to analyse.

Looking at EEG results could indicate some form of COVID-related encephalopathy in these patients – signs of impairment or disturbance to brain function.



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Approximately two-thirds of the patients in the studies were male, and the median age was 61 years old. Some people also had a pre-existing condition, such as dementia, that could alter an EEG reading, which the researchers considered when evaluating their test results.

Among the 420 patients where the basis for ordering an EEG was recorded, the most common reason was an altered mental state: close to two-thirds of the patients studied had experienced some delirium, coma, or confusion.

Around 30 percent of patients had had a seizure-like event, which prompted their doctor to order an EEG, while a handful of patients had speech issues. Others experienced a sudden cardiac arrest, which could have interrupted blood flow to the brain.

The patients' EEG scans showed a whole spectrum of abnormalities in brain activity, including some rhythmic patterns and epileptic-like spikes in activity. The most common abnormality noted was diffuse slowing, which is an overall slowing of brain waves that indicates a general dysfunction in brain activity.

In the case of COVID, this impairment [could be the result of widespread inflammation](#), as the body mounts its immune response, or possibly reduced blood flow to the brain, if the heart and lungs are weak.

As for localised effects, a third of all abnormalities detected were detected in the [frontal lobe](#), the part of the brain which handles executive thinking tasks, such as logical reasoning and decision-making. The frontal lobe also helps us to regulate our emotions, control our behaviour, and is involved in learning and attention.

"These findings tell us that we need to try EEG on a wider range of patients, as well as other types of brain imaging, such as MRI or CT scans, that will give us a closer look at the frontal lobe," [said](#) neurologist and co-author Zulfi Haneef from Baylor College of Medicine in Houston.

In time, an EEG could help cement a COVID-19 diagnosis or hint at possible complications. Doing so might help doctors monitor the long-term complications of COVID-19, and detect any long-lasting effects on a patient's brain function.

Unfortunately, as it stands the results don't give any indication of how rare or common these brainwave disturbances are in the broader population, since only COVID-19 patients who had an EEG test were included in the analysis.

But it does add to mounting evidence that the novel [coronavirus](#) can have a serious impact on our neurological health.

"More research is needed, but these findings show us these are areas to focus on as we move forward," Haneef [said](#).

"EEG abnormalities affecting the frontal lobe seem to be common in COVID-19 encephalopathy, and has been proposed as a potential biomarker if recorded consistently," the authors [wrote in their paper](#).

As the [pandemic](#) rolls on, we've come to understand just how stubborn COVID-19 can be, with patients dubbed '[long haulers](#)' describing how they can't shake symptoms, and still feel fatigued months after they were diagnosed.

"A lot of people think they will get the illness, get well, and everything will go back to normal," Haneef [said](#) in a statement. "But these findings tell us that there might be long-term issues, which is something we have suspected and now we are finding more evidence to back that up."

►► The study was published in [Seizure: European Journal of Epilepsy](#).

Emergence and spread of a SARS-CoV-2 variant through Europe in the summer of 2020

By Emma B Hodcroft, Moira Zuber, Sarah Nadeau, et al.

Source: <https://www.medrxiv.org/content/10.1101/2020.10.25.20219063v1>

Oct 28 – A variant of SARS-CoV-2 emerged in early summer 2020, presumably in Spain, and has since spread to multiple European countries. The variant was first observed in Spain in June and has been at frequencies above 40% since July. Outside of Spain, the frequency of this variant has increased from very low values prior to 15th July to 40-70% in Switzerland, Ireland, and the United Kingdom in September. It is also prevalent in Norway, Latvia, the Netherlands, and France. Little can be said about other European countries because few recent sequences are available. Sequences in this cluster (**20A.EU1**) **differ from ancestral sequences at 6 or more positions, including the mutation A222V in the spike protein and A220V in the nucleoprotein.** We show that this variant was exported from Spain to other European countries multiple times and that much of the diversity of this cluster in Spain is observed across Europe. **It is currently unclear whether this variant is spreading because of a transmission advantage of the virus or whether high incidence in Spain followed by dissemination through tourists is sufficient to explain the rapid rise in multiple countries.**



Two Must Read Studies

Infection fatality rate of COVID-19 inferred from seroprevalence data

By John P. A. Ioannidis

Published online: 14 October 2020

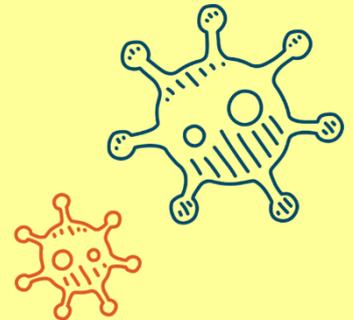
*Meta-Research Innovation Center at Stanford (METRICS), Stanford University, CA*Source: https://www.who.int/bulletin/online_first/BLT.20.265892.pdf**Abstract****Objective:** To estimate the infection fatality rate of coronavirus disease 2019 (COVID-19) from seroprevalence data.**Methods:** I searched PubMed and preprint servers for COVID-19 seroprevalence studies with a sample size ≥ 500 as of 9 September, 2020. I also retrieved additional results of national studies from preliminary press releases and reports. I assessed the studies for design features and seroprevalence estimates. I estimated the infection fatality rate for each study by dividing the number of COVID-19 deaths by the number of people estimated to be infected in each region. I corrected for the number of antibody types tested (immunoglobulin, IgG, IgM, IgA).**Results:** I included 61 studies (74 estimates) and eight preliminary national estimates. Seroprevalence estimates ranged from 0.02% to 53.40%. Infection fatality rates ranged from 0.00% to 1.63%, corrected values from 0.00% to 1.54%. Across 51 locations, the **median COVID-19 infection fatality rate was 0.27%** (corrected 0.23%): the rate was 0.09% in locations with COVID-19 population mortality rates less than the global average (< 118 deaths/million), 0.20% in locations with 118–500 COVID-19 deaths/million people and 0.57% in locations with > 500 COVID-19 deaths/million people. In people < 70 years, infection fatality rates ranged from 0.00% to 0.31% with crude and corrected medians of 0.05%.**Conclusion:** The infection **fatality rate of COVID-19 can vary substantially** across different locations and this may reflect differences in population age structure and case-mix of infected and deceased patients and other factors. The inferred infection fatality rates tended to be much lower than estimates made earlier in the pandemic.**Global perspective of COVID-19 epidemiology for a full-cycle pandemic**

By John P. A. Ioannidis

First published: 07 October 2020

*Meta-Research Innovation Center at Stanford (METRICS), Stanford University, CA*Source: <https://onlinelibrary.wiley.com/doi/10.1111/eci.13423>**Abstract**As of October 2020, there are >1 million documented deaths with COVID-19. Excess deaths can be caused by both COVID-19 and the measures taken. COVID-19 shows extremely strong risk stratification across age, socioeconomic factors, and clinical factors. Calculation of years-of-life-lost from COVID-19 is methodologically challenging and can yield misleading over-estimates. Many early deaths may have been due to suboptimal management, malfunctioning health systems, hydroxychloroquine, sending COVID-19 patients to nursing homes, and nosocomial infections; such deaths are partially avoidable moving forward. About 10% of the global population may be infected by October 2020. Global infection fatality rate is 0.15–0.20% (0.03–0.04% in those <70 years), with large variability across locations with different age-structure, institutionalization rates, socioeconomic inequalities, population-level clinical risk profile, public health measures, and health care. There is debate on whether at least 60% of the global population must be infected for herd immunity, or, conversely, mixing heterogeneity and pre-existing cross-immunity may allow substantially lower thresholds. **Simulations are presented with a total of 1.58–8.76 million COVID-19 deaths over 5-years (1/2020–12/2024) globally (0.5–2.9% of total global deaths).**

The most favorable figures in that range would be feasible if high risk groups can be preferentially protected with lower infection rates than the remaining population. Death toll may also be further affected by potential availability of effective vaccines and treatments, optimal management and measures taken, COVID-19 interplay with influenza and other health problems, reinfection potential, and any chronic COVID-19 consequences. Targeted, precise management of the pandemic and avoiding past mistakes would help minimize mortality.



Nine COVID Facts: A Pandemic of Fearmongering and Ignorance

By Jeff Harris

Source: <https://www.globalresearch.ca/nine-covid-facts-pandemic-fearmongering-ignorance/5728067>

Oct 30 – Ever since the alleged pandemic erupted this past March the mainstream media has spewed a non-stop stream of misinformation that appears to be laser focused on generating maximum fear among the citizenry. But the facts and the science simply don't support the grave picture painted of a deadly virus sweeping the land.

Yes, we do have a pandemic, but it is a pandemic of ginned up pseudo-science masquerading as unbiased fact. Here are nine facts backed up with data, in many cases from the CDC itself that paints a very different picture from the fear and dread being relentlessly drummed into the brains of unsuspecting citizens.



1) [The PCR test is practically useless](#)

According to an article in the New York Times August 29th 2020 testing for the Covid-19 virus using the popular PCR method results in up to 90% of those tested showing positive results that are grossly misleading.

Officials in Massachusetts, New York and Nevada compiled testing data that revealed the PCR test can NOT determine the amount of virus in a sample. (viral load) The amount of virus in up to 90% of positive results turned out to be so miniscule that the patient was asymptomatic and posed no threat to others. So, the positive Covid-19 tests are virtually meaningless.

2) [A positive test is NOT a CASE](#)

For some reason every positive Covid-19 test is immediately designated a CASE. As we saw in #1 above up to 90% of positive Covid-19 tests result in miniscule amounts of virus that do not sicken the subject. Historically only patients who demonstrated actual symptoms of an illness were considered a case. Publishing positive test results as "CASES" is grossly misleading and needlessly alarming.

3) [The Centers for Disease Control dramatically lowered the Covid-19 Death Count](#)

On August 30th the CDC released new data that showed only 6% of the deaths previously attributed to Covid-19 were due exclusively to the virus. The vast majority, 94%, may have had exposure to Covid-19 but also had preexisting illnesses like heart disease, obesity, hypertension, cancer and various respiratory illnesses. While they died with Covid-19 they did NOT die exclusively from Covid-19.

4) [CDC reports Covid-19 Survival Rate over 99%](#)

The CDC updated their "Current Best Estimate" for Covid-19 survival on September 10th showing that over 99% of people exposed to the virus survived. Another way to say this is that less than 1% of the exposures are potentially life threatening. According to the CDC the vast majority of deaths attributed to Covid-19 were concentrated in the population over age 70, close to normal life expectancy.

5) [CDC reveals 85% of Positive Covid cases wore face masks Always or Often](#)

In September of 2020 the CDC released the results of a study conducted in July where they discovered that 85% of the positive Covid test subjects reported wearing a cloth face mask always or often for two weeks prior to testing positive. The majority, 71% of the test subjects reported always wearing a cloth face mask and 14% reported often wearing a cloth face mask. The only rational conclusion from this study is that cloth face masks offer little if any protection from Covid-19 infection.

6) [There are inexpensive, proven therapies for Covid-19](#)

Harvey Risch, MD, PhD heads the Yale University School of Epidemiology. He authored "The Key to Defeating Covid-19 Already Exists. We Need to Start Using It" which was published in Newsweek Magazine July 23rd, 2020. Dr. Risch documents the proven effectiveness of treating patients diagnosed with Covid-19 using a combination of



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Hydroxychloroquine, an antibiotic like azithromycin and the nutritional supplement zinc. Medical Doctors across the globe have reported very positive results using this protocol particularly for early stage Covid patients.

7) [The US Death Rate is NOT spiking](#)

If Covid-19 was the lethal killer it's made out to be one would reasonably expect to see a significant spike in the number of deaths reported. But that hasn't happened. According to the CDC as of early May 2020 the total number of deaths in the US was 944,251 from January 1 – April 30th. This is actually slightly lower than the number of deaths during the same period in 2017 when 946,067 total deaths were reported.

8) [Most Covid-19 Deaths Occur at the End of a normal Lifespan](#)

According to the CDC as of 2017 US males can expect a normal lifespan of 76.1 years and females 81.1 years. A little over 80% of the suspected Covid-19 deaths have occurred in people over age 65. According to a June 28th New York Post article almost half of all Covid suspected deaths have occurred in Nursing Homes which predominately house people with preexisting health conditions and close to or past their normal life expectancy.

9) [CDC Data Shows Minimal Covid Risk to Children and Young Adults](#)

The CDC reported in their September 10th update that it's estimated Infection Mortality Rate (IFR) for children age 0-19 was so low that 99.97% of those infected with the virus survived. For 20-49-year-olds the survival rate was almost as good at 99.98%. Even those 70 years-old and older had a survival rate of 94.6%. To put this in perspective the CDC data suggest that a child or young adult up to age 19 has a greater chance of death from some type of accident than they do from Covid-19.

Taken together it should be obvious that Covid-19 is pretty similar to typical flu viruses that sicken some people annually. The vast majority are able to successfully fight off the virus with their body's natural immune system. Common sense precautions should be taken, particularly by those over age 65 that suffer from preexisting medical conditions.

The gross over reaction by government leaders to this illness is causing much more distress, physical, emotional and financial, than the virus ever could on its own. **The bottom line is there is NO pandemic, just a typical flu season that has been wildly blown out of proportion by 24/7 media propaganda and enabled by the masses paralyzed by irrational fear.**

Oxford scientists develop extremely rapid diagnostic test for Covid-19

Source: <https://www.ox.ac.uk/news/2020-10-15-oxford-scientists-develop-extremely-rapid-diagnostic-test-covid-19#>

Oct 15 – Scientists from Oxford University's Department of Physics have developed an extremely rapid diagnostic test that detects and identifies viruses in less than five minutes.

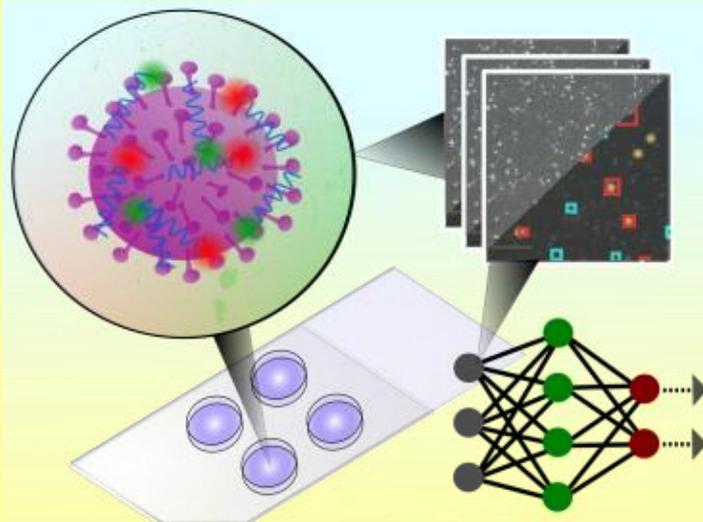


image containing hundreds of fluorescently-labelled viruses.

Machine-learning software quickly and automatically identifies the virus present in the sample. **This approach exploits the fact that distinct virus types have differences in**

The method, [published on the preprint server MedRxiv](#), is able to differentiate with high accuracy SARS-CoV-2, the virus responsible for COVID-19, from negative clinical samples, as well as from other common respiratory pathogens such as influenza and seasonal human coronaviruses.

The test uses a [convolutional neural network](#) to classify microscopy images of single intact particles of different viruses – Credit: University of Oxford

Working directly on **throat swabs** from COVID-19 patients, without the need for genome extraction, purification or amplification of the viruses, the method starts with the rapid labelling of virus particles in the sample with **short fluorescent DNA strands**. A microscope is then used to collect images of the sample, with each



their fluorescence labeling due to differences in their surface chemistry, size, and shape.

The scientists have worked with clinical collaborators at the John Radcliffe Hospital in Oxford to validate the assay on COVID-19 patient samples which were confirmed by conventional RT-PCR methods.

[Professor Achilles Kapanidis](#), at Oxford's [Department of Physics](#), says: 'Unlike other technologies that detect a delayed antibody response or that require expensive, tedious and time-consuming sample preparation, our method quickly detects intact virus particles; meaning the assay is simple, extremely rapid, and cost-effective.'

DPhil student [Nicolas Shiaelis](#), at the University of Oxford, says: 'Our test is much faster than other existing diagnostic technologies; viral diagnosis in **less than 5 minutes** can make mass testing a reality, providing a proactive means to control viral outbreaks.'

[Dr Nicole Robb](#), formerly a Royal Society Fellow at the University of Oxford and now at Warwick Medical School, says: 'A significant concern for the upcoming winter months is the unpredictable effects of co-circulation of SARS-CoV-2 with other seasonal respiratory viruses; we have shown that our assay can reliably distinguish between different viruses in clinical samples, a development that offers a crucial advantage in the next phase of the pandemic.'

The researchers aim to develop an integrated device that will eventually be used for testing in sites such as businesses, music venues, airports etc., to establish and safeguard COVID-19-free spaces.

They are currently working with Oxford University Innovation (OUI) and two external business/finance advisors to set up a spinout, and are seeking investment to accelerate the translation of the test into a fully integrated device to be deployed as a real-time diagnostic platform capable of detecting multiple virus threats.

They hope to incorporate the company by the end of the year, start product development in early 2021, and have an approved device available within 6 months of that time.

▶▶ Read the preprint here: <https://www.medrxiv.org/content/10.1101/2020.10.13.20212035v1>

Aprotinin a new drug candidate for the treatment of COVID-19

Source: <https://scienceblog.com/519360/aprotinin-a-new-drug-candidate-for-the-treatment-of-covid-19/>

Oct 30 – Researchers from the University of Kent, the Goethe-University in Frankfurt am Main (Germany), and the Hannover Medical School (Germany) have identified a drug with the potential to provide a treatment for COVID-19.

The international team led by Professor Martin Michaelis, Dr Mark Wass (both School of Biosciences, University of Kent), and Professor Jindrich Cinatl (Institute of Medical Virology, Goethe-University) found that the approved **protease inhibitor aprotinin** displayed activity against SARS-CoV-2, the coronavirus that causes COVID-19, in concentrations that are achieved in patients. Aprotinin inhibits the entry of SARS-CoV-2 into host cells and may compensate for the loss of host cell protease inhibitors that are downregulated upon SARS-CoV-2 infection.

Aprotinin aerosols are approved in Russia for the treatment of influenza and could be readily tested for the treatment of COVID-19. Professor Martin Michaelis said: "The aprotinin aerosol has been reported to **be tolerated extremely well in influenza patients**. Hence, it may have a particular potential to prevent severe COVID-19 disease when applied early after diagnosis."

Infectious diseases, chemical threats, nuclear attacks: Here's how the FDA is advising hospitals to prepare for the worst

Source: <https://sports.yahoo.com/infectious-diseases-chemical-threats-nuclear-attacks-heres-how-the-fda-is-advising-hospitals-to-prepare-for-the-worst-185903337.html>

Oct 30 – While the COVID-19 pandemic is far from over — and not even close to slowing down — the Food and Drug Administration is already looking toward the next public health emergency.

On Friday, the FDA released a list of essential medications and "medical countermeasures" — which include drugs and devices for "a potential public health emergency stemming from a terrorist attack with a biological, chemical, or radiological/nuclear material, or a naturally occurring emerging disease" — that are needed to help combat future threats to public health.

The [list](#), which contains 223 drug and biological product essential medicines and medical countermeasures, along with 96 medical devices, features items that the FDA has deemed



“medically necessary to have available at all times in an amount adequate to serve patient needs and in the appropriate dosage forms,” according to a [press release](#) issued by the agency.

“Basically, it’s a list of meds and devices to cover many conditions so that hospitals will be fully prepared in the event that there are mass shortages,” Jamie Alan, an assistant professor of pharmacology and toxicology at Michigan State University, explains to Yahoo Life. “This would be something the pharmacy could cross-check to make sure they were stocked up on everything they need.”

The list was created on the prompting of an [executive order](#) issued in early August.

“The goal of this work is to ensure the American public is protected against outbreaks of emerging infectious diseases, such as COVID-19, as well as chemical, biological, radiological and nuclear threats,” the release says. “To accomplish this goal, the executive order seeks to ensure sufficient and reliable, long-term domestic production of these products, and to minimize potential shortages by reducing our dependence on foreign manufacturers of these products.”

The medications identified are ones that are “most needed for patients in U.S. acute care medical facilities, which specialize in short-term treatment for severe injuries or illnesses, and urgent medical conditions,” the release says. The devices include diagnostic testing kits, supplies for rapid test development and processing, personal protective equipment, active vital-sign monitoring devices, devices for vaccine delivery and medical devices like ventilators.

According to the FDA, the items that made the list are what the agency anticipates “will be needed to respond to future pandemics, epidemics, and chemical, biological and radiological/nuclear threats.”

“When identifying essential medicines and medical countermeasures, we focused on including those that are medically necessary to have available in adequate supply which can be used for the widest populations to have the greatest potential impact on public health,” the release says.

The list will be used by federal partners to “carry out directives in the executive order, such as facilitating domestic production and increasing the domestic procurement of items on the list,” FDA spokesperson Jeremy Kahn tells Yahoo Life. While helping hospital systems actually procure the supplies is outside the FDA’s expertise, Kahn says that the organization “intends to provide input as appropriate to help other agencies fulfill their procurement obligations.”

There is a wide range of items on [the list](#), including medications like the blood-thinner heparin, antiviral medications (including oseltamivir, which is used to treat the flu), steroids, select chemotherapy drugs, the antibiotic cream bacitracin, oximeters, hypodermic needles and transfusable blood.

It seems obvious that hospital systems should stock up on needed supplies and medications — especially after going through shortages due to the COVID-19 pandemic — but the list may be helpful, Dr. Richard Watkins, an infectious disease physician in Akron, Ohio, and a professor of medicine at the Northeast Ohio Medical University, tells Yahoo Life. “Many hospitals are in dire financial straits, so guidance that helps them plan about supply issues could be useful,” he says.

Dr. Amesh A. Adalja, senior scholar at the Johns Hopkins Center for Health Security, agrees. “There are certain medications that we want to have in ample supply for any type of public health emergency,” he tells Yahoo Life. “Many hospitals don’t necessarily think about global public health emergency planning. They just might think about an influenza pandemic.”

Doctors say the pandemic has been hard on medical systems. “We have recently experienced shortages of basic medications, such as intravenous morphine and normal saline, which wreaked havoc on basic patient care needs,” Dr. Lewis Nelson, chair of the Department of Emergency Medicine at Rutgers New Jersey Medical School, tells Yahoo Life. “The recognition of how ill-prepared the country was for the coronavirus epidemic highlights our vulnerability to other public health and terrorism-related concerns. In an effort to be sure that we maintain adequate supplies of medications, antidote, personal protective equipment, diagnostic tests and other devices, the list lays out what would be considered essential to mitigate both of these situations.”

But, Alan says, it’s likely hospital systems are already aware that they need to have at least some these medications and devices stockpiled. “Most hospital pharmacies will have a list like this already, but it’s nice to have,” she says.

Regardless of whether hospitals have a list like this, Alan says it’s crucial for medical providers to have the right supplies on hand for future public health emergencies. “It could make a big difference,” she says. “There are several potentially lifesaving medications on this list. In a public health emergency, supply chains could very well break down, and having these medications and devices in stock is a good idea.”

FDA: Drug and Biologic Essential Medicines, Medical Countermeasures, and Critical Inputs – Biological

Source: <https://www.fda.gov/media/143406/download>



To Avoid an 'Era of Pandemics,' We Must Protect Nature, UN Warns

Source: <https://www.sciencealert.com/to-avoid-an-era-of-pandemics-we-must-protection-nature-un-warns>

Oct 30 – Future pandemics will happen more often, kill more people, and wreak even worse damage to the global economy than [COVID-19](#) without a fundamental shift in how humans treat nature, the United Nations' biodiversity panel said Thursday.

Warning that there are up to 850,000 [viruses](#) which, like the novel [coronavirus](#), exist in animals and may be able to infect people, the panel known as IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) said pandemics represented an "existential threat" to humanity.

Authors of the [special report on biodiversity and pandemics](#) said that habitat destruction and insatiable consumption made animal-borne diseases far more likely to make the jump to people in future.

"There is no great mystery about the cause of the COVID-19 [pandemic](#) – or any modern pandemic," said Peter Daszak, president of the Ecohealth Alliance and chair of the IPBES workshop that drafted the report.

"The same human activities that drive [climate change](#) and biodiversity loss also drive pandemic risk through their impacts on our agriculture."

The panel said that COVID-19 was the sixth pandemic since the influenza outbreak of 1918 – all of which had been "entirely driven by human activities."

These include unsustainable exploitation of the environment through deforestation, agricultural expansion, wildlife trade, and consumption – all of which put humans in increasingly close contact with wild and farmed animals and the diseases they harbour.

Seventy percent of emerging diseases – such as [Ebola](#), Zika, and [HIV/AIDS](#) – are zoonotic in origin, meaning they circulate in animals before jumping to humans.

Around five new diseases break out among humans every single year, any one of which has the potential to become a pandemic, the panel warned.

Land use

IPBES said in its periodic assessment on the state of nature last year that more than three-quarters of land on Earth had already been severely degraded by human activity.

One-third of land surface and three-quarters of fresh water on the planet is currently taken up by farming, and humanity's resource use has rocketed up 80 percent in just three decades, it said.

IPBES conducted a virtual workshop with 22 leading experts to come up with a list of options that governments could take to lower the risk of repeat pandemics.

It acknowledged the difficulty in counting the full economic cost of COVID-19.

But the assessment pointed to estimated costs as high as \$16 trillion as of July 2020.

The experts said that the cost of preventing future pandemics was likely to be 100 times cheaper than responding to them, "providing strong economic incentives for transformative change."

"Our approach has effectively stagnated," Daszak said.

"We still rely on attempts to contain and control diseases after they emerge, through vaccines and therapeutics."

'Withering reminder'

The IPBES suggested a global, coordinated pandemic response, and for countries to agree upon targets to prevent biodiversity loss within an international accord similar to the Paris agreement on climate change.

Among the options for policymakers to reduce the likelihood of a COVID-19 re-run are taxes or levies on meat consumption, livestock production, and other forms of "high pandemic-risk activities."

The assessment also suggested better regulation of international wildlife trade and empowering indigenous communities to better preserve wild habitats.

Nick Ostle, a researcher at the CEH Lancaster Environment Centre, Lancaster University, said the IPBES' assessment should serve as a "withering reminder" of how reliant humanity is on nature.

"Our health, wealth, and wellbeing rely on the health, wealth, and wellbeing of our environment," said Ostle, who was not involved in the research process.

"The challenges of this pandemic have highlighted the importance of protecting and restoring our globally important and shared environmental 'life-support' systems."



This face mask with anti-viral layer can deactivate novel coronavirus

Source: <https://www.moneycontrol.com/news/coronavirus/novel-face-mask-with-anti-viral-layer-can-deactivate-novel-coronavirus-6040591.html>

Scientists have designed a new face mask with an anti-viral layer to deactivate the novel coronavirus, that can make the wearer less infectious.

The idea is to modify mask fabrics with anti-viral chemicals that can sanitise exhaled, escaped respiratory droplets, according to the researchers from the Northwestern University in the US.

By simulating inhalation, exhalation, coughs, and sneezes in the laboratory, the researchers found that non-woven fabrics used in most masks work well to demonstrate the concept.

The study, published on Thursday in the journal Matter, found that a lint-free wipe with just 19 percent fibre density, for example, sanitised up to 82 percent of escaped respiratory droplets by volume.

Such fabrics do not make breathing more difficult, and the on-mask chemicals did not detach during simulated inhalation experiments, the researchers said.

"Masks are perhaps the most important component of the personal protective equipment (PPE) needed to fight a pandemic," said Northwestern University's Jiaying Huang, who led the study.

"We quickly realised that a mask not only protects the person wearing it, but much more importantly, it protects others from being exposed to the droplets (and germs) released by the wearer," Huang said.

Although masks can block or reroute exhaled respiratory droplets, many droplets and their embedded viruses still escape, the researchers said.

From there, virus-laden droplets can infect another person directly or land on surfaces to indirectly infect others, they said.

The team aimed to chemically alter the escape droplets to make the viruses inactivate more quickly. After performing multiple experiments, the researchers selected two well-known antiviral chemicals: phosphoric acid and copper salt.

After performing multiple experiments, the researchers selected two well-known antiviral chemicals: phosphoric acid and copper salt. These non-volatile chemicals were appealing because neither can be vaporised and then potentially inhaled, and both create a local chemical environment that is unfavourable for viruses.

"Virus structures are actually very delicate and 'brittle'. If any part of the virus malfunctions, then it loses the ability to infect," Huang said.

The team grew a layer of a conducting polymer polyaniline on the surface of the mask fabric fibres.

The material adheres strongly to the fibres, acting as reservoirs for acid and copper salts.

The researchers found that even loose fabrics with low-fibre packing densities of about 11 percent, such as medical gauze, still altered 28 percent of exhaled respiratory droplets by volume.

For tighter fabrics, such as lint-free wipes — the type of fabrics typically used in the lab for cleaning 82 per cent of respiratory droplets were modified, they said.

How Does the Environment Impact COVID-19?

Source: <https://www.hstoday.us/subject-matter-areas/emergency-preparedness/how-does-the-environment-impact-covid-19/>

Oct 29 – "We don't do science projects just because they're cool. We're doing them to solve important problems that are facing the nation and our workforce."

So said Dr. Lloyd Hough, who leads the Department of Homeland Security (DHS) [Science and Technology Directorate's](#) (S&T) [Hazard Awareness and Characterization Technology Center](#) (HAC-TC). HAC-TC provides subject matter expertise on chemical, biological, and explosive hazards to S&T programs and supports the directorate's use of the innovative science-based capabilities at S&T's [National Biodefense Analysis and Countermeasure Center](#) (NBACC) to conduct vital research on COVID-19 and other diseases.

And Hough is right—with a devastating pandemic raging around the globe, there is perhaps no more important scientific endeavor than to identify ways to stop the spread of the novel coronavirus.

Soon after the outbreak began in the U.S., S&T created a COVID-19 [Master Question List](#) (MQL) that continues to be updated weekly. The MQL attempts to quickly summarize what is known and needs to be known about the virus. Questions like: How easily does it spread? What are the signs and symptoms? What is its stability in the environment? NBACC



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researchers applied their unique capabilities for characterizing biological threat agents to study environmental stability so that federal government and response agencies can prepare risk models to defend the homeland.

“It is of utmost importance to know how threat agents survive on surfaces, in the air, in various temperatures and humidity levels,” said Hough. “The answers will help us learn how to stay safe.”

“This research is important to help us better understand the potential for disease transmission in different environments,” said Dr. Paul Dabisch, a senior principal investigator and Aerobiology Team lead at NBACC. “However, many factors beyond just the survival of the virus on surfaces or in aerosol particles have the potential to impact disease transmission, such as the amount of virus expelled during breathing, talking or coughing, and how much virus is needed to infect someone. All these factors need to be assessed to determine the risk of disease transmission during different activities in different environments.”

Cutting-edge technology allows scientists to recreate multiple environments in a lab

NBACC researchers began their environmental studies in March 2020, focusing on testing how resistant the coronavirus is to sunlight, heat and humidity in droplets on surfaces, and in aerosols suspended in the air. Results from the studies were published this spring and summer in the peer-reviewed *Journal of Infectious Diseases* and the American Society for Microbiology's mSphere®.

“The more stable a biological threat agent is in the air, the farther downwind it will go. The same thing is true in a public health crisis, as potentially more people could be infected,” said Hough. “We have unique facilities at NBACC to do environmental stability studies on the coronavirus, including biosafety level-3 laboratory and aerosol chambers, with which to safely study the virus on surfaces and in aerosol.”

Laboratory biosafety level is defined by the hazard associated with working with different types of infectious diseases. Biosafety level 1 (BSL-1) laboratory is for benign organisms, such as non-pathogenic strains of *Escherichia coli*, which do not sicken healthy humans. In BSL-2 through BSL-4 laboratories, the danger and precautions increase. For the virus that causes COVID-19, Severe Acute Respiratory Syndrome Coronavirus 2 or SARS-CoV-2, researchers work in BSL-3 laboratories.

What makes NBACC unique is a special capability for studying viruses/microorganisms in different environments—an aerosol chamber with a controllable environment housed inside another specialized containment system. Inside the chamber, NBACC researchers can produce aerosols, control the temperature and humidity, add simulated sunlight, all to replicate different environments in the U.S. at different times of the year.

“We wanted to understand where this virus is most stable, so that we can focus efforts to treat the environments where the virus is most likely to be transmitted,” said Hough. “For example, this will help us advise other DHS agencies what and when they have to clean, and how we can most safely operate checkpoints and customs at the airports, so passengers can fly safely.”

NBACC scientists working with the aerosol chamber have expertise in aerobiology, like Dr. Dabisch and Dr. Shanna Ratnesar-Shumate. Aerobiology is the study of particles passively transported by the air, including pollen, spores (fungal, fern, moss), bacterial spores, miniscule insects and seeds, and, of course, viruses.

“We study infectious aerosols containing influenza, potential bioweapons like anthrax and most recently SARS-CoV-2,” Ratnesar-Shumate said.

Studies show that of all environmental factors impacting COVID-19, sunlight is key

In the recently published studies, NBACC researchers focused on how different environmental conditions affect the survival of infectious virus on surfaces and in the air.

To look at [how stable SARS-CoV-2 is on surfaces](#), they used larger droplets of simulated saliva and respiratory fluid containing the virus. Such droplets can be generated if a person sneezes or coughs and quickly drop on the ground. The researchers placed them on metal coupons inside the aerosol chamber and observed how long the virus remains infectious when exposed to simulated sunlight. While the virus survived for prolonged periods in the dark (similar to indoor conditions), in sunlight, 90% of the virus died in minutes.

To see [how stable the virus is in aerosols](#), the researchers produced aerosols that mimic those produced by humans when breathing, talking, or coughing. These particles remain airborne for extended periods of time and can travel significant distances.

“If people are sitting in a room and are talking, breathing, laughing, those aerosol particles are just hanging out and continuously floating and accumulating, increasing the risk of infection. Once inhaled, aerosols could reach deep into the lungs,” Ratnesar-Shumate said.

The researchers produced the aerosols with virus into the chamber at different humidity, temperature and sunlight levels. The results showed that sunlight was the strongest environmental factor that inactivated the virus, killing most of the virus in minutes.



“It was surprising that the humidity did not play a part in the aerosol study, because humidity has always had an effect on the survivability of viruses, specifically the influenza virus and even some of the other coronaviruses,” Ratnesar-Shumate said. “All environmental factors were eclipsed by the sun.”

Lessons learned from past outbreaks help inform the ongoing pandemic response

NBACC was founded in 2010 to defend the nation against biosecurity threats, such as the 2001 anthrax attacks. During the Western Africa Ebola epidemic (2013-2016), S&T prepared an MQL that helped focus S&T’s research on questions that only NBACC could answer. This experience served as a model for how to respond to future outbreaks. S&T has developed MQLs for several other bioagents of concern, such as the anthrax bacteria and the Middle East Respiratory Syndrome coronavirus, or MERS-CoV. These MQLs identify knowledge gaps that often lead to laboratory research efforts. As an example, NBACC studied how long [influenza virus remains infectious in aerosols in sunlight](#), which facilitated current COVID-19 research.

“Our response to the COVID-19 pandemic required us to shift research priorities almost overnight, which isn’t easy,” Dabisch said. “While we were able to leverage existing methods and capabilities, the need to rapidly shift our research focus has provided insight to help us refine and streamline our planning processes and workflows, which will hopefully allow us to respond more rapidly to future outbreaks if they occur.”

Lessons learned from past outbreaks and NBACC’s recent studies are available to help guide federal, state, and local decision-makers as they continue to implement and execute their COVID-19 response plans. S&T is committed to arming stakeholders with scientific data and practical resources—like two online calculator tools ([Surface Decay](#) and [Airborne Decay](#))—they can use on the front lines.

Additional NBACC COVID-related studies on the horizon

NBACC is continuing to focus its scientific efforts on COVID-19 studies. In addition to work with aerosols containing SARS-CoV-2, NBACC scientists are also studying decontamination methods, testing how effective different chemicals (e.g., peracetic acid, bleach, hand sanitizers, disinfectant wipes) are for indoor areas and highly touched surfaces. The scientists are also working to improve estimates of how much virus an individual might need to inhale before they get sick. These studies will produce critical data enabling informed decisions that may reduce the spread of the disease as we enter the colder months of the year that coincide with flu season. Most of these studies will continue through the fall and into the winter.

“Here at NBACC, we focus our efforts on the research questions that we are uniquely positioned to answer,” said Hough. “In the middle of a crisis, you don’t want to be developing new technologies or implementing new approaches. We focus on what we are best at.”

Here's What Happens When Lab-Grown Mini-Lungs Are Exposed to SARS-CoV-2

Source: <https://www.sciencealert.com/here-s-what-happens-when-lab-grown-mini-lungs-are-exposed-to-coronavirus>

Oct 31 – Scientists working on a lab-grown mini-lung are now using their living model to better understand the current [pandemic](#) and potential new treatments.

The most recent version of this unique organoid is based entirely on human [stem cells](#), known to repair the deepest parts of our lungs. When the researchers exposed it to [SARS-CoV-2](#), the results were illuminating.

Dropping just one of these self-renewing units into a dish containing a tailored growth solution can produce millions of cells in a clump that resembles the tiny air sacs in human lungs.

Known as alveoli, these balloon-like sacs have shown [diffuse damage](#) in fatal cases of [COVID-19](#), and while this havoc is [often attributed](#) to a storm of immune cells called cytokines, we’re still figuring out how lung injury actually comes about.

The new mini-model gives us a glimpse of the battle on a molecular scale, and while it’s nowhere near as complex as a real human lung, that’s also what makes it easier to control and observe.

The unique organoid includes just one type of lung stem cell, known as an **alveolar type 2 epithelial cell (AT2)**, which has the ability to self-renew, differentiate into other lung cells, keep the sac open with surfactants, and directly bind to [viruses](#).

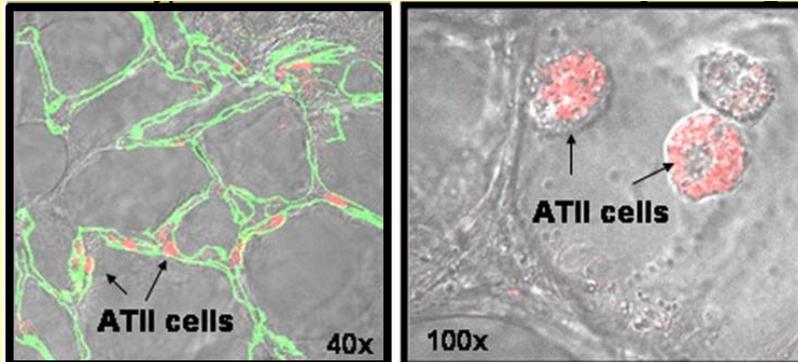
When the SARS-CoV-2 virus was introduced into this organoid’s dish, researchers say the virus quickly infected the AT2 cells and spread throughout the alveoli-like structure.

The infection also triggered an inflammatory response in the organoid, reducing the production and proliferation of surfactant and inducing cell death, sometimes in surrounding areas that hadn’t even yet been touched by the virus.



"This is a major breakthrough for the field because we were using cells that didn't have purified cultures," [explains](#) Ralph Baric, an epidemiologist, microbiologist, and immunologist at the University of North Carolina.

"This is incredibly elegant work to figure out how to purify and grow AT2 cells in culture."



Analysing the gene expression of these mini-organs, researchers found the inflammatory state triggered by the SARS-CoV-2 infection led to the production of interferons, cytokines, chemokines, and activation of genes related to cell death.

What's more, these signatures showed "[striking similarity](#)" to what's seen in severe COVID-19 patients. The results also match recent [growing evidence](#) that suggests severe cases of COVID-19 trigger a cytokine storm that may leave the lungs susceptible to damage.

Most of these observations, however, come from autopsies and have not been observed in living tissue.

This newly-developed model is a unique and versatile new way to study respiratory viruses in action, and it shows how a cascade of defences within stem cells themselves may cause more damage than good.

"It was thought cytokine storm happened due to the large influx of immune cells, but we can see it also happens in the lung stem cells themselves," [says](#) cell biologist Purushothama Rao Tata from Duke University.

"Now we have a way to figure out how to energise the cells to fight against this deadly virus," he adds.

In another set of experiments on the mini-lung, researchers found that administering low doses of interferons before infection slowed the spread of the virus, whereas reducing interferons before infection worsened the damage.

This suggests interferons are somehow mediating the immune response in our alveoli, slowing the cascade of cell death as the lung tries to get ahead of the infection.

But this may not be the whole picture; it's just a small insight into what's going on. Other [recent studies](#) show that while interferons might be a helpful treatment at certain stages of infection, at other times they can make matters worse.

While there are still many kinks and details that need to be ironed out in their model, researchers hope they can one day grow mini-lungs on which hundreds of experiments can be run at the same time, allowing us to figure out how the lung responds to infection and also how we can best protect it.

There's never been a more important time to learn more.

►► The study was published in [Cell Stem Cell](#).

If You Have COVID-19, US Study Shows 50% of Your Household Will Get Sick Within Days

Source: <https://www.sciencealert.com/if-you-have-covid-19-us-study-shows-half-of-your-household-will-get-sick-within-days>

Nov 02 – People who develop [COVID-19](#) infect around half of their household members, with adults only slightly more likely than children to spread the [virus](#), [a US government study](#) said Friday.

The paper by the Centers of Disease Control and Prevention (CDC) is the latest to attempt to quantify the household transmission rate of the disease, with previous research varying widely but generally suggesting that adults are bigger drivers than children.

The new research by the CDC involved finding cases of "index" or initial patients with lab-confirmed [coronavirus](#) infection in Nashville, Tennessee, and Marshfield, Wisconsin, starting in April 2020.

Both the index patients and their household members were trained remotely to complete symptom diaries and obtain self-collected specimens, which were either nasal swabs only or nasal swabs and saliva samples, for 14 days.

A total of 191 enrolled household contacts of 101 index patients reported having no symptoms on the day of their index patient's illness onset.

In the follow-up period, 102 of the 191 contacts had [SARS-CoV-2](#) positive tests, for a "secondary infection rate" of 53 percent.

The secondary infection rate when index patients were over 18 was 57 percent, which fell to 43 percent when the index patient was under 18.



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Overall there were far fewer children index patients than there were adults: 20 compared to 82, which makes it harder to generalize the results for under-18s.

In terms of household characteristics, the median number of members per bedroom was one, 69 percent of index patients reported spending four or more hours in the same room with one or more household member the day before, and 40 percent the day after illness onset.

Forty percent of index patients reported sleeping in the same room with one or more household members before illness onset and 30 percent after illness onset.

Higher than reported

Interpreting the findings, the authors of the paper [wrote](#): **"In this ongoing prospective study that includes systematic and daily follow-up, transmission of SARS-CoV-2 among household members was common, and secondary infection rates were higher than have been previously reported."**

"Substantial transmission occurred whether the index patient was an adult or a child," they added.

Another important finding of the study was that fewer than half of household members with confirmed infections reported symptoms at the time infection was first detected, and many reported no symptoms throughout seven days of follow-up.

This underscores the potential for transmission for [asymptomatic](#) secondary contacts.

Other studies carried out abroad have at times found lower household infection rates.

The CDC said this might be because those studies didn't have enough follow-up, or because those patients isolated in facilities outside their houses or applied more stringent mask use.

It recommended that people who think they might have COVID-19 should isolate themselves from others in their household, including sleeping separately and using a separate bathroom if possible, and wear a mask.

People exposed should not delay isolating until their infection is confirmed by a test.

An important limitation of the study was that determining who the index patient was can be challenging.

When the calculations were changed to exclude 54 household members who had positive tests in specimens taken at enrolment, but whose results took some time to be confirmed, the overall secondary infection rate fell to 35 percent.

However, it's still thought **more likely that the person who first developed symptoms is the index patient.**

Slovakia starts nationwide Covid testing scheme

Source: <https://www.thenationalnews.com/world/slovakia-starts-nationwide-covid-testing-scheme-as-germany-begins-wave-breaker-lockdown-1.1104327>

Nov 02 – Slovakia has tested about half its population for coronavirus after announcing a plan to test everyone over the age of 10. About 2.5 million Slovaks were tested on the first day of mass testing on Saturday, with 25,850, or **1 per cent, testing positive and forced to self-isolate.**

The country of 5.5 million has struggled to contain the second wave and officials argued the only alternative to the ambitious testing programme would be a national lockdown. People were tested on a voluntary basis but the government said it would impose a personal lockdown on those who did not participate. **More than 40,000 medics, army and police staffed 5,000 sites to administer the antigen swab tests.** Prime Minister Igor Matovic apologised for pressuring people to take part but said the country was at a crossroads. Slovakia is predicted to be "two or three" weeks behind neighbouring Czech Republic, which has the worst infection rate in Europe. Mr Matovic said: "Freedom must go together with responsibility towards those who ... are the weakest among us, oncology patients, old people, people with other diseases." However, the scheme has been criticised by some experts who said it didn't make sense. The Slovak Association of General Practitioners pointed out that crowding into testing sites went against social-distancing protocols. Medics also argued the antigen tests used were less accurate than the laboratory-based tests, returning more false negative and false positive results. Slovakia plans a second round of the testing next weekend to catch cases missed in the first round or those who got infected in the meantime.

►► Read also: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)32261-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32261-3/fulltext)

The tests that have been purchased by the government include BIOCREDIT COVID-19 Ag (RapiGEN, South Korea) and Standard Q COVID-19 Ag (SD Biosensor, South Korea). The Prime Minister Igor Matovič, reading from the package insert for the latter, said the test has a specificity of 99.68% and a sensitivity of 96.52% compared with PCR tests



Terrorism in time of the pandemic: exploiting mayhem

By Arie W. Kruglanski, Rohan Gunaratna, Molly Ellenberg, and Anne Speckhard

Global Security: Health, Science and Policy | Volume 5, 2020 - Issue 1

Source: <https://www.tandfonline.com/doi/full/10.1080/23779497.2020.1832903>

ABSTRACT

Despite the world's overwhelming preoccupation with the COVID-19 pandemic, the threat of international and domestic terrorism is not in decline according to available indicators. The angst that the pandemic induced in millions of people, and the incapacitation of major functions and institutions of world's societies are exploited by both jihadist and far-right terror organisations for the spread of conspiracy theories aimed to fuel hate against their alleged nemeses, the encouragement of easy attacks against vulnerable targets, and the spread of bedlam and confusion intended to bring down governments and promote the terrorists' agenda. In this paper, we illustrate and discuss terrorism trends manifest during the COVID-19 pandemic and consider the threat these trends pose to the world's security.

Arie W. Kruglanski is Distinguished University Professor of Psychology at the University of Maryland. He has served as editor of the Journal of Personality and Social Psychology: Attitudes and Social Cognition, and as editor of the Personality and Social Psychology Bulletin, and as Associate Editor of the American Psychologist. He has also served as President of the Society for the Study of Motivation. His interests have been in the domains of human judgment and decision making, the motivation-cognition interface, group and intergroup processes, the psychology of human goals, and the social psychological aspects of terrorism.

Climatic factors and possible influence on the spread of SARS-Cov2: is the role of droplets' physics underestimated?



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European Review for Medical and Pharmacological Sciences (2020:24:X – Letter to the Editor accepted for publication)

It is debated whether climatic variations represent an influencing factor in the contagiousness of the SARS-CoV2 virus and therefore in its spread. Previous studies conducted on respiratory viruses including SARS-CoV, suggest that the increase in both temperature and relative humidity (in the atmosphere) inhibit the virus. On the contrary, the virus transmission vehicle, represented by the saliva droplets (and nasopharyngeal secretions emitted from an infected individual), evaporates more rapidly with high temperature and low humidity, lowering the possibility of contagion.

During the common breathing process, and much more during coughing or sneezing, when a droplet of infected saliva/secretions is released into the environment, it is subject to phenomena of nature both fluid-dynamic and thermal that are able to influence the trajectory traveled by a single or a cloud of droplets. The fluid-dynamic parameters are the emission speed and the turbulence of the motion (e.g., due to the presence of wind in the environment), while the thermo-hygrometric parameters act through the evaporation processes, that are capable of modifying the volume of the droplet and indirectly the motion itself until neutralization.

Approximating each droplet to a sphere, it is possible to divide these into respirable droplets (all those droplets that get stuck in the upper airways due to their size), with a diameter of $\geq 5 \mu\text{m}$ and inspirable droplets (all those droplets having such dimensions as to be able to reach the lungs), $\leq 5 \mu\text{m}$ in diameter. Respirable droplets stop at the upper airways, while inspirable droplets can reach bronchioles and could be potentially more dangerous. Due to evaporation, larger droplets can shrink below the $5 \mu\text{m}$ threshold.

The predictable droplet's trajectory toward the ground is the basis of the recommendations that indicate the value of 1 (other recommend distance values greater than 1 meter) meter as a social distance to prevent inhalation: in fact it results that already at 0.77 m over 70% of the droplets emitted during normal breathing have precipitated¹, while other studies report that breathing or conversation can push droplets up to 1.8 m. These values are respected in the event that the speed of the air in the environment is zero. In fact, if air speed takes on values higher than 0 km/h, the droplet can travel at greater distances (6 m with wind at 4 km/h): the presence, for example, of air conditioners or fans in a closed environment can cause turbulent motions capable of pushing the droplets to greater distances. Furthermore, in the event that the emission occurs through sneezing or coughing,



the exit speed can reach values of 160 km/h for sneezing and 80 for coughing. The distances covered by the droplets in this case can reach 8 m.

Models we find in literature⁹, assimilate the single droplet of saliva to a drop of water with the same geometric dimensions and predict that evaporation is influenced by environmental conditions, the initial size of the droplets and the time taken by the single droplet to travel from the mouth to a given distance. For instance, drops of 70-80 µm would reduce their diameter by about 40% in 10 s in the absence of wind. In the presence of turbulent motions, the reduction of the diameter is accelerated due to a more rapid evaporation of the aqueous component. Evaporation, reducing the diameter of the droplets, could make the propagation of the virus more insidious (changing the droplets from respirable to inspirable), but at the same time it can determine two consequences that might reduce viral dissemination.

First, we must consider that the model that equates saliva with water does not take into account the constituent components of saliva, such as electrolytes, mucus and enzymes and their relationship with the virus once the water component has evaporated. Concentration of the solid components could have a detrimental effect on the survival capacity of the virus. Secondly, the concentration of the solutes increases the specific weight of the residual drop-let and facilitates its fall to the ground and shortens the trajectory.

These considerations give place to the necessity of investigating two aspects, of which there is no evidence in the literature: influence of solutes present in the saliva droplet on the survival of the virus and of increase of specific weight of the vector droplets. However, the fact that the infection from SARS-CoV2 is slowed down by the onset of the hot season could just be a consequence of the rapidity with which the evaporation process of the carrier droplet develops.

In conclusion, it can be stated that the spread of the SARS-CoV2 virus by air is influenced by many physical and physico-chemical factors connected to the vector, interacting with each other with final effects not easily predictable.



Confronting the Notion that Face Masks Reduce COVID “Dose”

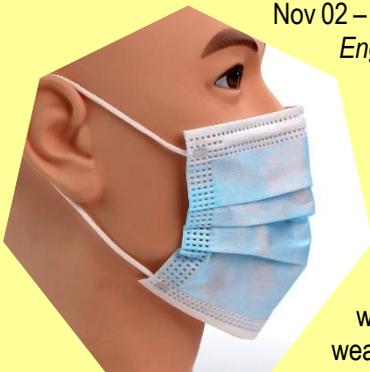
By Mary Van Beusekom

Source: <http://www.homelandsecuritynewswire.com/dr20201102-confronting-the-notion-that-face-masks-reduce-covid-dose>

Nov 02 – When two physicians at the University of California at San Francisco published a [commentary](#) in the *New England Journal of Medicine (NEJM)* on Sep 8 proposing to resurrect the 18th century practice of variolation using face coverings to prevent severe COVID-19 and confer immunity, the Internet lit up with headlines such as “Coronavirus: Another reason for that mask: You’ll get less sick.”

The paper, written by Monica Gandhi, MD, MPH, and George Rutherford, MD, suggested that face coverings, in the absence of a vaccine, could reduce the inhaled dose of coronavirus by filtering some virus-containing droplets, leading to asymptomatic or mild disease and stimulating T- and B-cell immunity.

Concerned that the piece, its positioning in a top medical journal, and the resulting media coverage would embolden people to abandon physical distancing and other public health measures in favor of only wearing face coverings, scientists warned against the practice in two [letters to the editor](#) in the same journal on Oct 23.



Reviving an Ancient Practice

The inspiration behind Gandhi and Rutherford’s piece was variolation, the practice of inoculating healthy people with variola, the virus that causes smallpox, to give them a lower dose than would be inhaled, producing mild disease and stimulating immunity. While variolation worked in some people, others died of their infections, and it was abandoned after a vaccine became available in 1796. Gandhi and other colleagues also published a [paper](#) on the topic in July in the *Journal of General Internal Medicine*.

However, Angela Rasmussen, PhD, associate research scientist at the Center for Infection and Immunity at Columbia University and coauthor of the first letter, along with Kevin Escandon MD, of Universidad del Valle in Colombia, and Saskia Popescu, PhD, of George Mason University, said the proposal is based on faulty assumptions about an emerging coronavirus about which much is yet unknown.

“We don’t know the role that T cells play in determining disease severity,” Rasmussen said, let alone whether asymptomatic or mild disease generates the long-lasting, robust antibody responses required for durable immunity.



A Hypothesis, Not Evidence

Publishing a hypothesis—without describing the experiments that would need to prove or disprove it—in a prominent journal like *NEJM* sends the message that the concept has been borne out by evidence, Rasmussen said, adding that the paper would have been acceptable had it been framed as only a hypothesis.

“I think that could encourage irresponsible behavior,” she said. “Of course, people should be wearing masks, but they should also be social distancing; masks are not the only nonpharmaceutical intervention.”

Chad Roy, PhD, MSPH, of Tulane University School of Medicine, coauthor of the second letter, along with Lisa Brosseau ScD, CIH, and Michael Osterholm, PhD, MPH, both of the Center for Infectious Disease Research and Policy, publisher of CIDRAP News, called the proposal of variolation “borderline heresy” in terms of modern vaccine design and all of its complexities.

“Variolation was used historically as an incredibly crude way of vaccinating individuals, but it was a completely uncontrolled mechanism by which to achieve vaccination,” Roy said. “Variolation should be considered an antiquity and not anything that anyone would try to use in modern medicine.”

Also problematic is that no one knows what constitutes an infectious dose of the coronavirus, which likely varies from person to person and doesn’t appear to follow a classic dose-response relationship, Rasmussen said. And although it seems counterintuitive, high doses of coronavirus can be less virulent than low ones, Rasmussen said.

That’s because viruses mutate, some to the point that they can no longer cause infection, and may thereby alter a host’s immune response to the virus. “They think the more virus you have the sicker you’re going to get, but that’s not necessarily true,” she said, adding that it probably depends more on the proportion of noninfectious-to-infectious virus. “There’s not always a linear relationship between dose and disease severity and outcome.”

Roy pointed out the complexity of trying to define infectious dose in a virus that doesn’t necessarily cause symptoms, even in people with high viral loads. “Most particles are probably empty and just made up of mucous and water with no virions, or else everyone would be infected,” he said.

Another problem with the perspective piece is that it doesn’t define what the authors consider a face covering, which range from single-layer homemade cloth masks to dependable N95 respirators, according to Rasmussen. “Certainly, masks could probably block larger droplets, and that kind of gets into the area of the whole droplet-versus-aerosols debate,” she said. “We just don’t have much evidence that masks protect the person wearing them, unless they are N95s certified by [the National Institute for Occupational Safety and Health].”

Flimsy References

In Gandhi and Rutherford’s response to the letters to the editor, in which they defend their assertions, they cite a non-peer-reviewed May 29 [study](#) claiming a dose response in six ferrets inoculated with the coronavirus, with a low dose resulting in only one showing signs of viral RNA replication. But Roy said that ferrets aren’t a good model because they don’t become very ill with COVID-19, as opposed to the disease in humans and nonhuman primates.

“Nonhuman primates are a near clinical model of human disease,” he said. “When you have that beachhead established in a higher-order model, it’s very difficult for a lower-order model to trump that observation.”

Rasmussen agrees, saying that most of the ferrets in the study likely didn’t show signs of infection because the dose was too low. “It suggests that maybe five out of the six ferrets weren’t infected at all,” she said.

In their response to the letters, Gandhi and Rutherford also cite a Jun 14 [paper](#) as evidence that viral load is equivalent to infectious dose, but it doesn’t describe the infectious dose that participants received, Brosseau said. “Having a high viral load doesn’t tell you anything about the dose that you received,” she said. “There is no relationship.”

Nor did the study authors describe participant age, sex, or presence of underlying illnesses, which likely explain the results better than dose response, because they did not perform an exposure evaluation or even test all the participants for COVID-19. “It’s just sort of chance that some got symptoms and some didn’t, depending on host characteristics and the size of the space,” Brosseau said.

A problem with another cited [study](#) is that the researchers didn’t sample all the soldiers involved in their study—which involved physical distancing in Swiss soldiers and disease course—or describe what constituted lockdown conditions, Brosseau said. The authors of that paper also remarked that none of the group of 154 soldiers developed coronavirus symptoms after implementation of physical distancing, despite having antibodies. “They say not one of the soldiers developed severe disease, well of course not; they were all young and healthy,” she said.

And another cited [study](#) was done with no understanding of filter science, Brosseau said. In that study, US researchers didn’t measure the flow rate of the aerosols they generated in the study, used high-speed videos rather than precision tools to measure droplet



transmission, and employed much larger particle sizes than those generated in the real world.

Putting People at Risk

Gandhi and Rutherford's paper is "really, really dangerous," said Brosseau, adding that she has been moved to write only about three letters to the editor in her life. "They are putting people at risk by suggesting that that 'it'll be fine, you'll wear your face covering, and you'll get a low dose,'" she said. "It just goes to show what really bad science is going on out there."

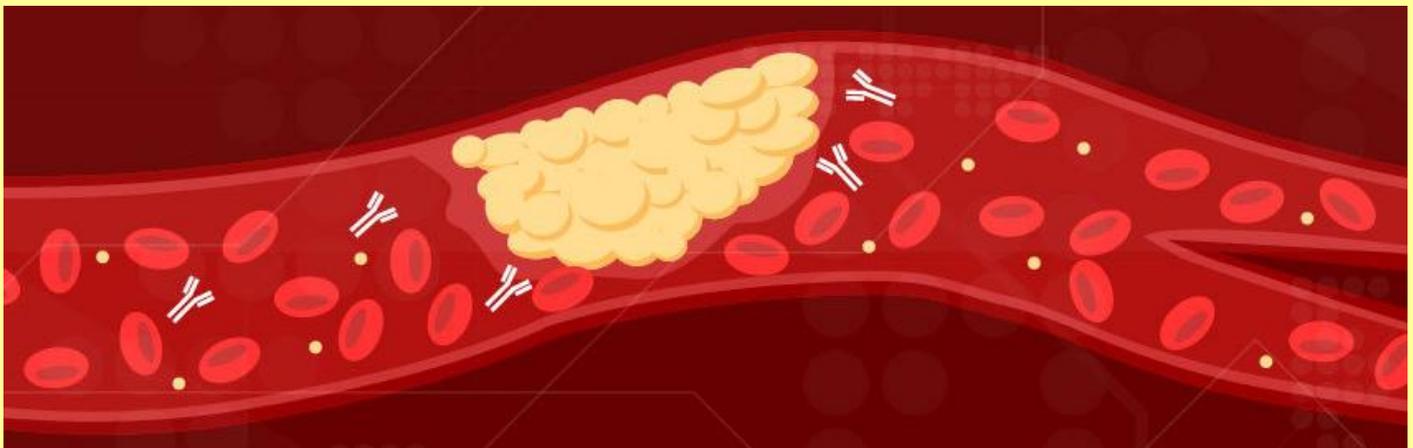
Osterholm agrees. "What we're worried about is people getting exposed and getting infected while thinking they were actually doing something to protect themselves," he said.

Rasmussen said that some scientists may be in a rush to be the first ones to present the next big idea about a virus that has been studied for only a matter of months—whether or not the science is sound. **"I do wish some of these journals like the *New England Journal of Medicine* would be mindful of the platform they have and the credibility they can lend something when it's published," she said.**

Mary Van Beusekom is a CIDRAP news writer.

In COVID-19, Blood Clots Are Promoted by Autoantibodies

Source: <https://www.genengnews.com/news/in-covid-19-blood-clots-are-promoted-by-autoantibodies/>



Nov 02 – Blood-clot-promoting autoantibodies have been found in at least half of the serum samples collected from 172 patients hospitalized with [COVID-19](#). These autoantibodies—which are also linked to a dangerous autoimmune condition called antiphospholipid syndrome—are promising therapeutic targets. For example, if the clot-causing autoantibodies were to be neutralized or removed from the blood, perhaps by plasmapheresis, clotting could be lessened in patients with severe COVID-19.

The new finding appeared November 2 in the journal *Science Translational Medicine*, in an article titled, "[Prothrombotic autoantibodies in serum from patients hospitalized with COVID-19](#)." The article reports that scientists based at the University of Michigan tested the COVID-19 patients' serum samples for eight types of autoantibodies that target phospholipids and phospholipid-binding proteins (aPL antibodies).

"These aPL antibodies included anticardiolipin IgG, IgM and IgA; anti-β2 glycoprotein I IgG, IgM, and IgA; and anti-phosphatidylserine/prothrombin (aPS/PT) IgG and IgM," the article's authors wrote. "Higher titers of aPL antibodies were associated with neutrophil hyperactivity including the release of neutrophil extracellular traps (NETs), higher platelet counts, more severe respiratory disease, and lower clinical estimated glomerular filtration rate."

Antiphospholipid syndrome antibodies have been studied for years at Michigan Medicine. Still, the connection between these autoantibodies and COVID-19 was unexpected, admitted one of the study's two co-corresponding authors, Jason Knight, MD, PhD, a rheumatologist at Michigan Medicine. He recalled the surprise the Michigan Medicine scientists experienced when they learned that half of the patients hospitalized with COVID-19 were positive for at least one of the autoantibodies.

"In patients with COVID-19, we continue to see a relentless, self-amplifying cycle of inflammation and clotting in the body," elaborated the study's other co-corresponding author, Yogendra Kanthi, MD, an assistant professor of cardiovascular medicine at Michigan



Medicine. “Now we’re learning that autoantibodies could be a culprit in this loop of clotting and inflammation that makes people who were already struggling even sicker.”

The Michigan Medicine scientists found about half of the patients who were very sick with COVID-19 were exhibiting a combination of high levels of both the dangerous antibodies and super-activated neutrophils, which are destructive, exploding white blood cells. In April, the team was the first to report that patients hospitalized for severe COVID-19 had higher levels of neutrophil extracellular traps in their blood.

To learn more, they studied the explosive neutrophils and the COVID-19 antibodies together in mouse models to see if this could be the dangerous combination behind the clots.

“Antibodies from patients with active COVID-19 infection created a striking amount of clotting in animals—some of the worst clotting we’ve ever seen,” noted Kanthi, who is a Lasker Investigator at the National Institutes of Health’s National Heart, Lung, and Blood Institute. “We’ve discovered a new mechanism by which patients with COVID-19 may develop blood clots.”

The researchers say these findings aren’t yet ready for clinical practice, but they add a new perspective to the robust thrombosis and inflammation research in patients with COVID-19.

The Michigan Medicine scientists now want to know whether severely ill patients with high levels of these autoantibodies would have better outcomes if the autoantibodies were to be blocked or removed. If so, that might warrant an aggressive treatment like plasmapheresis, which is commonly used in severe autoimmune diseases. It involves draining blood through an IV, filtering it, and replacing it with fresh plasma that doesn’t contain those antibodies associated with blood clots.

“We know people with the highest levels of autoantibodies did worse in terms of respiratory function, and the antibodies caused inflammation even in healthy cells” said Yu Zuo, MD, the study’s first author and an assistant professor of internal medicine and a rheumatologist at Michigan Medicine.

“We don’t yet know what is triggering the body to produce these antibodies,” Knight acknowledged. “So, the next step would be additional research to identify the triggers and the targets of the antibodies.”

In addition, these findings bring up new questions surrounding the use of convalescent plasma as a possible COVID-19 treatment, but the team says more research is needed to examine this concern.

The researchers noted that the serum samples in their study were not acquired at a single defined point during the time of hospitalization, and suggested that future studies should systematically track these antibodies through the course of the disease, including after patients are discharged from the hospital.

“We’re now investigating how long these antibodies remain in circulation after recovery from the novel coronavirus,” Knight pointed out. The researchers are also currently running a randomized clinical trial called DICER, which is testing a well-known anticlotting agent, dipyridamole, in patients with COVID-19 to determine whether it’s more effective than a placebo in reducing excessive blood clots.

“Dipyridamole is an old drug that is safe, inexpensive, and scalable,” Kanthi noted. “The FDA approved it 20 years ago to prevent clotting, but we only recently discovered its potential to block this specific type of inflammation that occurs in COVID.”

COVID-19 Nanoparticle Vaccine Elicits High Levels of Protective Antibodies in Mice

Source: <https://www.genengnews.com/news/covid-19-nanoparticle-vaccine-elicits-high-levels-of-protective-antibodies-in-mice/>

Nov 03 – There are currently hundreds of COVID-19 vaccine candidates in development around the world. Some of the challenges facing them are the requirement of large doses, complex manufacturing, and cold-chain shipping and storage. An ultrapotent vaccine that is safe, effective at low doses, simple to produce, and stable outside of a freezer could enable vaccination against COVID-19 on a global scale. Now, a team of scientists at the University of Washington School of Medicine (UW Medicine) in Seattle report data on an innovative nanoparticle vaccine candidate that produces virus-neutralizing antibodies in mice at levels ten-times greater than is seen in people who have recovered from COVID-19 infections. The vaccine candidate has been transferred to two companies for clinical development.

This work is published in *Cell* in the paper titled, “[Elicitation of potent neutralizing antibody responses by designed protein nanoparticle vaccines for SARS-CoV-2.](#)”

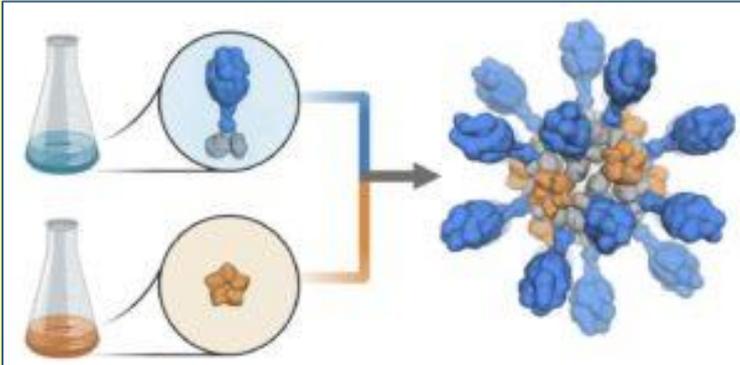
The vaccine candidate was developed using structure-based vaccine design techniques invented at UW Medicine. It is a self-assembling protein nanoparticle that displays 60 copies of the SARS-CoV-2 Spike protein’s receptor-binding domain in a highly immunogenic array.



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The molecular structure of the vaccine roughly mimics that of a virus, which may account for its enhanced ability to provoke an immune response.

Compared to vaccination with the soluble SARS-CoV-2 Spike protein, which is what many leading COVID-19 vaccine candidates are based on, the new nanoparticle vaccine produced ten times more neutralizing antibodies in mice, even at a six-fold lower vaccine dose.



Production schematic shows how coronavirus proteins are added to a computer-designed nanoparticle platform to create a candidate vaccine against COVID-19. The vaccine candidate was designed and tested in animal models by researchers at the University of Washington School of Medicine [Ian Haydon/UW Medicine Institute for Protein Design]

The data also show a strong B-cell response after immunization, which can be critical for immune memory and

a durable vaccine effect. When administered to a single nonhuman primate, the nanoparticle vaccine produced neutralizing antibodies targeting multiple different sites on the Spike protein. Researchers say this may ensure protection against mutated strains of the virus, should they arise.

The authors wrote that, "Antibodies elicited by the RBD-nanoparticles target multiple distinct epitopes, suggesting they may not be easily susceptible to escape mutations, and exhibit a lower binding:neutralizing ratio than convalescent human sera, which may minimize the risk of vaccine-associated enhanced respiratory disease."

The lead authors of this paper are Alexandra Walls, PhD, a senior scientist in the laboratory of David Veessler, PhD, associate professor of biochemistry, and Brooke Fiala, a research scientist in the laboratory of Neil King, PhD, assistant professor at the Institute for Protein Design at UW Medicine.

"We hope that our nanoparticle platform may help fight this pandemic that is causing so much damage to our world," said King. "The potency, stability, and manufacturability of this vaccine candidate differentiate it from many others under investigation."

The high yield and stability of the assembled nanoparticles suggest that manufacture of the nanoparticle vaccines will be highly scalable. These results highlight the utility of robust antigen display platforms and have launched cGMP manufacturing efforts to advance the SARS-CoV-2-RBD nanoparticle vaccine into the clinic.

MIT Team's Cough Detector Identifies 97% of COVID-19 Cases Even in Asymptomatic People

Source: <https://www.sciencealert.com/ai-cough-analysis-could-detect-covid-19-even-if-you-re-asymptomatic>

Nov 03 – Part of the challenge in controlling the [coronavirus pandemic](#) is in identifying and isolating infected people quickly – not particularly easy when [COVID-19](#) symptoms [aren't always noticeable](#), especially early on. Now scientists have developed a new [artificial intelligence](#) model that can detect the [virus](#) from a simple forced cough.

Evidence shows that the AI can spot differences in coughing that can't be heard with the human ear, and if the detection system can be incorporated into a device like a smartphone, the research team thinks it could become a useful early screening tool.

The work builds on research that was already happening into [Alzheimer's](#) detection through coughing and talking. Once the pandemic started to spread, the team turned its attention to COVID-19 instead, tapping into what had already been learned about how disease can cause very small changes to speech and the other noises we make.

"The sounds of talking and coughing are both influenced by the vocal cords and surrounding organs," [says research scientist Brian Subirana](#), from the Massachusetts Institute of Technology (MIT).

"This means that when you talk, part of your talking is like coughing, and vice versa."

"It also means that things we easily derive from fluent speech, AI can pick up simply from coughs, including things like the person's gender, mother tongue, or even emotional state. There's in fact sentiment embedded in how you cough."

The Alzheimer's research repurposed for COVID-19 involved a neural network known as ResNet50. It was trained on a thousand hours of human speech, then on a dataset of words



spoken in different emotional states, and then on a database of coughs to spot changes in lung and respiratory performance. When the three models were combined, a layer of noise was used to filter out stronger coughs from weaker ones. Across around 2,500 captured cough recordings of people confirmed to have COVID-19, the AI correctly identified 97.1 percent of them – and 100 percent of the asymptomatic cases.

That's an impressive result, but there's more work to do yet. The researchers emphasise that its main value lies in spotting the difference between healthy coughs and unhealthy coughs in asymptomatic people – not in actually diagnosing COVID-19, which a proper test would be required for. In other words, it's an early warning system.

"The effective implementation of this group diagnostic tool could diminish the spread of the pandemic if everyone uses it before going to a classroom, a factory, or a restaurant," [says Subirana](#).

The fact that the test is non-invasive, virtually free to run and speedy to apply adds to its potential usefulness – while it's not designed to *diagnose* people with COVID-19 who are already showing symptoms, it could tell you if you should isolate and get a proper test when no major signs of the virus are showing.

The researchers now want to test the engine on a more diverse set of data, and see if there are other factors involved in reaching such an impressively high detection rate. If it does make it to the phone app stage, there are obviously going to be privacy implications too, as few of us will want our devices constantly listening out for signs of ill health.

Once we start to put the coronavirus pandemic behind us, the new research could help feed back into the study of coughs and [Alzheimer's detection](#). The data show that the neural networks only required slight tweaking in order to be adapted to each condition.

"Our research uncovers a striking similarity between Alzheimer's and COVID discrimination," write the researchers in their [published paper](#).

"The exact same biomarkers can be used as a discrimination tool for both, suggesting that perhaps, in addition to temperature, pressure or pulse, there are some higher-level biomarkers that can sufficiently diagnose conditions across specialties once thought mostly disconnected."

►► The research has been published in the [IEEE Open Journal of Engineering in Medicine and Biology](#).

UK Scientists Want Vitamin D Added to Bread and Milk in The Middle of The Pandemic

Source: <https://www.sciencealert.com/uk-scientists-want-vitamin-d-added-to-bread-and-milk-to-fight-covid-19>

Nov 02 – A group of researchers in the UK are calling for the government to encourage vitamin D supplementation in common grocery items like bread and milk, citing evidence that the nutrient can help fight the [coronavirus pandemic](#).

Dr. Gareth Davies, an independent medical researcher, is among a group of scientists that have been investigating the role of vitamin D in [COVID-19](#) prevention for months, and are now urging officials to take action, [The Guardian reported](#).

The [UK is currently facing a second round of lockdowns and a growing number of infections](#).

As [many as half of all UK residents may be deficient in vitamin D](#), and research suggests vitamin D deficiency could be a factor in severe COVID-19 cases.

The human body naturally produces vitamin D in response to sunlight, and it's also found naturally in foods like fatty fish and egg yolks. Countries like the US already fortify milk and similar products with vitamin D, and residents of those nations get a substantial amount of the nutrient from fortified foods.

But many people could still benefit from supplementing, experts say. Davies has previously recommended that every adult get 4,000 IUs of vitamin D per day, [10 times the current dose recommended by health officials](#).

Extensive evidence links adequate vitamin D to better coronavirus outcomes

Davies led previous research, released [as a pre-print in June](#), which found getting enough vitamin D could significantly improve COVID-19 outcomes, particularly in vulnerable groups such as the elderly.

There's since been even more studies supporting the theory that vitamin D could be beneficial against the [virus](#).

A [small study published last month found that coronavirus patients who were given a highly potent form of vitamin D](#) were significantly less likely to need intensive care, and none of them died. That indicates the nutrient could reduce the severity of COVID-19 infection and lower the risk of complications, the researchers said.



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[Multiple studies](#) have found an association between vitamin D levels and COVID-19 outcomes, although they did not establish a causal link.

A [study published in September](#) found that patients with sufficient vitamin D were significantly less likely to face dangerous complications of the virus, such as difficulty breathing or unconsciousness.

And [another small study](#) found people with a vitamin D deficiency were twice as likely to be infected in the first place.

While this growing body of evidence is promising, more research is needed to better understand how vitamin D could play a role in preventing infection, or helping to heal patients.

At least [one study](#) found no apparent connection between the nutrient and the virus. It's [well-documented](#) that large doses of vitamin D aren't a cure-all for this or any other illness, and can in fact have serious side effects.

Countries like the US, which do fortify milk, still get less vitamin D than recommended

[Research](#) has also shown that vitamin D deficiency is a [global issue that can cause serious health problems](#), including weakened bones and a dampened immune system.

As researchers like Davies have said, fortifying common foods like milk and bread can help.

In countries that already fortify milk, including the United States, Canada, and Finland, residents get a significant amount of their daily vitamin D from those products, [according to research](#).

In the US, nearly all commercial milk is fortified with vitamin D and has been since the 1930s. Still, even [many Americans don't get enough vitamin D, according to data](#).

That's led health officials such as Dr. Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases to [recommend supplementing vitamin D](#), particularly in the winter when fewer people spend time outdoors in the sunshine.

COVID and Its Man-Made Gigantic Collateral Damage: The Great Reset – A Call for Civil Disobedience

By Peter Koenig

Source: <https://www.globalresearch.ca/covid-man-made-gigantic-collateral-damage-great-reset-call-civil-disobedience/5728407>

Nov 03 – *The going narrative in the west is: "Covid is on the Rise – we are entering the second wave – we must protect our people." The offered recipe is testing-testing-testing – it is the instrument for increasing "cases". The more you test, the more cases you have. Is that so difficult to understand? If tomorrow the world stops "testing", covid is gone. Finito. Back to life. That's what they don't want, though. "They", the higher-ups. Let me call them the diabolical Deep Dark State.*

However, testing and the testing results are never analyzed. How many positives are asymptomatic, who are the "positives", what are their age groups? According to all those doctors around the world who have stepped out of the *Matrix* and formed associations of medical professionals and related scientists, most of them call themselves *Doctors for the Truth*, in Germany, Belgium, Spain, France, Switzerland, Austria, Netherlands, Denmark, Peru, the USA and more – more than 80% of the "positives" are asymptomatic, meaning asymptomatic people feel nothing and never get sick.

About ten to fifteen percent have slight to more serious symptoms, but do not need hospitalization – and the rest who may be hospitalized is above 75 or 80 years of age almost all of them with one to several comorbidities. Of those who die, most die from a medical pre-condition – coronary disease, diabetes, cancer – *with "tested" covid-19, but not from covid-19.*

According to the various associations of Doctors for the Truth, concluded based on their experience, more than 50% of the so-called RT-PCM ([Reverse transcription polymerase chain reaction](#)) deliver "false positives". Of course, the labs, hospitals and doctors who perform them are aware. But they are silenced with a carrot or a stick. And the "false positives" conveniently help drive covid statistics through the roof.

But who would have an interest in that?

►► [Read the rest of this article at source's URL.](#)

Peter Koenig is an economist and geopolitical analyst. He is also a water resources and environmental specialist. He worked for over 30 years with the World Bank and the World Health Organization around the world in the fields of environment and water. He lectures at universities in the US, Europe and South America. He writes regularly for online journals such as Global Research; ICH; New Eastern



Outlook (NEO) and more. He is the author of [Implosion – An Economic Thriller about War, Environmental Destruction and Corporate Greed](#) – fiction based on facts and on 30 years of World Bank experience around the globe. He is also a co-author of [The World Order and Revolution! – Essays from the Resistance](#). He is a Research Associate of the Centre for Research on Globalization.

Scientists Find Tissue in The Human Eye That Appears Resistant to SARS-CoV-2

Source: <https://www.sciencealert.com/there-s-a-part-of-the-human-eye-that-seems-to-resist-coronavirus-scientists-discover>



Nov 04 – As the [coronavirus pandemic](#) spread across the world this year to such devastating effect, many of us were asking the same questions. How does the virus spread? How do I protect myself from the infection?

The truth is, we're still learning how [SARS-CoV-2](#) works. [Official guidance from the CDC](#) suggests the main way the virus spreads is through respiratory droplets or small particles, ejected from the mouth or nose of infected people, and then inhaled by others.

But that's not the only way the virus circulates. The same infectious droplets and particles can land on surfaces and be transferred by touch – meaning infection could result if you touch something with virus particles on it, and then touch your mouth, nose, or eyes, the [CDC says](#). While this general advice is repeated by health authorities the world over, there's still a lot we don't know about how the [coronavirus might enter the body through the eyes](#), although scientists suggest it's "[biologically plausible](#)".

However, new evidence suggests at least some of the eye may in fact be resistant to SARS-CoV-2 – even while it's susceptible to other kinds of [viruses](#).

In a [new study](#), researchers at Washington University in St. Louis found that the [cornea](#) – the transparent dome at the front of the eye, which covers the iris and pupil – appeared to be resistant to coronavirus infection in experiments, although they're eager to emphasise the

findings are only preliminary.

"Our findings do not prove that all corneas are resistant," [says](#) molecular microbiologist Jonathan J. Miner, the first author of the study.

"But every donor cornea we tested was resistant to the novel coronavirus. It's still possible a subset of people may have corneas that support growth of the virus, but none of the corneas we studied supported growth of SARS-CoV-2."

In experiments using corneal tissue from 25 human donors and also mice corneas, the researchers exposed the eye tissue to three separate viruses: SARS-CoV-2, [Zika virus](#), and [herpes simplex virus 1](#) (HSV-1, which produces cold sores).

In the human cornea explants tested (which also contained some [conjunctiva tissue](#), the membrane that covers the rest of the front of the eye), the experiment showed that herpes and Zika virus were able to replicate in the tissue – but tests showed no sign of SARS-CoV-2 replication.

"The cornea and conjunctiva are known to have receptors for the novel coronavirus, but in our studies, we found that the virus did not replicate in the cornea," [says](#) senior author and ophthalmologist Rajendra S. Apte.

"Our data suggest that the novel coronavirus does not seem to be able to penetrate the cornea."

As for how the human cornea and conjunctiva might be capable of resisting SARS-CoV-2, the team isn't entirely sure. A potential molecular inhibitor of viruses in the eye – called interferon lambda – was able to limit virus growth in the human cornea for HSV-1 and Zika virus, but blocking the protein didn't seem to boost SARS-CoV-2's ability to replicate.

Without more to go on, the researchers' best guess for now is that the human cornea's resistance to coronavirus is "[likely regulated by a distinct antiviral pathway](#)". Quite what that pathway is we still don't know, and the team says further study is needed to confirm these findings.

In other words, health professionals shouldn't ditch their protective eyewear yet, and until we know otherwise, nobody should assume coronavirus can't get into the body via the eyes, despite the cornea's seeming resistance.

"It's important to respect what this virus is capable of and take appropriate precautions," [Miner says](#).

"We may learn that eye coverings are not necessary to protect against infection in the general community, but our studies really are just the beginning."

▶▶ The findings are reported in [Cell Reports](#).



Don't get a false sense of security with Covid-19 testing. Here's why you can test negative but still be infected and contagious

Source: <https://edition.cnn.com/2020/11/03/health/covid-test-negative-contagious-wellness/index.html>

Nov 03 – If you think a negative test result means you don't have coronavirus you could be wrong.

It can take days before a new infection shows up on a Covid-19 test.

"We know that the incubation period for Covid-19 is up to 14 days. And before that, you can be testing negative, and have no symptoms," emergency medicine physician Dr. Leana Wen told CNN. "But you could actually be harboring the virus and be able to transmit it to others."

So, if you want to get tested as a precaution before seeing friends or family, here's what you need to know:

If I got infected yesterday, would a test today pick that up?

Probably not. A study in the medical journal *Annals of Internal Medicine* examined [false-negative test results of people who actually had Covid-19](#).

The study estimated that during four days of infection *before* symptoms typically started, the probability of getting [an incorrect/negative test result on Day 1 was 100%](#).

On the day people started showing symptoms, the average false-negative rate had dropped to 38%, according to the study. Three days after symptoms started, the false-negative rate dropped to 20%.

"The virus just takes time to replicate in the body to detectable levels," said Justin Lessler, a senior author of the study and associate professor of epidemiology at the Johns Hopkins Bloomberg School of Public Health.

"You can get infected by just a few viral particles, but these will not be detectable until they have time to replicate to adequate levels to be detected," he told CNN by email.

So how many days should a person wait after possible exposure to get tested?

"There is no hard and fast rule, but the evidence suggests getting a test before the third day after exposure is not of much use," Lessler said.

Could I be contagious while testing negative?

Absolutely. "People sort of feel like if you test (negative), you're out of the woods. And you're kind of not," said Dr. Rochelle Walensky, chief of the infectious diseases division at Massachusetts General Hospital.

For people who get sick with Covid-19, symptoms can take up to two weeks to appear, but the average time is about five days, Walensky said.

"It's generally thought that you're most infectious the two days before that day and the two days after that," she said.

One reason why this virus spreads so easily is because people can be infectious without any symptoms. The US Centers for Disease Control and Prevention estimates 40% of infections are asymptomatic, and 50% of transmissions happen before symptoms begin.

"It's been among the biggest Achilles' heels of this. And it's been among the biggest challenges and the unexpected things because (with) its cousins, this is not true," Walensky said.

"The reason we were able to control the SARS outbreak so quickly -- although there were obviously a lot of deaths there -- but it didn't turn into a pandemic is because people weren't shedding (the virus) until they got symptoms."

Do different kinds of Covid-19 tests matter?

When it comes to diagnostic tests -- those that detect whether you have an active coronavirus infection -- there are two main types: **Molecular tests**, such as PCR tests, look for the virus' genetic material. Most of these tests are performed with nasal swabs or throat swabs, though some can be done using saliva, the [US Food and Drug Administration](#) says.

"This test is typically highly accurate and usually does not need to be repeated," the FDA says.

But the downside to molecular testing is that results can take a while -- anywhere from the same day to one week after testing.

"For people who show symptoms, so far the studies show the accuracy of the molecular test to find a positive case increases with each day after the exposure," said [Pia MacDonald, infectious disease epidemiologist](#) at the nonprofit research institute RTI International.

But for infected people who don't get symptoms, the accuracy rates are less clear, she said.

"Molecular test performance studies on asymptomatic people are very limited."



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Antigen tests are [often known as rapid tests](#) (though some molecular tests are rapid, too). Antigen tests are not antibody tests, which tell you [whether you've previously had the virus](#) and have already developed antibodies against the infection. Antigen tests don't look for the virus' genetic material, like molecular tests do. Instead, they look for specific proteins on the surface of the virus.

The good news is you can get antigen test results in less than an hour. The bad news is you're more likely to get a false negative with a rapid antigen test.

"Positive results are usually highly accurate but negative results may need to be confirmed with a molecular test," the FDA says.

"Antigen tests are more likely to miss an active coronavirus infection compared to molecular tests."

This could help explain some of the recent spread of Covid-19 linked to the White House.

While staff members close to [President Donald Trump](#) and [Vice President Mike Pence](#) are frequently tested, [White House staffers often use rapid antigen tests](#), which generally have a higher rate of false negatives than molecular tests do.

Regardless of which type of diagnostic test you use, you're generally more likely to get a false negative than a false positive.

"If a molecular test is positive, it's an accurate reflection of a person being infected," MacDonald said. "If it's negative, it's less reliable that the person is indeed negative. The same is true of the antigen tests."

Can I test myself at home?

Yes. There are some at-home testing kits available, such as the [Everlywell Covid-19 molecular test](#). Users take their own nasal swab samples and mail them to a lab, which will send results digitally within 24 to 48 hours of receiving the samples.

But taking any kind of Covid-19 test too early might miss an infection, said Dr. Frank Ong, chief medical and scientific officer at Everlywell.

"As testing capacity has continued to increase, more and more asymptomatic or mildly symptomatic individuals have undergone testing, most of whom likely have lower viral loads in their clinical samples," he said.

"My best advice is to treat yourself as if you are likely infected after suspected exposure. Quarantine, wear a mask to cover both nose and mouth, and practice good hygiene practices. If you want to take extra precautions or you believe you may have been exposed, get tested for the virus using an FDA-authorized test for Covid-19."

So, what should I do if I want to see friends or relatives?

If you insist on seeing loved ones for Thanksgiving, self-quarantining for 14 days beforehand is probably your safest bet, Walensky said.

"A 14-day quarantine -- with a real quarantine -- if you do that properly, you don't need a test," she said. "That's probably the cleanest way to do it."

To be clear: Quarantining means staying home. It does not mean you can run errands.

"'Grocery store' and 'quarantine' don't belong in the same sentence," Walensky said.

Adding testing to your list of precautions "is a helpful thing, but only if it's done properly," she said. "And if you don't know exactly when or how to use it, then you very well could be setting yourself up for a false sense of security."

Lessler agreed that quarantining is best, and testing must be done intelligently.

"If you are visiting an elderly family member and have a reasonable risk of having been exposed, there is no substitute for 14 days of quarantine," Lessler said.

"At the very least I would wait 10 days and have a negative test. If you are visiting a younger, healthy family member and have little chance of being exposed before or during travel, then 5 or 7 days (of quarantine) plus a negative test is probably plenty of risk reduction, though no guarantee of safety. Either way, you should definitely remain in quarantine while awaiting test results and make sure everyone you are getting together with is on the same page about the plan for controlling infection risk."

There have already been cases of coronavirus spread within families just days after a person tested negative, said Dr. Michael St. Louis, a member of the CDC's Community Guidance Team.

He said everyone must remember to treat family from different households the same way you would treat unrelated friends or work colleagues during this pandemic.

Of course, the best way to help ensure the safety of all your loved ones is to celebrate the holidays remotely.

"I have three kids. ... And my parents are not going to be joining us this year," Walensky said.

"It's just awful. But what I really hold out for is that my parents are pretty healthy, and I would never forgive myself if I put them in harm's way. And I'm just looking forward to a 2021 when we can be together."



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The CDC suggests celebrating with loved ones virtually online. You can also make traditional Thanksgiving dishes and deliver them "in a way that doesn't involve contact" to relatives, neighbors or those who might be feeling lonely.

Walensky said the small sacrifices made this Thanksgiving will help ensure everyone will be healthy enough to sit at the table next year.

"At least they'll be there next year, whereas irresponsible behavior now might mean they won't be here later," she said.

"Let's do this so that we can have a much better shot of being around the table together, healthy, in 2021."

EDITOR'S COMMENT: In order to avoid the confusion derived from articles as the one above, we at [HotZone Solutions Group](#) together with [Zekmed](#) have clarified the contribution of available Covid-19 tests as follows:

	PCR method	Rapid antigen test	ZEKMED/HZS Rapid antibody test
Testing method	Multi-step and complex processes Requires analysis in major central laboratories	Requires nasal swabs to collect sample, which leads to error potential – otherwise easy to use	Self contained , simple and easy to use (like a pregnancy test)
What does it detect?	The presence of the virus RNA Indication: not necessarily an infection	Presence of the virus nucleocapsid protein antigen Indication: Active infection	Presence of specific antibody against the virus, immune response IgM = Active and/or recent infection IgG = Past infection
Speed of results	Hours or days (laboratory)	15 minutes	15 minutes
Required resources	Staff trained to collect samples of this type Expensive and sophisticated equipment Laboratory technician and staff	Staff trained to collect samples of this type with the nasal swab Non-expensive test Simplified and readable result analysis that can be interpreted by anyone	Inexpensive test Simplified and readable results analysis that can be interpreted by anyone
Method of collection	Hazardous collection method requiring swab sampling at the back of the throat/nose Handling infected bodily fluids and swabs Requires the wearing of full PPE	Hazardous collection method requiring swab sampling at the back of the throat/nose Point of Care On-site testing and collection Requires the wearing of basic PPE	Point of Care On-site testing and collection Finger prick (like a glucose test for diabetics) Requires the wearing of basic PPE
Limitations	Negative results do not rule out an infection: Potential false negatives due to; 1) Human error in samplings 2) Low viral load 3) Time of collection	Negative results do not rule out an infection: Potential false negatives due to; 1) Human error in samplings 2) Low viral load 3) Time of collection	Negative results do not rule out an infection Potential false negative due to: 1. Time of collection 2. Very low level of antibodies Very rare false positive – high sensitivity for both IgM/IgG: Multiple indications Diagnosis/immune response Past infection + epidemiology monitoring
Cost	Very expensive	Minimal, fraction of the price of a PCR. Similar to rapid antibody	Minimal – fraction of the price of a PCR and other lab-based serology techniques
Ability to identify past infection	Does not reveal info about past infection – only on the current condition (if there is a viral load)	Does not reveal info about past infection – only on the current condition (if there is a high viral load)	Identifies whether the person has developed antibodies to the virus Identifies whether the person has been infected in the past (IgG) or is currently infected (IgM)

Testing must be an “and” strategy, not an “or” one. Rapid testing and masking. Rapid testing and social distancing. Rapid testing and vaccines.



These Countries Got COVID-19 Under Control. Here's 3 Things They Did Right

TAIWAN – AUSTRALIA – SOUTH KOREA

Source: <https://www.sciencealert.com/these-countries-have-the-pandemic-under-control-here-s-3-things-they-did-right>

Nov 03 – Nine months into the [pandemic](#), [the US](#) and parts of Europe are seeing their [coronavirus](#) outbreaks spiral even further out of control, with record-breaking daily infection counts.

And then there's [Taiwan, which just marked](#) its 200 consecutive day without a single new [COVID-19](#) case.

Or take the epicentre of Australia's pandemic, the state of Victoria, which [recorded zero cases for the first time in four months](#) on both October 26 and 27.

South Korea's daily case count, too, continues to [hover around 120](#) - about 1/1000 of the nearly [100,000 new cases](#) reported in the US on Friday.

According to public-health experts, these successes are the result of a clear recipe: Create a cohesive federal plan with consistent messaging, get everyone to wear masks, and implement widespread testing and contact tracing. The countries failing to curb their outbreaks are missing at least one of those elements.

The US lacks all of them.

"I think an organised federal response and the populace trusting their leaders and public-health officials is the most important, and we have failed miserably at both," Monica Gandhi, a professor of medicine at the University of California, San Francisco, told Business Insider.

1. Having a plan, and communicating it effectively

Emma Hodcroft, a scientist from Basel, Switzerland, who studies the coronavirus' genetic code, said she sees a common trend among governments that got the [virus](#) under control: They have a plan in place in case cases rise, communicate it clearly to the public, and enact it quickly whenever numbers start going up.

"A lot of countries have tried to kind of figure this out as they go in the autumn, rather than having pre-set limits and recommendations on when and what measures should be taken, and by whom this is done, and at what level," Hodcroft told Business Insider.

The problem with a reactive approach, Hodcroft added, is that "it can encourage remaining in the status-quo."

"Especially if cases are rising gently at first, which was the case in many countries, it's incredibly tempting to downplay this and hope that it will go away, or plateau, and not take action," she said.

The timelines in western Europe serve as good examples of this inertia: Cases have been rising steadily for nearly six weeks in many countries, but [the UK, Belgium, Portugal, Germany, and France](#) only just implemented new lockdowns.

Even Sweden, which had initially instituted relatively few shutdown orders, recently adopted [stricter guidelines](#) about gatherings and non-essential recreation after cases there surged 70 percent in one week.

By contrast, [Australia, China, and New Zealand](#) have used location-targeted lockdowns to great effect over the last several months, requiring shutdowns only [in cities](#) and regions experiencing outbreaks.

Japan's government, meanwhile, put out clear messaging early on instructing [citizens to avoid the three C's](#): closed spaces, crowded places, and close-contact settings.

Then the country used a comprehensive system of [regional healthcare facilities](#), partially funded by the federal government, to expand testing and public-health communication. Combined, these actions meant [Japan didn't have to lock down](#) at all.

South Korea, for its part, leveraged [smartphone technology](#) to communicate its response and give the public clear information. Its government provided free apps that sent people emergency text alerts about spikes in infections in their local area, granted access to telemedicine, and informed users about the number and type of face masks available at stores for purchase.

According to Gandhi, it's now too late for countries that didn't pursue this type of approach from the beginning.

"I don't believe we can get to zero transmission in the US given our initial failed response," she said. "Therefore, I think we have to focus on minimising transmission and minimising the severity of disease."

To do that, Gandhi added, new policies and public messaging need to better encourage people to avoid crowds, wear masks, practice good hand hygiene, and properly ventilate indoor spaces.

2. Masking, masking, masking

Despite overwhelming evidence that face coverings [prevent coronavirus transmission](#), the US still doesn't require universal mask wearing.



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A mask mandate is "incredibly simple, yet increasingly looks to be effective way to help control transmission," Hodcroft said. One [model](#) from the University of Washington's Institute for Health Metrics and Evaluation predicted that if 95 percent of Americans wore masks, at least [63,000 lives](#) might be saved between the end of September and March 1. But in the US, masks have come to be seen by some, [including President Donald Trump](#), as a political statement. Protesters have rallied against mask mandates, saying they violate personal freedom. The lack of federal guidance about masks from the White House resulted in piecemeal policies: A majority of US states have statewide mask rules, though [17](#) have mask requirements in only in some areas, and South Dakota has no rule at all. Masking rules are lax in many regions of Europe, too. [Face coverings are compulsory](#) in public indoor settings and on public transportation in the UK, for [workplaces across France](#), and for [all Parisians](#). But these mandates didn't go into effect [until summer](#). [Sweden](#), neither requires nor recommends universal mask use. In countries like China, Taiwan, and Singapore, by contrast, mask use is [almost universal](#). In [South Korea](#) and Melbourne, Australia, residents who don't wear a mask in public and businesses that do not enforce mask-wearing can be fined. Even Russia, where President Vladimir Putin has in the past downplayed the pandemic, announced a national mask mandate [last week](#).

3. Effective testing and tracing

The other crucial tool that successful coronavirus responses all have in common is a combination of testing and contact tracing. Gandhi and Hodcroft both said the key to minimising transmission is offering robust, accessible, free testing to identify and isolate coronavirus patients, then tracing their contacts and getting those people to quarantine.

"Test and trace' is one of the most effective tools in containing spread because, if it's working ideally, you find these spreading events and all the people attached to them, and cut them off quickly," Hodcroft said.

China, for example, tested [2.8 million people](#) in one day after a single case was reported in Kashgar. That led authorities to catch and contain an additional 137 cases.

But for this tool to be effective, anyone with exposure - the suspected cases - must isolate. The same goes for people coming into the country from abroad. But in the US, that process is typically an honour system that relies on individuals to voluntarily follow recommendations.

In South Korea, on the other hand, many international travellers are transported straight [from the airport to a government quarantine facility](#). They stay in a hotel room, [have meals brought to them](#), then leave after two weeks.

If a South Korean resident tests positive or is suspected of coming into contact with a coronavirus patient, health authorities have them download [self-quarantining apps](#) that monitor their condition and set off an alarm on a user's phone reminding them not to venture out of a designated quarantine area.

While the US's and Europe's testing and tracing programs [have vastly improved since March](#), there are now too many new cases reported per day for that strategy to work on its own, experts say.

"When you start getting the numbers of cases in the hundreds and potentially thousands, it's almost impossible for contact tracers to be effective," Adrian Esterman, an epidemiologist at the University of South Australia, [previously told Business Insider](#).

That's why the US's first step must be to get its surge under control; then cases could get back to a level where testing and tracing are once again effective, Hodcroft said.

"I don't think it's impossible that the US could turn this around," she added.

When it comes to airborne COVID-19 transmission, droplet size matters

Source: <https://www.popsci.com/story/health/covid-19-spread-aerosols/>

Nov 02 – Researchers reported last week in the journal *Physics of Fluids* that tiny particles called aerosols probably don't spread the virus that causes COVID-19 as effectively as larger droplets that fall quickly to the ground after being exhaled. However, that doesn't mean this route of transmission should be dismissed.

Since the beginning of the pandemic, scientists have debated the extent to which the smaller droplets transmit COVID-19. "It's very difficult to quantify this because if somebody gets COVID you never know how that person was infected,"

says Daniel Bonn, director of the University of Amsterdam's Van der Waals-Zeeman Institute for experimental physics, who [published the findings](#) on October 27. "What we did is to try and set up a risk analysis to see how likely it is that you can get infected through the aerosol route."



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Bonn and his colleagues measured the amount and volume of large and tiny droplets produced when healthy people spoke and coughed, then used mathematical models to estimate how the aerosols travel through the air and are inhaled. Based on their findings, he says, “It’s a possible and plausible route, but it’s not a very efficient route, probably.”

The new research provides evidence to suggest that airborne transmission is “improbable but can happen,” says Phillip Clapp, a researcher at the Mucociliary Clearance and Aerosol Research Laboratory in the University of North Carolina at Chapel Hill Center for Environmental Medicine, Asthma, and Lung Biology. “What this shows...is that aerosol transmission of COVID is probably not the predominant mechanism of transmission, but that doesn’t mean that we shouldn’t be concerned about it.”

The primary way that people catch COVID-19 is by being in close contact with an infected person, according to the [Centers for Disease Control and Prevention](#) and the [World Health Organization](#). The respiratory droplets that carry the virus—which are produced when people breathe, speak, sing, sneeze, or cough—vary in size. In tiny aerosols, the liquid evaporates quickly, leaving behind a residue that is light enough to remain suspended in the air and reach people more than two meters (about 6 feet) away.

“That is what poses the threat, because if you’re in the room with a person who produces these aerosols and who is infected, you’re breathing all these aerosols for a long time,” Bonn says. This airborne transmission is a key route through which measles spreads; the virus can linger in the air for up to two hours after an infected person has left the room, [making it extraordinarily contagious](#).

Throughout the pandemic, explosive outbreaks known as super-spreading events have raised concerns that the novel coronavirus can also spread this way. In one recent example, [more than 30 people](#) connected to the Rose Garden ceremony President Donald Trump held for Judge Amy Coney Barrett’s nomination to the Supreme Court tested positive for the virus. In February and March, a cluster of [more than 5,000 cases](#) was linked to a church in South Korea.

Although [initially slow to acknowledge](#) the role of airborne transmission, the WHO and CDC [have updated their guidance](#) in recent months to reflect that the novel coronavirus can spread this way, particularly in poorly-ventilated spaces. One cause for confusion has been that droplet size is a spectrum, Clapp says. “We’re talking about terms that aren’t really concrete,” he says. “There’s no agreed-upon cutoff for size that I’m aware of that says, this is what constitutes a large droplet aerosol, and this is what constitutes a small one.”

Bonn and his colleagues considered **aerosols to be roughly 100 times smaller in diameter than droplets**. “If you...assume that the concentration in the saliva is constant, that means that there’s a million times more virus particles in these large droplets than in the small droplets per droplet,” Bonn says. The researchers asked seven volunteers to cough and speak into laser beams so they could measure the amounts of aerosols and large droplets they produced.

“We find that if somebody speaks, he or she only produces aerosols, but if you cough you also produce these large droplets,” Bonn says. “They are so heavy that they fall onto the ground within a couple of feet from the person that coughs.” **About 98 percent of the spray produced when a person coughed fell into the large droplet range.**

Next, the researchers used a jet nozzle to spray ethanol droplets into a chamber eight cubic meters in size and used lasers to track how they moved through space. The ethanol quickly evaporated to leave behind aerosols similar to those produced by coughing or speaking.

The researchers then calculated what would happen in a situation where a person entered a small, unventilated space such as a restroom after an infected person coughed. “What we model is how many aerosol particles do you inhale, and how many virus particles are in the aerosol droplet, and so what is your probability of becoming ill,” Bonn says. In these simulations, participants were all unmasked, and Clapp says that a face covering would likely “greatly reduce the number of small particles in the air and drop the relative risk.”

He and his team found that **it would be relatively safe to spend less than 12 minutes in the room after an infected person had coughed once, particularly if that person was not a “high emitter,” or potential super-spreader**, which the researchers defined as someone who produced 17 times more liquid volume than others in the study did. However, Bonn says, if the infected person had been coughing repeatedly or speaking, more aerosols would build up. “You’d need to stay for two or three minutes and then you have a very high probability of being infected,” he says. “But it all depends on the room size and the amount of coughing that the COVID patient did, etcetera; it’s difficult to give exact numbers for unknown circumstances.”

The researchers observed that a person’s chances of becoming infected were highest if they entered a room right after a high emitter coughed. “We have kind of had that intuition for some time, but this has put a numerical refinement to it,” Clapp says. “Now we can look at these data, and look at this model, and kind of get some understanding of what that means in terms of a relative risk.”

Bonn and his colleagues caution that the findings should not be interpreted too literally. “Importantly, our results do not completely rule out aerosol transmission,” the researchers wrote. “What is acceptable as an infection probability is beyond the scope of this paper.”

One limitation of the research is that it’s not known how many virus particles a person needs to be exposed to before becoming infected with COVID-19. For their calculations,



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Bonn and his colleagues assumed that this amount is similar to that determined for the coronavirus that caused the SARS epidemic in the early 2000s.

The researchers also only measured secretions produced by healthy people. “My guess is that based on biological responses from the lungs and from the rest of the body that you’re going to see more fluid production...when they’re sick with something like COVID,” Clapp says. “It could [be] that the numbers that they came up with here may change based on a person’s output when they’re actually sick.”

Matthew Meselson, a molecular biologist at Harvard University who was not involved with the research, says that aerosols may actually contain more virus particles than larger droplets because they come from deeper within the lungs. If this is true of the novel coronavirus, the new findings would underestimate the threat of airborne transmission. “It’s very important that one take account of this difference, because the high titer of virus is likely to be down deep in your lungs,” says Meselson, [who investigated a 1979 anthrax outbreak](#) in Russia, and concluded that it was primarily fueled by airborne transmission. “What we really need is [more] measurements of the amount of [SARS-Cov-2] RNA in the aerosols that people produce when speaking.”

More research is still needed to determine how risky airborne transmission of COVID-19 is under different circumstances, Bonn says. “Our conclusion is that if you’re in a well-ventilated room in a modern building, for instance, that you don’t need to worry too much about getting aerosol infections, but if you’re in ill-ventilated rooms—small meeting rooms, elevators, public restrooms—you should worry,” he says. “The trouble with the message is that it’s not a yes or a no, it’s not a ‘no, aerosols are not dangerous,’ and it’s also not, ‘yes, the aerosols are very dangerous.’”

While there are some precautions you can take to avoid spending time in stuffy spaces, such as taking the stairs instead of a cramming into an elevator and opening your windows, the new findings underscore the importance of good ventilation. “[This] is probably going to be a key element as we enter the winter and people are moving to indoor spaces,” Clapp says. He and his colleagues have recently begun investigating how effective air purifiers are at removing small particles like aerosols from the air. So far, he says, their preliminary data are encouraging.

Still, Clapp says, the most important precautions against COVID-19 continue to be wearing masks and social distancing. “I can’t emphasize enough that people should continue to wear masks,” he says. “In doing that we limit the number of large and small particles in the air that we’re all sharing.”

Startling Case Study Finds Asymptomatic COVID-19 Carrier Who Shed Virus For 70 Days

Source: <https://www.sciencealert.com/case-study-reveals-rare-patient-who-showed-no-symptoms-but-shed-infectious-sars-cov-2-for-70-days>

Nov 05 – If there’s one thing we know about [SARS-CoV-2](#), is that its effects on people vary. A lot. As the [pandemic](#) rolls on, this [coronavirus](#) continues to bring new surprises.

A team of researchers and doctors has now reported the case of one woman with leukemia who had no symptoms of COVID-19 but 70 days after her first positive test, she was still shedding infectious SARS-CoV-2 particles.

This result is much longer than previous reports of hospitalised adults found shedding infectious SARS-CoV-2 [virus up to 20 days](#) after their [COVID-19](#) diagnosis, plus other accounts of people shedding genetic material from the virus [up to 63 days](#) after their symptoms first appeared.

The new report should alert doctors and public health experts alike to the fact that people without symptoms and with weakened immune systems, such as [cancer](#) patients, can seemingly shed the SARS-CoV-2 virus for a really long time. In this case, even months.

“Although it is difficult to extrapolate from a single patient, our data suggest that long-term shedding of infectious virus may be a concern in certain immunocompromised patients,” the research team [wrote in their paper describing the case](#).

An estimated 3 million people in the US have some kind of condition that compromises or weakens their immune system, making them vulnerable to infections. Cancer patients on chemotherapy and transplant recipients who take immunosuppressant drugs are some examples.

“As this virus continues to spread, more people with a range of immunosuppressing disorders will become infected, and it’s important to understand how SARS-CoV-2 behaves in these populations,” [said virologist and co-author Vincent Munster](#) from the US National Institute of Allergy and Infectious Diseases.



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Virologists like Munster would have been on the lookout in this pandemic for prolonged viral shedding of SARS-CoV-2. It has been well established that immunocompromised people can shed common seasonal coronaviruses for weeks after infection.

Studies of Middle East respiratory syndrome (MERS) have likewise shown immunocompromised people shedding the virus that causes this illness for up to [one month after infection](#).

But the proportion of asymptomatic COVID-19 cases still remains unclear. The danger is that these carriers of the virus could easily go about their days unaware of their capability of spreading the virus.

In this case, doctors detected, isolated and tracked one woman's SARS-CoV-2 infection using diagnostic PCR tests and throat swabs. A decade ago, the 71-year-old woman was diagnosed with [chronic lymphocytic leukemia](#) (CCL), a cancer of white blood cells that most commonly affects older adults and progresses slowly.

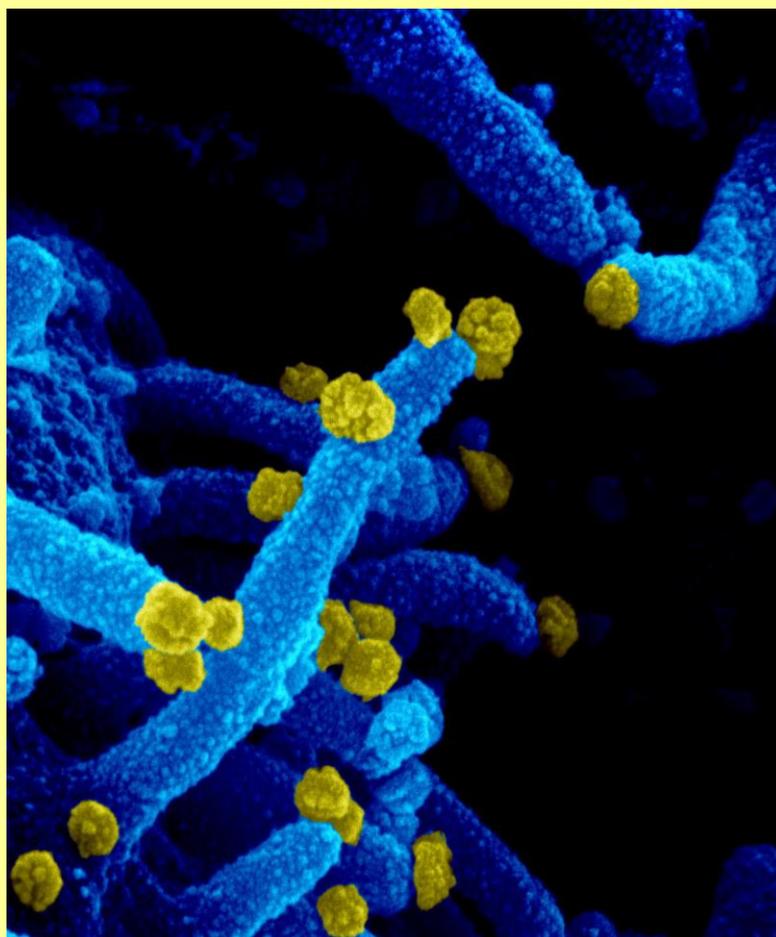
She first tested positive for SARS-CoV-2 on 2 March 2020 after she was admitted to hospital for severe anaemia related to her cancer. She then tested positive for COVID-19 another 13 times and yet showed no symptoms of the disease.

Twice she received plasma from people who had recovered from COVID-19, and eventually cleared the virus from her system sometime in mid-June.

Doctors don't know exactly when she acquired the coronavirus, but most likely it was at a rehabilitation facility which had a large COVID-19 outbreak in February, where the woman had stayed days earlier.

From the throat swabs collected over the course of her 15-week infection, the researchers showed that the woman was shedding infectious SARS-CoV-2 particles for 70 days. Some of its genetic material was also detected up to 105 days after she first tested positive.

We have to be careful here to distinguish between infectious viral particles and the results of a diagnostic test, which just detects



shreds of viral RNA. Importantly, in this study the researchers actually isolated SARS-CoV-2 from a few swab samples – day 70 included – to test whether the virus collected was able to replicate in lab-grown cells, which it was.

"This indicates that, most likely, the infectious virus shed by the patient would still be able to establish a productive infection in contacts upon transmission," [the researchers wrote](#).

[SARS-CoV-2 particles obtained from the woman's throat swab and cultured in lab-grown cells. \(NIAID-RML\)](#)

Additionally, once the doctors were alerted to the woman's case, they also quickly recognised it as an opportunity to study how SARS-CoV-2 might evolve over the course of such a long infection.

The researchers sequenced the virus' genetic material from various samples to see how this particular SARS-CoV-2 virus changed while circulating through the woman's body. Different viral variants became more dominant at certain times, but the turnover was high and none stuck.

Further experiments with the isolated virus in lab-grown cells also showed that these genetic changes didn't affect how fast the virus replicated.

While these are some valuable insights, more research still needs to be done.

"Understanding

the mechanism of virus persistence and eventual clearance will be essential to providing appropriate treatment and preventing transmission of SARS-CoV-2, as persistent infection and prolonged shedding of infectious SARS-CoV-2 occur more frequently," the study authors [wrote in their paper](#).



And yes, this is a single case study, so we can't make any generalisations about persistent viral shedding in people with other immunocompromising conditions, or how effective convalescent plasma is as a treatment for COVID-19, the study authors warn. It is, however, "the longest case of anyone being actively infected with SARS-CoV-2 while remaining asymptomatic," [according to the medical research team](#). They think the woman remained infectious for so long because her compromised immune system never allowed her to mount a response.

"We've seen similar cases with influenza and with [Middle East respiratory syndrome](#), which is also caused by a coronavirus," [Munster said](#). "We expect to see more reports like ours coming out in the future."

With each one, we'll surely learn more about this virus, how long it persists, and what we need to do to take care of the most vulnerable people in our communities.

▶▶ The study was published in the journal [Cell](#).

MIT Researchers Use mHealth Tools to Identify COVID-19 in a Cough

Source: <https://mhealthintelligence.com/news/mit-researchers-use-mhealth-tools-to-identify-covid-19-in-a-cough>

Nov 03 – Researchers at the Massachusetts Institute of Technology are developing an mHealth tool that can detect evidence of COVID-19 in one's cough.

In a study recently published in the [IEEE Journal of Engineering in Medicine and Biology](#), the team of researchers used tens of thousands of samples of [people coughing and talking, and were able to create an AI tool that could accurately identify coronavirus symptoms 98.5 percent of the time among those who'd tested positive for the virus and in every asymptomatic case.

"The sounds of talking and coughing are both influenced by the vocal cords and surrounding organs," Brian Subirana, a research scientist in MIT's Auto-ID Laboratory and co-author of the study, [said in a press release](#) published by the university. "This means that when you talk, part of your talking is like coughing, and vice versa. It also means that things we easily derive from fluent speech, AI can pick up simply from coughs, including things like the person's gender, mother tongue, or even emotional state. There's in fact sentiment embedded in how you cough."

The idea of detecting illness in coughs isn't new. In 2014, ResApp Health [developed an mHealth app](#) at the University of Queensland in Australia that could help clinicians identify respiratory distress, such as pneumonia, bronchitis, croup and asthma, in children and adults who coughed into a smartphone.

With the world in the grip of the pandemic, health systems and digital health companies like Fitbit have been focused on [developing telehealth and mHealth platforms](#) that could detect early signs of the virus through vital signs, activity and sleep patterns tracked on wearables.

"Our research shows that our bodies start to fight the disease before more visible symptoms appear," Amy McDonough, general manager and senior vice president of Fitbit Health Solutions, said of that company's recent partnership with Northwell Health and the US Army on a connected health project. "We believe Fitbit can reliably detect those signals, giving us an incredible opportunity to get ahead of this and help alert people that they could be sick before they unknowingly spread it to others."

The Mayo Clinic is also researching how voice-based medical biomarkers can be used to identify illness. Recently, the health system announced a partnership with Vocalis Health to develop new tools for monitoring patients with respiratory issues like pulmonary hypertension.

"We have seen the clinical benefits of voice analysis for patient screening throughout the COVID-19 pandemic, and this collaboration presents an opportunity for us to continue broadening our research, beginning with pulmonary hypertension," Tal Wenderow, CEO and co-founder of Israel-based Vocalis Health, [recently told the Times of Israel](#). "Voice analysis has the potential to help physicians make more informed decisions about their patients in a non-invasive, cost-effective manner. We believe this technology could have important clinical implications for telemedicine and remote patient monitoring in the very near future."

At MIT, Subirana and his colleagues developed AI tools to measure a person's vocal cord strength, then focused on tools to detect emotional states evident in speech, using people living with Alzheimer's as their model. On top of that, they layered a database of different coughs.

The resulting AI tool identifies four biomarkers specific to COVID-19: vocal cord strength, sentiment, lung and respiratory performance and muscular degradation.

"We think this shows that the way you produce sound, changes when you have Covid, even if you're asymptomatic," Subirana said.



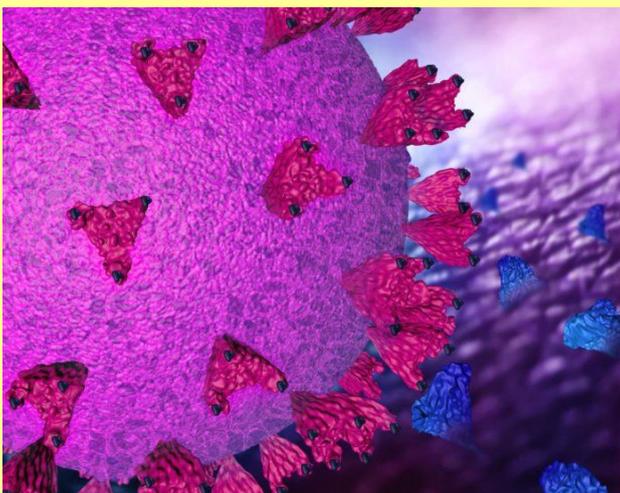
The researchers are now working to create an mHealth app that would allow care providers and patients to use the tool on a smartphone or tablet – perhaps eventually on a smart speaker or other digital health platform in the home. And they're planning partnerships with large health systems to strengthen and expand the database to identify other conditions.

"Pandemics could be a thing of the past if pre-screening tools are always on in the background and constantly improved," they concluded in the study.

Synthetic Nanobodies, "Sybodies," Found That Neutralize SARS-CoV-2

Source: <https://www.genengnews.com/news/synthetic-nanobodies-sybodies-found-that-neutralize-sars-cov-2/>

Nov 05 – Interrupting the interaction between the spike protein on the SARS-CoV-2 virus and its receptor on host cells, ACE2, has become the key target of COVID-19 therapeutics. Therapeutic neutralizing antibodies achieve this, constituting a potential treatment.



However, antibody production is traditionally a somewhat slow and expensive process. Now, a German group of researchers reports the rapid isolation and characterization of nanobodies from a synthetic library, known as sybodies, that target the receptor-binding domain (RBD) of the SARS-CoV-2 spike protein.

This work is published in *Nature Communications* in a paper titled, "[Selection, biophysical, and structural analysis of synthetic nanobodies that effectively neutralize SARS-CoV-2.](#)"

To enable the virus to hook onto the cell surface, the spike protein binds ACE2 using three finger-like protrusions, called the receptor-binding domains (RBDs). Blocking the RBDs therefore has the potential to stop the virus from entering human cells. This can be done using antibodies. Nanobodies, small antibodies found in camels and llamas, are promising as tools against viruses due to their high stability and small size. Although obtaining them from animals is time consuming, technological advances now allow for rapid selection of synthetic nanobodies, called sybodies. A

technology platform to select sybodies from large synthetic libraries was recently developed in the lab of Markus Seeger, PhD, assistant professor at the University of Zurich, and made available for this study.

In search of the best sybody against SARS-CoV-2

The lab of Christian Löw, PhD, group leader at EMBL Hamburg, searched through the existing libraries to find sybodies that could block SARS-CoV-2 from infecting human cells. First, they used the viral spike protein's RBDs as bait to select those sybodies that bind to them. Next, they tested the selected sybodies according to their stability, effectiveness, and the precision of binding. Among the best binders, one called sybody 23 turned out to be particularly effective in blocking the RBDs.

"Several binders with low nanomolar affinities and efficient neutralization activity were identified of which Sb23 displayed high affinity and neutralized pseudovirus with an IC₅₀ of 0.6 µg/mL," the authors wrote.

To learn exactly how sybody 23 interacts with the viral RBDs, researchers in the group of Dmitri Svergun, PhD, senior scientist at EMBL Hamburg, analyzed the binding of sybody 23 to the RBDs by small-angle X-ray scattering. In addition, Martin Hällberg, PhD, at the Karolinska Institutet used cryo-EM to determine the structure of the full SARS-CoV-2 spike bound to sybody 23.

The authors explained that the cryo-EM structure of the spike bound to sybody 23 showed that "sybody 23 binds competitively in the ACE2 binding site." Furthermore, they noted, "the cryo-EM reconstruction revealed an unusual conformation of the spike where two RBDs are in the 'up' ACE2-binding conformation."

The RBDs switch between two positions: in the "up" position the RBDs poke out, ready to bind ACE2; in the "down" position they are furled to hide from the human immune system. The molecular structures revealed that sybody 23 binds RBDs in both "up" and "down" positions, and blocks the areas where ACE2 would normally bind. This ability to block RBDs regardless of their position might explain why sybody 23 is so effective.

Finally, to test if sybody 23 can neutralize a virus, the group of Ben Murrell at Karolinska Institutet used a different virus, called a lentivirus, modified such that it carried SARS-CoV-2's spike protein on its surface. They observed that sybody 23 successfully disabled the



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modified virus in vitro. Additional tests will be necessary to confirm whether this sybody could stop SARS-CoV-2 infection in the human body.

Scientific collaboration during lockdown

“The collaborative spirit has been enormous in these times, and everybody was motivated to contribute,” said Löw. The researchers started the project as soon as they received approval from EMBL leadership to reopen their laboratories during the COVID-19 lockdown. They managed to select the candidate sybodies and perform the analyses in just a few weeks.

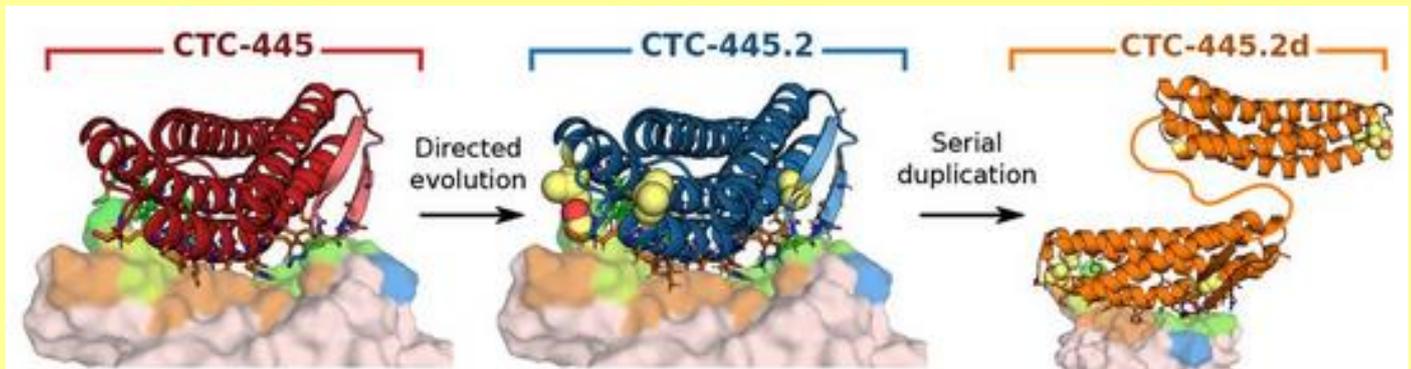
“Getting the results so quickly was only possible because the methodologies we used had already been established for other research projects unrelated to SARS-CoV-2. Developing these tools would have taken significantly more time and resources,” said Löw.

The results of this project hold out the promise of a potential way to treat COVID-19. In future work, the scientists will perform further analyses to confirm whether sybody 23 could be an effective COVID-19 treatment.

SARS-CoV-2 Decoyed by De Novo Protein, Diverted from Real Target In Vivo

Source: <https://www.genengnews.com/news/sars-cov-2-decoyed-by-de-novo-protein-diverted-from-real-target-in-vivo/>

Nov 05 – Drawing fire from SARS-CoV-2, a computationally designed protein protected test animals, sparing them the most serious consequences of infection. **The protein, called CTC-445.2, mimicked SARS-CoV-2's preferred target, the host cell receptor known as angiotensin converting enzyme 2 (ACE2).** Because the protein is so like ACE2, its effectiveness as a decoy is likely to persist. That is, the protein is intrinsically resilient to viral mutational escape.



Design models of CTC-445, CTC-445.2 and CTC-445.2d. CTC-445.2 contains 5 mutations that were guided by directed evolution experiments.

Details about the protein appeared November 5 in the journal *Science*, in an article titled, “[De novo design of potent and resilient hACE2 decoys to neutralize SARS-CoV-2](#).” The article’s authors, primarily researchers at Neoleukin, a biopharmaceutical company, described how they “developed a de novo protein design strategy to swiftly engineer decoys.”

After using their strategy to generate approximately 35,000 computational decoys, the researchers selected the top-ranking designs for further testing, identifying one particularly strong candidate. Administering a version of it prevented infection of multiple human cell lines by SARS-CoV-2. In a Syrian hamster model, a single prophylactic dose administered 12 hours before viral challenge allowed all animals to survive the lethal dose, with modest weight loss.

“The best decoy, CTC-445.2, binds with low nanomolar affinity and high specificity to the receptor-binding domain of the spike protein,” the article’s authors wrote. “Cryogenic electron microscopy shows that the design is accurate and can simultaneously bind to all three receptor binding domains of a single spike protein.”

According to the authors, natural proteins that are repurposed as therapeutics often present significant challenges, such as low stability (which can complicate manufacturing, transport, and storage); residual (and undesirable) biological activity; and the risk of eliciting an autoimmune response. “In contrast,” the authors continued, “the de novo protein decoys are amenable for large-scale manufacturing in traditional bacterial systems, and their thermodynamic hyperstability can enable simplified transport and storage.”

CTC-445.2 (which is also designated NL-CVX1) and the other de novo protein decoys were specifically designed to bind the SARS-CoV-2 spike protein with high affinity, preventing its association with the viral receptor ACE2, which is required for infection.



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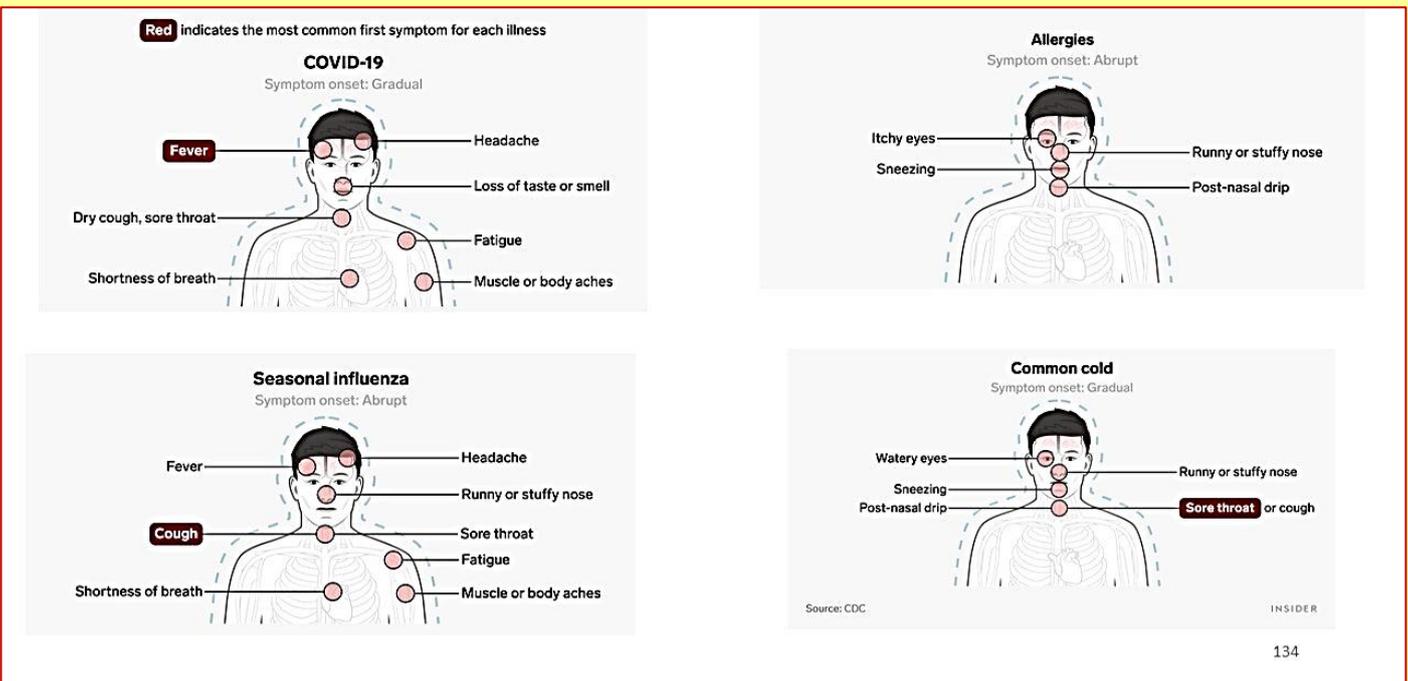
“We believe the development of NL-CVX1 is the fastest development of a therapeutic de novo protein from concept to preclinical validation,” said Daniel-Adriano Silva, PhD, vice president and head of research at Neoleukin. “It represents our most sophisticated design to date.”

“The rapid development of this targeted protein demonstrates the potential of our de novo protein design platform and our team of scientists to address a broad spectrum of important biological problems,” added Jonathan Drachman, MD, CEO of Neoleukin. “NL-CVX1 is designed to be stable and **could potentially be administered by intranasal spray or inhalation to prevent and treat infection in the lungs and upper airways by SARS-CoV-2.** We are currently evaluating the possibility of advancing this molecule to clinical trials in humans.”

How COVID-19 Symptoms Differ from Allergies, Cold and Flu, in One Chart

Source: <https://www.sciencealert.com/this-is-how-covid-19-symptoms-differ-from-allergies-cold-or-flu-in-one-chart>

Nov 05 – Is it [COVID-19](#) or just a cold?



It's a question many Americans are asking themselves as fall and winter bring more cases of the common cold and seasonal flu. The symptoms may be hard to distinguish, given that all three conditions can result in a cough.

But each has its own hallmarks.

An [August study](#) from the University of Southern California identified [a distinct order of symptoms](#) among COVID-19 patients: Most symptomatic patients start with a [fever](#), followed by a cough. For seasonal influenza, it's typically the opposite - people generally develop a cough before a fever.

If you get a common cold, meanwhile, that's more likely to start with a sore throat as the first symptom, according to the Centres for Disease Control and Prevention (CDC).

Here's how to distinguish the novel [coronavirus](#) from the seasonal flu, allergies, and common cold.

However, these symptom lists - and the order in which they arrive - aren't foolproof. Plenty of COVID-19 patients don't develop a fever at all, and some flu patients never come down with a cough.

That's why it's also helpful to consider how quickly symptoms appear and how long they last.

How COVID-19, flu, cold, and allergies manifest and progress

Coronavirus cases tend to develop more gradually than the flu. While some people start showing COVID-19 symptoms within two days of being infected, the disease's symptoms



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can take up to two weeks to manifest. On average, people start to feel sick five days after they were infected. People with the flu, on the other hand, usually feel sick one to four days after exposure. Most patients then fully recover within less than two weeks, often as quickly as a few days. Many coronavirus patients recover within two weeks as well, but a growing share of patients have reported symptoms that last for months. Common cold symptoms, by contrast, usually reach their peak within two to three days of infection - but, like the coronavirus, they often come on more gradually. Some cold symptoms last longer than others: Patients with a typical cold may have a sore throat for eight days, a headache for nine to 10 days, and congestion, a runny nose, or cough for more than two weeks. Allergies tend to last longer - about two to three weeks per allergen - and won't resolve until the allergen leaves the air. Seasonal allergies also tend to be more severe in the spring, though.

The most common symptoms of each illness

Coronavirus cases run the gamut from asymptomatic to mild to severe.

"I've never seen an infection with this broad range of manifestations," Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, [told Facebook founder Mark Zuckerberg](#) in July.

Many patients have reported conditions that don't appear on the official CDC list, including [hair loss](#), [hiccups](#), [rashes](#), and [purple, swollen toes](#).

A large share of COVID-19 patients [lose their sense of taste or smell](#) - this is perhaps [the strongest predictor](#) of a coronavirus infection, according to a June study from scientists at Massachusetts General Hospital and King's College London.

A [Spanish case study](#) similarly found that nearly 40 percent of patients with COVID-19 developed smell and/or taste disorders, compared to just 12 percent of patients with the flu.

Symptoms like a fever or headache could help rule out allergies or the common cold as well. People with colds, meanwhile, are more likely to develop a runny or stuffy nose than COVID-19 patients. And cold symptoms are milder overall.

One of the hallmarks of allergies - itchy eyes - isn't associated with any of the other three illnesses.

Ultimately, the best way to know if you have COVID-19 is to get a diagnostic test. Until results come back negative, people should stay home if they're feeling sick or were exposed to someone confirmed to have the [virus](#).

Everyone should also get a flu shot to minimise the risk of overcrowding at hospitals.

"This will be, in my opinion, the most important flu season of our lifetimes," US Surgeon General Jerome Adams said at a September Senate hearing. "Less flu and fewer hospitalizations will help conserve precious healthcare resources."

Sixty seconds on . . . covid-19 sniffer dogs

By Zosia Kmiotowicz

BMJ 2020;370:m3758

Source: <https://www.bmj.com/content/370/bmj.m3758.full>

What's this, another shaggy dog story?

Not at all. Canine scent detectors have been working at Helsinki-Vantaa Airport since 22 September in a pilot study to see if they can speed up the detection of SARs-CoV-2 in the arrivals lounge.

Are we talking about new test labs?

Possibly, although dog breed is less important than a love of sniffing, according to trainers from Wise Nose ([wisenose.fi](#)), the research group at the University of Helsinki that's leading the project. Most of the 10 dogs being trained to detect the virus have done sniffing work before, identifying cancers, moulds, and bed bugs. **Kössi, an eight-year-old greyhound mix at work at the airport learnt to identify the scent of SARs-CoV-2 in just seven minutes.**

Just how effective are they?

A dog only needs 10-100 molecules of SARS-CoV-2 to identify the virus, whereas standard polymerase chain reaction test equipment requires 18 million. And preliminary tests, conducted by researchers at the veterinary faculty of the University of Helsinki, show that dogs can smell the virus with almost 100% certainty. They can also identify people with the virus before symptoms appear.





could replace “a well functioning public health approach.”

Is Finland leading the way?

Ulla Lettijeff, the director of Helsinki-Vantaa Airport, believes so. “We are among the pioneers. As far as we know no other airport has attempted to use canine scent detection on such a large scale. This might be an additional step forward on the way to beating covid-19,” she said.

Kössi – Finland

Dogs to the rescue

Absolutely. Susanna Paavilainen, Wise Nose chief executive, has ambitions to hound out the current testing service from the airport. “We’re working with Finnish customs to prepare for a potential scenario where dog sniffing takes charge of the operation,” she said, though that will require a change in the law.

So, a warm welcome awaits from man’s best friend?

Unfortunately, you won’t get anywhere near the dogs. People taking the test swipe their skin with a wipe which is then placed in a cup and presented to the dog. Those who test positive will be referred to health services.

Is NHS test and trace barking up the wrong tree?

I couldn’t possibly comment. Deenan Pillay, a professor of virology at University College London, said that, like a contact tracing app, dogs could potentially be useful, but were not a “magic bullet” that

Zosia Kmietowicz has been a medical journalist for 30 years, working initially as a reporter for GP Magazine before freelancing for the national and medical press, including The BMJ. She graduated from the University of Liverpool in 1986 with a BSc in Pharmacology and in 1988 with an MSc in Information Science from City University, London.

Originally Built for Bioterrorism Agents, This Decontamination System Now Clears SARS-CoV-2 from Military Aircraft

Source: <https://globalbiodefense.com/2020/11/05/military-aircraft-sars-cov-2-sanitization-with-hot-air-system/>

Nov 05 - During the ongoing COVID-19 pandemic, the U.S. Department of Defense (DoD) has quickly and safely transported COVID-19-infected warfighters and civilians by aircraft to hospitals for care. Inside the aircraft, patients rested in biocontainment systems to prevent aerosolized severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19, from infecting the aircrew and contaminating the aircraft.

If aircraft contamination were to occur, the U.S. Air Force can use a modified [Joint Biological Agent Decontamination System \(JBADS\)](#) process, referred to as JBADS Lite, for hot-air decontamination. JBADS Lite provides rapid, effective decontamination of an aircraft’s interior for SARS-CoV-2 and other enveloped RNA viruses.

The Defense Threat Reduction Agency’s (DTRA) Chemical and Biological Technologies Department, in its role as the Joint Science and Technology Office (JSTO), generated data that allowed for successful implementation of JBADS Lite.

DTRA-JSTO had previously developed JBADS processes to more efficiently destroy persistent biological threat agents, such as *Bacillus anthracis* spores. Using an enclosure to house the aircraft, standard JBADS processes use a hot and humid environment of 170–190 degrees Fahrenheit, which are temperatures just below the safety limits for the equipment in the aircraft. The environment is sustained for three days until both the interior and exterior of the aircraft are disinfected.



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Lower temperatures and shorter times could disinfect aircraft interiors of other biological threats, such as viruses, but these temperatures and times were not known.



JBADS-Lite connected to a C-17A Globemaster for decontamination of the aircraft's interior at Dover Air Force Base, Delaware, on May 2020. Photo courtesy of Dr. Tony Buhr, NSWC Dahlgren Division

To explore decontamination procedures at reduced times and temperatures for viruses, DTRA-JSTO supported researchers at the Naval Surface Warfare Center Dahlgren Division (NSWCDD) from 2015 through 2017. Researchers developed laboratory decontamination processes using Phi6, a virus that poses no threat to humans. The Phi6 served as a surrogate for other human viruses, such as SARS-CoV-2, because such experiments are seldom performed using actual biological threat agents that can cause infections in humans. Using Phi6, NSWCDD researchers performed over 20,000 separate laboratory tests that showed that an environment of 143 degrees Fahrenheit at 90% relative humidity destroyed all detectable infectious Phi6 virus in one hour. Researchers next needed to validate their laboratory findings through demonstrations in the field on actual aircrafts.

In May 2020, NSWCDD researchers demonstrated the effectiveness of the JBADS Lite process on two aircrafts. The first demonstration used a derelict C-130 Hercules at Aberdeen Proving Ground, Maryland; the second demonstration used an operational U.S. Air Force C-17A Globemaster at Dover Air Force Base, Delaware. The demonstrations did not include enclosures for the aircrafts, so only an aircraft's interior was exposed to the hot and humid air. Before decontamination, NSWCDD researchers placed high concentrations of infectious Phi6 on material coupons, or swatches of material used inside the aircraft. After the decontamination, researchers analyzed the material coupons for any remaining infectious virus. In both demonstrations, JBADS Lite achieved the targeted disinfection level: the amount of virus present inside the aircraft decreased by at least 10,000- fold or 99.99%. The decontamination process for the C-17A — setup, hot-air treatment of one hour, and breakdown — took three hours and 15 minutes, proving that the modified system is practical and effective for rapid disinfection.

The aircraft demonstrations are significant for two other reasons. First, they showed that JBADS Lite can reduce the survival of an infectious, enveloped RNA virus, such as SARS-



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CoV-2, by greater than 99.99% in less than four hours. The U.S. Department of Defense (DoD) can deploy JBADS Lite at a greater rate than the standard JBADS because the modified process needs lower temperatures to disinfect an aircraft's interior of enveloped RNA viruses and does not need an equipment enclosure. Second, the field demonstrations were the first to use Phi6 as a surrogate for an enveloped RNA virus and develop methods for using the virus in a hot-air decontamination of an aircraft. Phi6 does not affect humans or animals, so its use by NSWCDD researchers sets a precedent for safe field demonstrations in the future.

In Memoriam: Healthcare Workers Who Have Died of COVID-19

Updated November 5, 2020

Source: <https://www.medscape.com/viewarticle/927976>

Healthcare workers are on the front lines of the global effort to care for patients with COVID-19, while putting themselves at risk for infection. Thousands have already died, from dozens of countries, professions, and specialties. Here we honor them all.

Physicians, nurses, assistants, technicians, orderlies, administrators, volunteers, drivers, porters, EMTs, firefighters, and more — fresh on the job or retired — they are all remembered here. In some cases, we include names of people who did not die from COVID-19, but whose deaths were clearly related to the stress and demands of the pandemic.

This list is not yet complete, and we need your help to keep it up to date. Please submit names through [this form](#) with as much information as possible, including age, hospital or facility name, profession or specialty, location, and a link to source information. We rely on the links you include to verify each case. We are unfortunately unable to include names without confirmation of their death related to COVID-19.

To all who have submitted the names of colleagues, friends, and family members, we thank you for helping us remember them, and we mourn your loss. As of July 1, this list includes more than 1800 names from 64 countries. The youngest is 20, the eldest 99.

They will not be forgotten.

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#) | [Anonymous](#)

Eight Companies Selected to Bring COVID-19 Fighting Innovations to Public Transportation

Source: <https://www.hstoday.us/industry/eight-companies-selected-to-bring-covid-19-fighting-innovations-to-public-transportation/>

Oct 31 – The Transit Innovation Partnership and partner agencies Metropolitan Transportation Authority, Port Authority of New York and New Jersey, NJ TRANSIT and NYC Dept. of Education have announced eight finalists for the COVID-19 Response Challenge, a global competition calling for technologies to increase public transit safety and responsiveness in the midst of the pandemic. Selected out of nearly 200 applicants, the eight companies will now implement their innovative solutions across the NYC-area agencies for rapid evaluation. If successful, companies may be chosen for a year-long pilot to deploy their tools at scale.

The companies that will begin testing their products in an eight-week proof of concept are:

Beyond (Brooklyn, N.Y.)

Individually leased folding electric bikes and scooters to expand public transit access*

CASPR Group (Dallas, Texas)

Disinfection technology that works with ambient air to provide continuous air and surface protection without harmful chemicals or an operator

CitySwift (Galway, Ireland)

Provides riders and train operators with capacity levels for trains and buses

Kinnos (Brooklyn, N.Y.)

Visualizes disinfection through colorized powder formula that dissolves into liquid bleach



**Knorr Merak (Munich, Germany)**

Air filtration and purification solution

Piper (San Diego, Calif.)

Collects real time passenger crowding data from trains and platforms for integration with mobile apps and in-station displays

Strongarm (Brooklyn, N.Y.)

Wearable technology to promote worker safety and social distancing

Vyv (Troy, N.Y.)

Continuous non-UV antimicrobial light to reduce bacteria/microbes from surfaces

The COVID-19 Challenge was launched in July by the Transit Tech Lab, building on MTA's cleaning measures to help riders return confidently to transit. Nearly 200 submissions were received. Last month five transit agencies – the Metropolitan Transportation Authority, the Port Authority of New York & New Jersey, NJ TRANSIT, New York City Department of Education, and New York City Department of Transportation – were presented with a variety of solutions from 16 companies, including seven based in New York. More than 50 public and private sector evaluators reviewed submissions.

"We have a great group of companies we selected from the over 200 applicants who will work with MTA and the other agencies to find innovative solutions to issues created by the pandemic," said MTA Chief Innovation Officer Mark Dowd.



**The Beyond proof of concept will not commence customer scooter use until after November 23, 2020. The Transit Innovation Partnership and MTA will work with NYC DOT to ensure the proof of concept meets the city's guidelines and regulations.*

CDC Issues Framework for Resuming Safe and Responsible Cruise Ship Passenger Operations

Source: <https://www.hstoday.us/subject-matter-areas/maritime-security/cdc-issues-framework-for-resuming-safe-and-responsible-cruise-ship-passenger-operations/>

Nov 03 – The Centers for Disease Control and Prevention (CDC) issued a Framework for Conditional Sailing Order that introduces a phased approach for the safe and responsible resumption of passenger cruises. The order establishes a framework of actionable



items for the cruise line industry to follow so they can resume passenger operations with an emphasis on preventing the further spread of COVID-19 on cruise ships and from cruise ships into communities, and to protect public health and safety. The order applies to passenger operations on cruise ships with the capacity to carry at least 250 passengers in waters subject to U.S. jurisdiction.

Recent outbreaks on cruise ships overseas provide current evidence that cruise ship travel facilitates and amplifies transmission of COVID-19—even when ships sail at reduced passenger capacities—and would likely spread the disease into U.S. communities if passenger operations were to resume in the United States without public health oversight.

“This framework provides a pathway to resume safe and responsible sailing. It will mitigate the risk of COVID-19 outbreaks on ships and prevent passengers and crew from seeding outbreaks at ports and in the communities where they live,” says CDC Director Robert R. Redfield, M.D. “CDC and the cruise industry have a shared goal to protect crew, passengers, and communities and will continue to work together to ensure that all necessary public health procedures are in place before cruise ships begin sailing with passengers.”

Cruising safely and responsibly during a global pandemic is very challenging. The Framework for Conditional Sailing Order requires a phased approach to resuming passenger operations. A phased approach is necessary because of the continued spread of the COVID-19 pandemic worldwide, risk of resurgence in countries that have suppressed transmission, ongoing concerns related to restarting of cruising internationally, and need for additional time for the cruise industry to test the effectiveness of measures to control potential COVID-19 transmission on board cruise ships with passengers without burdening public health.

“CDC and the cruise industry have the same goal: A return to passenger sailing, but only when it's safe. Under the CDC's Framework for Conditional Sailing Order, cruise lines have been given a pathway to systematically demonstrate their ability to sail while keeping passengers, crew and their destination ports safe and healthy,” said former Utah Gov. Mike Leavitt, co-chair of the Healthy Sail Panel.

During the initial phases, cruise ship operators must demonstrate adherence to testing, quarantine and isolation, and social distancing requirements to protect crew members while they build the laboratory capacity needed to test crew and future passengers. Subsequent phases will include simulated (mock) voyages with volunteers playing the role of passengers to test cruise ship operators' ability to mitigate COVID-19 risk, certification for ships that meet specific requirements, and return to passenger voyages in a manner that mitigates COVID-19 risk among passengers, crew members, and communities.

“Our member lines are 100 percent committed to helping to protect the health of our guests, our crew and the communities we serve, and are prepared to implement multiple layers of protocols informed by the latest scientific and medical knowledge,” said Kelly Craighead, president and CEO of Cruise Lines International Association (CLIA). “We look forward to



reviewing the new Order and are optimistic that it is an important step toward returning our ships to service from U.S. ports.” CDC will help ships prepare and protect crew members during the initial phases by:

- establishing a laboratory team dedicated to cruise ships to provide information and oversight for COVID-19 testing,
- updating its color-coding system to indicate ship status,
- updating its technical instructions, as needed, and
- updating the “Enhanced Data Collection (EDC) During COVID-19 Pandemic Form” to prepare for surveillance for COVID-19 among passengers.

CDC will continue to update its guidance and recommendations to specify basic safety standards and public health interventions based on the best scientific evidence available.

For more information about COVID-19 and cruise ships, please visit www.cdc.gov/coronavirus/2019-ncov/travelers/cruise-ship/what-cdc-is-doing.html and www.cdc.gov/quarantine/cruise.

EDITOR’S COMMENT: Take a cruise, pay a lot of money just to end up in a foreign hospital? No thank you! I can wait until the vaccine is ready and life is back to normal or whatever. I know it is a lot of money at stake but what is the value of a single life? And there is always an airport in all attractive destinations!

Qatar scientists turn to cancer drugs in hope of finding treatment for COVID-19

Source: <https://www.qatar-day.com/news/local/qatar-scientists-turn-to-cancer-drugs-in-hope-of-finding-treatment-for-covid-19/79427>

Nov 07 – With COVID-19 continuing to wreak havoc across the globe, the global death toll is now over one million. A number that seemed like an exaggeration back when the pandemic started has become a harsh reality. With no vaccine in sight, several studies have been focusing on repurposing existing drugs to fight the virus. Drug repurposing refers to the reuse of existing licensed drugs to treat or prevent diseases outside the scope of their original medical purpose.

“We are in the midst of a pandemic, with time not being on our side, so repurposing an existing drug can help us find a cure much faster. Because they are already approved drugs, the conditions for safe use are known which eliminates the need for lengthy safety evaluation,” says Prof. Dr. Paul J Thornalley, Research Director of the Diabetes Research Center at the Qatar Biomedical Research Institute (QBRI), part of Hamad Bin Khalifa University, a member of Qatar Foundation.

In a collaborative effort, scientists from QBRI and Qatar University (QU) have been exploring the possibility of repurposing antitumor drugs for COVID-19 treatment. What is common between viruses and many cancers and makes them both dangerous is how fast they replicate and spread in the human body.

“We started by performing a computer-based analysis of the proteins of the SARS-CoV-2 virus to **explore which type of reactive metabolites would be most effective in producing proteotoxicity – damage to its proteins. Two reactive metabolites known to produce major quantitative modification of protein in physiological systems are: reactive oxygen species (ROS) and methylglyoxal (MG),**” said Dr. Naila Rabbani, College of Medicine, Qatar University.

“Upon investigating the interaction of these metabolites with the SARS-COV-2 virus, we found that the virus is likely resistant to ROS but sensitive to modification by MG on the spike protein and nucleoprotein. The spike protein is vital for virus entry into human lung cells whereas the nucleoprotein is responsible for virus replication; damaging these two would effectively result in impaired infectivity and replication.

“Building on some unpublished data from previously done work by myself and Prof. Rabbani at the University of Warwick, UK, we knew that certain clinically-approved anticancer drugs increase MG levels that would be high enough to modify and inactivate the SARS-CoV-2 virus in human cells,” said Prof. Thornalley.

Sensitivity to MG modification has previously been seen in other viruses including some strains of the influenza virus. Concentrations of MG 4-5-fold higher than normally found in cells is known to produce anti-viral activity.

Prof. Thornalley explained, “Having established that a pharmacological increase of MG would produce a virucidal effect and therapeutic response, we identified two antitumor drugs which increase cellular MG concentration to virucidal levels: **doxorubicin and paclitaxel.** We are now performing further studies on these two drugs to confirm our predictions and determine the dosage and duration of treatment that would be required for the SARS-COV-2 virus.”

Cancer drugs may be damaging to healthy cells alongside diseased cells. With that in mind, would it be safe to use them as a treatment for COVID-19?



“Since these drugs are already in clinical use, we are aware of potential adverse effects. However, most of these adverse effects are linked to dose and duration of treatment. We know that the duration of treatment against COVID-19 will be much shorter than in cancer chemotherapy.

“A typical course of chemotherapy is at least six months or more whereas the maximum period of treatment of COVID-19 is about one month. We don’t know about the dose required yet, but if the dose is lower or similar to that used in cancer treatment then the drugs will likely have appropriate safety for use in COVID-19 treatment,” said Dr. Rabbani.

“The elevation of MG for a short period is expected to be tolerable to human cells but much less so to the virus. **A recent review in the British Journal of Cancer, indicated that there are now at least 37 clinical trials on-going with anticancer drugs repurposed for COVID-19 treatment – some of which may work by our proteotoxicity approach,**” said Prof. Thornalley.

Rospotrebnadzor named another symptom of COVID-19

Source: <https://balthazarkorab.com/2020/11/04/rospotrebnadzor-named-another-symptom-of-covid-19/>

Nov 04 – One of the symptoms encountered with coronavirus infection is **ear congestion**. This was announced by Natalya Pshenichnaya, deputy director for clinical and analytical work of the Central Research Institute of Epidemiology of Rospotrebnadzor. The specialist referred to a study conducted in Turkey, according to which 31 people (18%) out of 172 patients with COVID-19 revealed such a symptom, RIA Novosti reports.

In addition, about 12% of patients with mild disease complained of ear congestion.

Pshenichnaya recalled that this symptom can also occur with ARVI. According to her, if the congestion does not go away for several days, pains appear in the ear, you should immediately consult an otolaryngologist.

In October, Japanese scientists at the National Center for Global Health and Medicine reported that one of the consequences of an illness caused by a coronavirus infection is **hair loss**.

A few weeks earlier, British scientists had named the new symptoms of the coronavirus – muscle pain, fatigue and blisters on the legs.

Iranian bio technology

Source: <https://www.tehrantimes.com/news/453487/Iranian-biotechnology-ranks-12th-in-world-first-in-West-Asia>

Oct 12 – Iran is ranked **12th in the world and first in West Asia** in terms of biotechnology, as 9.5 percent of the income of knowledge-based companies and more than 60 percent of their exports are related to biotechnology.

First-Ever Flu Vaccine Derived from Tobacco Plants Just Smashed Clinical Trials

Source: <https://www.sciencealert.com/large-scale-studies-test-flu-vaccine-derived-from-tobacco-plants-for-the-first-time>

Nov 09 – A new flu vaccine grown in plants has been put to the test in two large-scale [clinical trials](#), a first for vaccine research.

The vaccine contained virus-like particles which resembled circulating flu strains, extracted from native Australian tobacco relatives that were genetically instructed to produce the viral proteins.

The two trials combined involved nearly 23,000 people and the results suggest that the plant-derived vaccine is not only safe, but comparable to current commercial flu vaccines.

"To the best of our knowledge, these studies and the clinical development programme that preceded them are the largest demonstration to date of the potential for a plant-based platform to produce a human vaccine that can be safe, immunogenic, and effective," the [research team wrote](#).

Every year, the vaccines that protect us against influenza have to be reformulated for the next flu season, which is a huge undertaking. The influenza virus is a chameleon of sorts, constantly changing the protein molecules it displays on its outer surface, and this has researchers feverishly looking for ways to [improve our current vaccine technology](#).

Most [influenza vaccines are currently made](#) using virus particles grown in and harvested from chicken eggs or lab-grown cells, which takes months even after scientists work out which flu strains (and surface proteins) they need to target.

Plants, which can be engineered to produce select proteins and cultivated at scale, could be an alternative, helping to boost our capacity to produce seasonal flu vaccines.



The technique might also help to overcome complications encountered in the way current flu vaccines are manufactured that sometimes renders vaccines less effective.

In this system, the researchers used an Australian relative of the tobacco plant, [Nicotiana benthamiana](#), engineered to produce just the outer shell of influenza [viruses](#). These virus-like particles are then extracted and purified under strict conditions to make a flu vaccine.

The researchers tested their plant-derived vaccine in two clinical trials, funded by the Canadian biotech company which developed the technique, and no major safety concerns were reported.

Phase III trials testing safety and efficacy like this are usually one of the last hurdles vaccines need to clear before they can be approved for widespread use.

But keep in mind that even if a flu vaccine is approved as safe and effective, any manufacturer needs to be able to produce millions of doses every year, which could be a challenge for vaccine-producing plants.

The **first trial** involved more than 10,100 adults from Asia, Europe and North America, aged 18 to 64 years, and it was designed to show that the vaccine could prevent 70 percent of people in the trial from developing flu-like or other respiratory illnesses in one flu season.

Although this high benchmark was not reached in the trial, the vaccine did protect about a third of people from flu strains circulating in the 2017-2018 Northern Hemisphere winter that were a match for the viral particles in this vaccine.

That result might sound low, but the efficacy of commercial flu vaccines often varies year to year depending on how well a vaccine matches the different flu strains circulating that winter.

The researchers [concluded](#), based on data collected during 2017-2018, that their plant-derived vaccine provided a "broadly similar" level of protection as commercial vaccines used in that particularly long flu season, which is a fair result.

The **second study** recruited another 12,700 people aged 65 years and over. This is quite important because elderly people's immune systems tend to wane with age, making them more vulnerable to contracting infections.

"Like other influenza vaccines, [antibody](#) responses to the [plant-derived] vaccine also diminished with age," the researchers [said](#).

The plant-derived vaccine stimulated less of an antibody response in older people, a somewhat expected result, but it did activate a substantial increase in immune cells ready to respond to flu-like infections.

Promisingly, the protection the vaccine granted people from flu-like illnesses in the 2018-2019 flu season was still on par with a commercially available flu vaccine used that season.

"The field of plant-derived vaccines has grown a lot in the past 28 years, since it was [first shown \[in 1992\] that viral proteins could be expressed in plants](#)," John Tregoning, an infectious disease researcher from Imperial College London, [said in a commentary](#) about the latest trial results.

"This is the first time a plant vaccine has been tested in a [human] clinical trial," [Tregoning added](#). "It is a milestone for this technology and sows the seeds for other plant-based vaccines and therapeutics."

If all goes well, this research might one day give us another way to manufacture seasonal flu vaccines that could also be scaled up in the event of another flu [pandemic](#).

In their paper, the researchers [claim](#) that their plant-based system can produce the first doses of a newly designed flu vaccine within two months of identifying an emerging influenza strain.

But there is likely still a long road ahead navigating regulatory approvals for this vaccine, so watch this space.

►► The research was published in [The Lancet](#).

This Bacterium Survived on The Outside of The Space Station for a Whole Damn Year

AMAZING!

Source: <https://www.sciencealert.com/this-bacterium-survived-on-the-outside-of-the-space-station-for-a-year>

Nov 09 – A year in space is no walk in the park. Just ask [Scott Kelly](#), the American astronaut who spent a year on the International Space Station (ISS) in 2015.

His long-term stay in space changed [his DNA, telomeres, and gut microbiome](#), he lost bone density, and he still had sore feet [three months later](#).



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But it's a whole other thing to survive in the naked space outside the protection of the ISS, where UV radiation, vacuum, huge temperature fluctuations, and microgravity are all imminent threats.

So, it's quite a feat that a species of bacterium first found in a can of meat, *Deinococcus radiodurans*, was still alive and kicking after a year spent living on a specially designed platform outside the pressurised module of the ISS.

Researchers have been investigating these mighty microbes [for a while](#); back in 2015, an international team set up the [Tanpopo mission](#) on the outside of the Japanese Experimental Module Kibo, to put hardy bacterial species to the test.

Now, *D. radiodurans* has passed with flying colours.

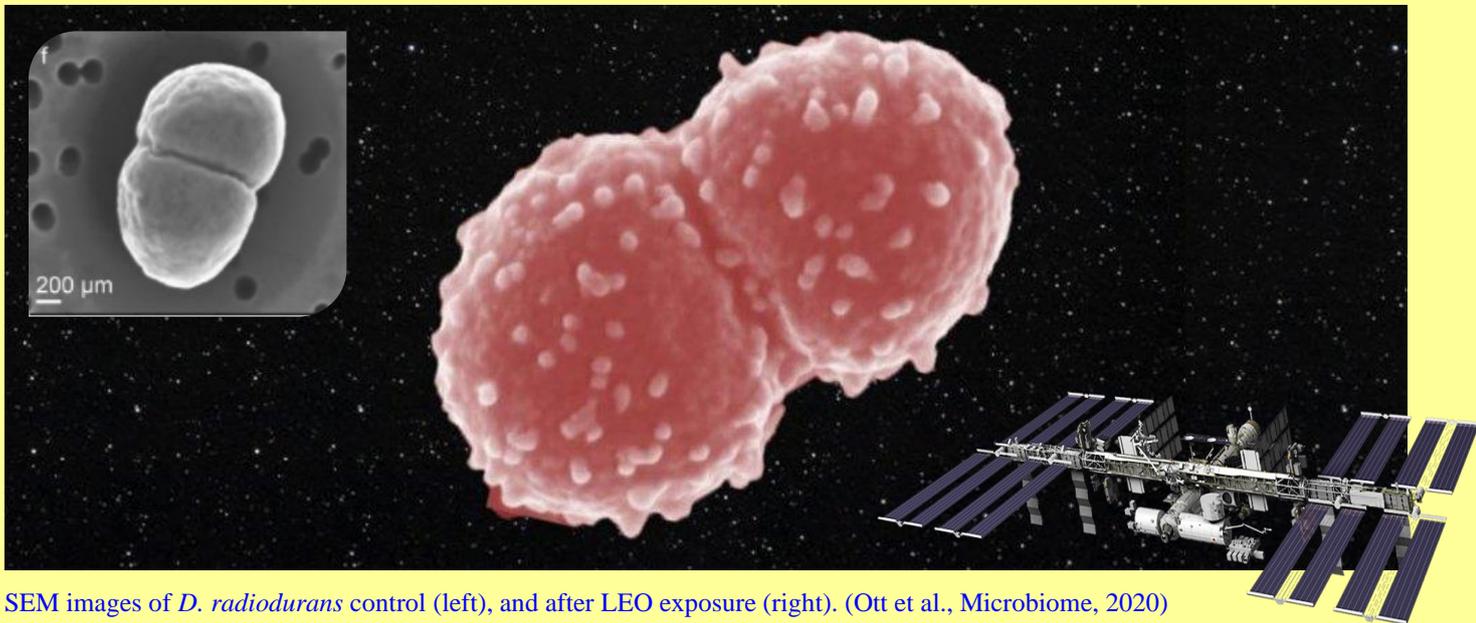
The bacterial cells were dehydrated, shipped to the ISS, and placed [in the Exposed Facility](#), a platform continuously exposed to the space environment; in this case, the cells were behind a glass window that blocked out UV light at wavelengths lower than 190 nanometres.

"Results presented in this study may increase awareness regarding planetary protection concerns on, for instance, the Martian atmosphere which absorbs UV radiation below 190-200 nm," the team from Austria, Japan, and Germany [wrote in their new paper](#).

"To mimic this condition, our experimental setup on the ISS included a [silicon dioxide](#) glass window."

This isn't the longest time *D. radiodurans* has been kept in these conditions – [back in August](#) we wrote about a sample of the bacterium being left up there for three whole years.

But the team weren't trying for a world record, instead they were trying to uncover what makes *D. radiodurans* just so good at surviving in these extreme conditions.



SEM images of *D. radiodurans* control (left), and after LEO exposure (right). (Ott et al., *Microbiome*, 2020)

So, after a year of radiation, freezing and boiling temperatures, and no gravity, the researchers got the spacefaring bacteria back down to Earth, rehydrated both a control that had spent the year on Earth and the Low Earth Orbit (LEO) sample, and compared their results.

The survival rate was a lot lower for the LEO bacteria compared to the control version, but the bacteria that did survive seemed to be doing okay, even if they had turned a little different to their Earth-bound brethren.

The team found that the LEO bacteria were covered with small bumps or [vesicles](#) on the surface, a number of repair mechanisms had been triggered, and some proteins and mRNAs had become more abundant.

The team isn't exactly sure why the vesicles (which you can see in the picture above) formed, but they do have a couple of ideas.

"Intensified vesiculation after recovery from LEO exposure can serve as a quick stress response, which augments cell survival by withdrawing stress products," [the team wrote](#).

"Additionally, outer membrane vesicles may contain proteins important for nutrient acquisition, DNA transfer, transport of toxins and quorum sensing molecules, eliciting the activation of resistance mechanisms after space exposure."

This kind of study helps us understand whether bacteria could survive other worlds, [and maybe even the journey between them](#), which will become more and more important as we



humans and the germs we bring with us begin to travel farther than our Moon [into the Solar System](#), and one day maybe even beyond.

"These investigations help us to understand the mechanisms and processes through which life can exist beyond Earth, expanding our knowledge on how to survive and adapt in the hostile environment of outer space," [said University of Vienna biochemist Tetyana Milojevic](#).

"The results suggest that survival of *D. radiodurans* in LEO for a longer period is possible due to its efficient molecular response system and indicate that even longer, farther journeys are achievable for organisms with such capabilities."

▶▶ The research has been published in [Microbiome](#).

The Pandemic Has Revealed How Obesity Can Harm the Body Even in The Short Term

By Cate Varney

Source: <https://www.sciencealert.com/coronavirus-reveals-how-obesity-can-harm-our-bodies-in-the-short-term>

Nov 09 – The [COVID-19 pandemic](#) has thrust the obesity [epidemic](#) once again into the spotlight, revealing that obesity is no longer a disease that harms just in the long run but one that can have acutely devastating effects.

New studies and information confirm doctors' suspicion that this [virus](#) takes advantage of a disease that our current US health care system is unable to get under control.

In most recent news, the Centers for Disease Control and Prevention reports that 73 percent of nurses who have been hospitalized from COVID-19 had obesity. In addition, a recent study found that [obesity could interfere with the effectiveness of a COVID-19 vaccine](#).

I am an [obesity specialist and clinical physician](#) working on the front lines of obesity in primary care at the University of Virginia Health System. In the past, I often found myself warning my patients that obesity could take years off their life. Now, more than ever, this warning has become verifiable.

More damage than believed

Initially physicians believed that having obesity increased only your risk of getting sicker from COVID-19, not your chance of being infected in the first place.

Now, [newer analysis](#) shows that not only does obesity increase your risk of being sicker and dying from COVID-19; obesity increases your risk of getting infected in the first place.

In March 2020, [observational studies](#) noted hypertension, [diabetes](#) and coronary artery disease as the most common other conditions – or co-morbidities – in patients with more severe COVID-19 disease.

But it was the [editors of Obesity journal](#) who first raised the alarm on April 1, 2020 that obesity would likely prove to be [an independent risk factor](#) for more severe effects of COVID-19 infection.

Additionally, [two studies](#) including nearly 10,000 patients have shown that patients who [have both COVID-19 and obesity](#) have a [higher risk of death at days 21 and 45](#) compared to patients with a normal body mass index, or BMI.

And a study published in September, 2020 reported higher rates of obesity in COVID-19 patients who are critically ill and [require intubation](#).

It is becoming overwhelmingly evident from these studies and others that those with obesity are facing a clear and present danger.

Stigma and lack of understanding

Obesity is an interesting disease. It is one that many physicians talk about, often in frustration that their patients cannot prevent or reverse it with the oversimplified treatment plan that we have been taught in our initial training; "Eat less and exercise more."

It is also a disease that causes problems physically, such as sleep apnea and joint pain. It also affects one's mind and spirit due to societal and [medical professionals' bias](#) against those with obesity.

It can even [adversely affect the size of your paycheck](#). Can you imagine the outcry if the headline read "Patients with high blood pressure earn less"?

We doctors and researchers have understood for quite some time the long-term consequences of excess weight and obesity. We currently recognize that [obesity is](#)



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[associated with at least 236 medical diagnoses](#), including 13 types of [cancer](#). Obesity can decrease one's lifespan by up to eight years.

Despite knowing this, US physicians are not prepared to prevent and reverse obesity. In a [recently published survey](#), only 10 percent of medical school deans and curriculum experts feel that their students were "very prepared" in regards to obesity management. Half of the medical schools responded that expanding obesity education was a low priority or not a priority. An average of 10 hours total was reported as dedicated to obesity education during their entire training in medical school.

And doctors sometimes don't know how or when to prescribe medications for patients with obesity. For example, [eight FDA-approved weight loss medications](#) are on the market, but only [2 percent of eligible patients](#) receive prescriptions for them from their physicians.

What goes on in the body

So, here we are, with a collision of the obesity epidemic and the COVID-19 pandemic. And a question I find patients asking me more and more: How does obesity create more severe disease and complication from COVID-19 infection?

There are many answers; let's start with structure.

Excess [adipose tissue](#), which stores fat, creates a mechanical compression in patients with obesity. This limits their ability to take in and completely release a full breath of air.

Breathing takes more work in a patient with obesity. It creates restrictive lung disease, and in the more serious cases, lead to [hypoventilation syndrome](#), which can cause a person to have too little oxygen in their blood.

And then there is function. Obesity results in an excess of adipose tissue, or what we colloquially call "fat". Over the years, scientists have learned that adipose tissue is harmful in and of itself.

One may say that adipose tissue acts as an endocrine organ all its own. It releases [multiple hormones and molecules](#) that lead to a chronic state of inflammation in patients with obesity.

When the body is in a constant state of low-grade inflammation, it releases [cytokines](#), proteins that fight inflammation. They keep the body on guard, simmering and ready to fight disease. That's all well and good when they are kept in check by other systems and cells.

When they are chronically released, however, an imbalance can occur that causes injury to the body. Think of it like a small but contained wildfire. It's dangerous, but it's not burning the entire forest.

COVID-19 causes the body to create another [cytokine wildfire](#). When a person who is obese has COVID-19, two small cytokine wildfires come together, leading to the raging fire of inflammation that damages the lungs even more so than patients with normal BMI.

Additionally, this chronic state of inflammation can lead to something called [endothelial dysfunction](#). In this condition, instead of opening up, blood vessels close down and constrict, further decreasing oxygen to the tissues.

In addition, increased adipose tissue may have more ACE-2, the enzyme that allows the [coronavirus](#) to invade cells and begin to damage them. A [recent study](#) has shown an association of increased ACE-2 in adipose tissue rather than lung tissue.

This finding further strengthens the hypothesis that obesity plays a major role in more serious COVID-19 infections.

So in theory, if you have more adipose tissue, the virus can bind to and invade more cells, causing higher viral loads that stay around longer, which can make the infection more severe and prolong recovery.

ACE-2 can be helpful in [counteracting inflammation](#), but if it otherwise bound to COVID-19, it cannot assist with this.

The novel [SARS-CoV-2](#) virus has forced the medical profession to face the reality that many US physicians inherently know. When it comes to prevention of chronic diseases such as obesity, the U.S. health care system is not performing well.

Many insurers reward physicians by [meeting metrics](#) of treating the effects of obesity rather than preventing it or treating the disease itself. Physicians are reimbursed, for example, for helping patients with Type 2 diabetes to attain a certain A1C level, or a set blood pressure goal.

I believe it is time to educate physicians and provide them with resources to combat obesity.

Physicians can no longer deny that obesity, one of the strongest predictors for COVID-19 and at least 236 other medical conditions, must become public enemy number one.

Cate Varney is a Clinician Physician @ University of Virginia.



Preexisting SARS-CoV-2 Antibodies Found in Uninfected People, Higher in Children

Source: <https://www.genengnews.com/news/preexisting-sars-cov-2-antibodies-found-in-uninfected-people-higher-in-children/>

Nov 09 – Although there is much attention being directed toward SARS-CoV-2, the coronavirus at the center of the global pandemic, there are multiple coronaviruses that infect humans. These seasonal coronavirus infections occur frequently and typically result in a mild, common cold-like illness. The presence of these coronavirus infections in the population has led to the hypothesis that immune cross-reactivity among these related viruses could occur, and potentially offer some protection to SARS-CoV-2. Now, a group of scientists has detected preexisting antibody-driven immunity against SARS-CoV-2 in a small proportion of individuals who were uninfected at the time of sampling.

The four coronaviruses that result in a common cold-like infection when infecting humans are 229E (alpha coronavirus), NL63 (alpha coronavirus), OC43 (beta coronavirus), and HKU1 (beta coronavirus). The other three coronaviruses known to infect humans cause far more serious infections. They are MERS-CoV (the beta coronavirus that causes Middle East Respiratory Syndrome, or MERS), SARS-CoV (the beta coronavirus that causes SARS), and SARS-CoV-2, the novel coronavirus that causes COVID-19.

People around the world commonly get infected with human coronaviruses 229E, NL63, OC43, and HKU1.

The London-based group of researchers found that 16 out of 302 adults (5.3%) harbored IgG antibodies that were likely generated during previous seasonal “common cold” coronavirus infections, and which cross-reacted with subunit S2 of the SARS-CoV-2 spike protein complex.

Notably, the presence of these cross-reactive IgG antibodies was much more prevalent in an additional cohort of SARS-CoV-2-uninfected children and adolescents (aged 1 to 16 years): at least 21 of these 48 subjects (43.8%) had detectable levels of SARS-CoV-2 S-reactive IgG antibodies.

Using flow cytometry, Kevin Ng, a graduate student at the Francis Crick Institute, and colleagues, found that the SARS-CoV-2-reactive antibodies from uninfected individuals were predominantly of the IgG class—rather than IgM or IgA antibodies—that targeted the viral S2 protein, responsible for cell entry and thought to more similarly structured across different coronaviruses than subunit S1.

By contrast, the authors wrote, “SARS-CoV-2 infection induced higher titers of SARS-CoV-2 S-reactive IgG antibodies, targeting both the S1 and S2 subunits, and concomitant IgM and IgA antibodies, lasting throughout the observation period.” Notably, they continued, “SARS-CoV-2-uninfected donor sera exhibited specific neutralizing activity against SARS-CoV-2 and SARS-CoV-2 S pseudotypes.”

In cell culture experiments, sera from both older and younger uninfected individuals with cross-reactive antibodies showed the ability to neutralize SARS-CoV-2 and SARS-CoV-2 S pseudotypes, whereas sera from uninfected patients lacking cross-reactive antibodies exhibited no such neutralizing activity. Further exploring potential targets on S2 that are conserved across multiple coronaviruses may hold the promise of a universal coronavirus vaccine, the authors said.

Together, these findings may help explain higher COVID-19 susceptibility in older people and provide insight into whether pre-established immunity to seasonal coronaviruses offers protection against SARS-CoV-2.

Though previous studies suggest cross-reactive immunity is neither sterilizing nor long-lasting, the presence of cross-reactivity can reduce viral transmission and ameliorate symptoms and is, therefore, an important area of study. The authors noted that distinguishing preexisting and de novo immunity “will be critical for our understanding of susceptibility to and the natural course of SARS-CoV-2 infection.”

►► This work is published in *Science* in the paper, [“Preexisting and de novo humoral immunity to SARS-CoV-2 in humans.”](#)

Pfizer says early analysis shows its Covid-19 vaccine is more than 90% effective

Source: <https://edition.cnn.com/2020/11/09/health/pfizer-covid-19-vaccine-effective/index.html>

Nov 09 – Drugmaker Pfizer said Monday an early look at data from its coronavirus vaccine shows it is more than 90% effective -- a much better than expected efficacy if the trend continues. The so-called interim analysis looked at the first 94 confirmed cases of Covid-19 among the more than 43,000 volunteers who got either two doses of the vaccine or a placebo. It found



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that fewer than 10% of infections were in participants who had been given the vaccine. More than 90% of the cases were in people who had been given a placebo.

Pfizer said that the vaccine, made with German partner BioNTech, had an efficacy rate higher than 90% at seven days after the second dose, which means protection is achieved 28 days after a person begins vaccination. The vaccine requires two doses. The US Food and Drug Administration has said it would expect at least 50% efficacy from any coronavirus vaccine.

In an interview with CNN Chief Medical Correspondent Dr. Sanjay Gupta on Monday morning, Pfizer CEO Albert Bourla called the Covid-19 vaccine "the greatest medical advance" in the world's last hundred years.

"Emotions are very high. You can imagine how I felt when I heard the results yesterday at 2 p.m. I think that likely, based on impact, this will be the greatest medical advance in the last 100 years," Bourla said.

"It is extraordinary but it's coming at a time that the world needs it the most," Bourla said, noting that the United States has recently seen more than 100,000 daily new Covid-19 cases.

In a news release, the pharmaceutical giant said it plans to seek emergency use authorization from the FDA soon after volunteers have been monitored for two months after getting their second dose of vaccine, [as requested by the FDA](#).

Pfizer said it anticipated reaching that marker by the third week of November.

In a text message to CNN, Dr. Anthony Fauci called Pfizer's results "Extraordinarily good news!"

Fauci, director of the National Institute of Allergy and Infectious Diseases, said he has not seen the vaccine data himself, but he spoke to Bourla Sunday night.

More results to come

There's still more to learn about the Pfizer vaccine.

The Phase 3 trial of the Pfizer vaccine has enrolled 43,538 participants since July 27. As of Sunday, 38,955 of the volunteers have received a second dose of the vaccine. The company says 42% of international trial sites and 30% of US trial sites involve volunteers of racially and ethnically diverse backgrounds.

The final goal of the trial is to reach 164 confirmed cases of coronavirus infection.

The Pfizer vaccine uses a never-before-approved technology called messenger RNA, or mRNA, to produce an immune response in people who are vaccinated.

The mRNA vaccine approach uses genetic material called mRNA to trick cells into producing bits of protein that look like pieces of the virus. The immune system learns to recognize and attack those bits and, in theory, would react fast to any actual infection.

Pfizer said Monday it will evaluate whether the vaccines protects people against severe Covid-19 disease and whether the vaccine can provide long-term protection against Covid-19 disease, even in patients who have been infected before.

"How long this protection lasts is something we don't know," Bourla told CNN.

It's not clear whether the Covid-19 vaccine will become a yearly or season shot, but Bourla believes it's likely.

"I think it is a likely scenario that you will need periodical vaccinations," Bourla told Gupta. "The reason why we selected the RNA technology was exactly that. This is a technology that you can boost without problems of creating antibodies against your vaccine, again and again and again."

So far, the vaccine hasn't shown any safety concerns, Bourla said.

"What we know right now -- it is with very, very high level of confidence these are very highly effective vaccines. What we know so far, it means that we don't have any safety concerns, but we need to wait until the results are there," Bourla said.

More than a billion doses expected in 2021

Bourla told CNN that Pfizer expects to have 50 million vaccine doses globally this year, and 1.3 billion next year.

"Who will get this vaccine? We have two separate manufacturing lines. One is in the US," Bourla said. "Those we prefer using mainly for Americans."

Bourla added that a second line in Europe will be used to produce vaccines for the rest of the world. "We have already signed contracts with multiple governments in the world and they have placed orders," Bourla said.

The vaccine will be free to all American citizens, Bourla said.

Pfizer's vaccine was not developed as part of Operation Warp Speed, the US government's coronavirus vaccine effort.

The federal government has invested \$1.95 billion in Pfizer's vaccine to help it manufacture a billion doses or more by next year, but it is not helping to test it and Pfizer has said it will distribute the vaccine itself.

President-elect Joe Biden said in a statement the Pfizer announcement is "excellent news," but warned that mask wearing and social distancing are still necessary.



President Donald Trump, who had previously suggested a vaccine might come before Election Day, said in a tweet that the Pfizer announcement was "SUCH GREAT NEWS!" and noted the stock market was up.

When asked on Monday about the timing of the Pfizer announcement -- just days after the election -- Bourla said, "the science brought it exactly at this time."

"We announced it the moment we learned about it, and I said multiple times the election for us is an artificial timeline," Bourla said. "This is when science brought it to us."

FDA gives emergency OK to Lilly's antibody treatment for Covid-19

Source: <https://edition.cnn.com/2020/11/09/health/lilly-coronavirus-monoclonal-fda-eua/index.html>



Nov 10 – The US Food and Drug Administration said Monday it had issued an emergency use authorization for Eli Lilly and Co's monoclonal antibody therapy to treat mild to moderate coronavirus infections in adults and children.

The single antibody treatment, called **bamlanivimab**, must be infused in a hospital or other health care setting. It is the first monoclonal antibody to be authorized for use in treating coronavirus. The idea is to kick-start an immune response against infection.



"**Monoclonal antibodies are laboratory-made proteins that mimic the immune system's ability to fight off harmful antigens such as viruses. Bamlanivimab is a monoclonal antibody that is specifically directed against the spike protein of SARS-CoV-2, designed to block the virus' attachment and entry into human cells,**" the FDA [said in a statement](#).

"The FDA's emergency authorization of bamlanivimab provides health care professionals on the frontline of this pandemic with another potential tool in treating Covid-19 patients," Dr. Patrizia Cavazzoni, acting director of the FDA's Center for Drug Evaluation and Research, said in the statement. "We will continue to evaluate new data on the safety and efficacy of bamlanivimab as they become available."

FDA authorization was based on [a study published in the New England Journal of Medicine](#) in October. It found the treatment seemed **to lower the risk of hospitalization and ease some symptoms in a small number of**

patients with mild to moderate cases of Covid-19.

The Phase 2 trial involved 452 patients, some who received the treatment and some who got a placebo, which does nothing. Only 1.6% of patients given the treatment had symptoms progress enough that they had to be hospitalized or seek care at the emergency room. For patients who got the placebo, the rate of hospitalization was 6.3%.

Lilly announced it had struck a \$375 million deal with the government for 300,000 vials of the antibody treatment, pending EUA, to be delivered in the two months after. Lilly applied for EUA in October. The company said it planned to have 100,000 doses ready to ship within days and would manufacture a million doses by the end of 2020. The treatment would be provided to patients at no cost. "Lilly will begin shipping bamlanivimab immediately to AmerisourceBergen, a national distributor, which will distribute it as directed by the U.S. government's allocation program," the company [said in a statement](#).

Emergency authorization is quicker than full approval

"The issuance of an EUA is different than FDA approval," the FDA noted.

"Based on the FDA's review of the totality of the scientific evidence available, the agency determined that it is reasonable to believe that bamlanivimab may be effective in treating non-hospitalized patients with mild or moderate Covid-19," the FDA said.

"And, when used to treat Covid-19 for the authorized population, the known and potential benefits outweigh the known and potential risks for the drug. There are no adequate, approved and available alternative treatments to bamlanivimab for the authorized population."

The treatment should be given as soon as possible after a positive Covid-19 test result, within 10 days of the onset of symptoms, the FDA said. It can only be given in a health care setting where doctors also have access to medication in case the patient has a bad reaction



to the infusion. Providers who use the treatment also need to let the FDA know if there are any serious adverse events, according to the EUA.

The treatment is not authorized for patients who are hospitalized or require oxygen therapy, as it does not seem to help them.

For months, hope has been building around monoclonal antibody therapies as a potential treatment for Covid-19.

As soon as the pandemic hit the US in January, Lilly's scientists went to work to identify an antibody, one of the proteins the body makes to naturally fight infection, that would best protect against the novel coronavirus.

Scientists sifted through thousands of antibodies generated by a patient who had recovered from Covid-19. They found, selected and then copied those they thought would best neutralize the virus and chose one for a cutting-edge treatment that went into human clinical trials in June.

Regeneron has also applied for an emergency use authorization for its antibody therapy. That's the one given to President Trump last month when he caught coronavirus.

There are [79 antibody](#) therapies under investigation.

"Authorization of this new Eli Lilly antibody treatment is a significant step forward in treating patients and bridging us to the rollout of safe and effective vaccines, with all of these efforts made possible by Operation Warp Speed," Health and Human Services Secretary Alex Azar said in a statement.

"Operation Warp Speed is helping to ensure that therapeutics like Lilly's can reach patients without a day wasted."

Lilly is also testing bamlanivimab in combination with another monoclonal it has developed. A peer-reviewed [study](#) in August showed the Regeneron "cocktail" approach that used two antibodies with its treatment worked in the lab even when the novel coronavirus mutated.

Odds and Evens: A Strategy for Safely Exiting Lockdown 2

By Laurence Roope and Philip Clarke

Source: <http://www.homelandsecuritynewswire.com/dr20201109-odds-and-evens-a-strategy-for-safely-exiting-lockdown-2>

Nov 09 – As the Danish physicist Niels Bohr once warned, it is [difficult to make predictions, especially about the future](#). This warning is particularly true when it comes to the epidemiology of COVID-19. In the past week, we have learned that cases in the UK have exceeded even the [worst-case scenario](#) predicted a few months ago by [SAGE](#), the government's expert advisory group.

The UK and many other countries in Europe are in lockdown again, but what should be done next? While most countries are planning lockdowns of up to a month, we know from the first wave that this may not be long enough to suppress COVID-19 to manageable levels. However, we also know that prolonged lockdowns come at a heavy price, including:

- Economic costs: the International Monetary Fund (IMF) estimates that in 2020 GDP across Europe will fall by [almost 8%](#).
- Impacts on other aspects of health, [such as mental health](#).
- [Disruption to education](#).

A key difficulty for governments is that they do not know with any certainty how transmission rates might increase if restrictions are removed. Based on our research, we believe there is a case for a cyclic lockdown policy, which could help control the spread of COVID-19 and also provide evidence to help predict the future much better.

While there has been a deluge of COVID-19 research, when it comes to understanding community transmission it is often hard to isolate the effect of individual social distancing policies on the spread of COVID-19. Take the recent rise in COVID-19 cases, how much is due to [resumption of schools and universities](#) versus [changes in weather](#)?

A better approach is to build a [controlled experiment](#) into policy to allow rapid evaluation. This approach was used in California during the 1918 influenza pandemic to evaluate the effectiveness of wearing masks. A policy that enforced the wearing of masks in San Francisco was [evaluated](#) by comparing rates of influenza to a control city of Oakland that did not enforce this policy.

More than 100 years later, in contrast to the [thousands of randomized controlled trials](#) investigating ways to treat COVID-19 with drugs, there are almost no controlled experiments assessing social distancing policies. As a [recent review](#) concluded: "The imbalance ... is worrying, in particular the paucity of trials on non-drug interventions. Despite non-drug interventions being the mainstay of current mitigation, [there are] none examining social distancing, quarantine effect or adherence, hand hygiene, or other non-drug interventions."

My name is Down
Lock Down



Large Controlled Experiment

How could controlled policy experiments be conducted to help inform policies on how to end the current lockdown? One approach would be to alternate between periods of lockdown and removal of restrictions for different groups in the population.

A variety of such cyclic policies have already been tried by several governments in the first wave of the pandemic (see the table below). The idea is that only half the usual population numbers are out mixing at any one time, which reduces the risk of transmitting the virus.

Summary of some cyclic policies employed during COVID-19 pandemic

- ❖ **Colombia** — In Bogota, males (females) allowed out on odd (even) days of month.
- ❖ **Costa Rica** — Nationwide vehicle restrictions, with days permitted according to last digit of license plate.
- ❖ **Ecuador** — Nationwide, private vehicles allowed to drive on alternate days according to last digit of license plate.
- ❖ **Ethiopia** — In Addis Ababa, private vehicles allowed on roads on alternate days, according to whether license plate number is odd or even.
- ❖ **Honduras** — Public allowed essential travel 1 day each week with day determined by last number of ID/passport.
- ❖ **India** — India adopted several odds and evens policies, e.g. shops with odd and even numbers allowed to open on alternate days; in Delhi, stalls in wholesale markets open on alternate days by stall number; in Assam, students in even/odd class years attend school on alternate days.
- ❖ **Iraq** — Vehicles allowed on roads on alternate days, according to whether license plate number is odd or even.
- ❖ **Lebanon** — Cars allowed on roads on alternate days, according to whether license plate number is odd or even.
- ❖ **Panama** — Hours allowed out restricted according to last number on ID cards/passports. Additionally, males and females allowed out on alternate days.
- ❖ **Paraguay** — Nationwide, private vehicles allowed to drive on alternate days according to whether license plate number is odd or even.
- ❖ **Singapore** — Entry to popular markets allowed on alternate days according to ID card number.
- ❖ **U.S.** — In several counties in New York state, residents born in odd (even) numbered years could only go out on odd (even) numbered days of month.

Epidemiological modelling suggests that longer cyclic policies are [likely to be more effective](#). Most people are at their peak infectiousness [three to six days](#) after catching the virus. So, with a weekly cyclic policy, if someone contracts COVID-19 during a week they are not locked down, they will probably be most infectious during the following week, when they are locked down.

Unlike an on-again, off-again policy with uncertain timing, a planned cyclic lockdown could provide a way to [sustain much of the benefits of social distancing](#) for a longer period. It would also allow a greater and more predictable level of economic activity to continue – for instance, pubs could reopen, but with half the customers. Cyclic policies could also help with the development of an effective test-and-trace system, as there should be fewer cases and less contacts to trace than if lockdown is fully removed.

A cyclic policy could involve two almost identical halves of the population alternating in and out of lockdown on consecutive weeks. A way of implementing such a policy experiment is adopting an [odds-and-evens policy based on house number](#).

Governments would alternate maintaining and relaxing stay-at-home orders between odd-and-even numbered households.

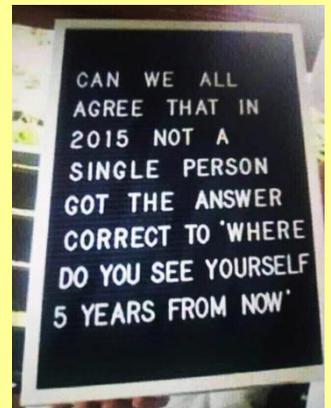
The effect of the cyclic policy on COVID-19 cases could easily be measured as a person's address, including their house number, is routinely collected by many healthcare systems. As there should be no other differences between odd and even households, the impact of relaxing the lockdown would become apparent by comparing the pattern of cases in the two groups over time.

Governments could obtain robust evidence from a controlled experiment and then decide if lockdown should continue or be lifted. Just as in a science like physics, where experimental and theoretical research are complementary, government policies need to be based on firm experimental evidence to find the best ways to combat COVID-19 and save lives.

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➔ **Note:** Photos added by the Editor





Dystopian “Great Reset”: “Own Nothing and Be Happy”, Being Human in 2030

By Colin Todhunter

Source: <https://www.globalresearch.ca/own-nothing-happy-being-human-2030/5728960>

Nov 09 – The World Economic Forum’s (WEF) annual meeting at the end of January in Davos, Switzerland, brings together international business and political leaders, economists and other high-profile individuals to discuss global issues. Driven by the vision of its influential CEO **Klaus Schwab**, the WEF is the main driving force for [the dystopian ‘great reset’](#), a tectonic shift that intends to change how we live, work and interact with each other.

The Great Reset entails a transformation of society resulting in permanent restrictions on fundamental liberties and mass surveillance as entire sectors are sacrificed to boost the monopoly and hegemony of pharmaceuticals corporations, high-tech/big data giants, Amazon, Google, major global chains, the digital payments sector, biotech concerns, etc.

Using COVID-19 lockdowns and restrictions to push through this transformation, **the great reset is being rolled out under the guise of a ‘Fourth Industrial Revolution’** in which **older enterprises are to be driven to bankruptcy or absorbed into monopolies, effectively shutting down huge sections of the pre-COVID economy.** Economies are being ‘restructured’ and many jobs will be carried out by AI-driven machines.

In a short video below, the WEF predicts that by 2030, **“You’ll own nothing and you’ll be happy.”** A happy smiling face is depicted while a drone delivers a product to a household, no doubt ordered online and packaged by a robot in a giant Amazon warehouse: ‘no humans were involved in manufacturing, packaging or delivering this product’; rest assured, it is virus- and bacteria-free – because even in 2030, they will need to keep the fear narrative alive and well to maintain full-spectrum dominance over the population.

▶▶ Read the full article at source’s URL.

COVID-19 Risks in Rheumatic Disease Remain Unclear

American College of Rheumatology (ACR) 2020 Annual Meeting: Presented November 6, 2020.

Source: <https://www.medscape.com/viewarticle/940567>

Nov 08 – **Among people with COVID-19, those with systemic autoimmune rheumatic diseases had an elevated 30-day risk of hospitalization, ICU admission, need for [mechanical ventilation](#), and [acute kidney injury](#), compared to a group without rheumatic diseases at 4 months in a match-controlled study.**

When investigators expanded the study to 6 months, the difference in need for mechanical ventilation disappeared. However, relative risk for venous [thromboembolism](#) (VTE) emerged as 74% higher among people with COVID-19 and with rheumatic disease, said [Kristin D’Silva, MD](#), who presented the [findings](#) during a plenary session at the virtual annual meeting of the American College of Rheumatology. She noted that rheumatic disease itself could contribute to VTE risk.

Comorbidities including [hypertension](#), diabetes, and [asthma](#) were more common among people with systemic autoimmune rheumatic diseases (SARDs). After adjustment for comorbidities, “the risks of hospitalization and ICU admission were attenuated, suggesting comorbidities are likely key mediators of the increased risk of severe COVID-19 outcomes observed in SARDs patients versus comparators,” D’Silva, a rheumatology fellow at Massachusetts General Hospital in Boston, said in an interview.

“The risk of venous thromboembolism persisted even after adjusting for comorbidities,” D’Silva said. Patients with SARDs should be closely monitored for VTE during COVID-19 infection, she added. “Patients with significant cardiovascular, pulmonary, and metabolic comorbidities should be closely monitored for severe COVID-19.”

At the same time, a systematic review of 15 published studies revealed a low incidence of COVID-19 infection among people with rheumatic disease. Furthermore, most experienced a mild clinical course and low mortality, [Akhil Sood, MD](#), said when presenting results of his [poster](#) at the meeting.



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Underlying [immunosuppression](#), chronic inflammation, comorbidities, and disparities based on racial, ethnic, and socioeconomic status could predispose people with rheumatic disease to poorer COVID-19 outcomes. However, the risks and outcomes of COVID-19 infection among this population "are not well understood," said Sood, a second-year resident in internal medicine at the University of Texas Medical Branch in Galveston.

Elevated Risks in Match-Controlled Study

D'Silva and colleagues examined a COVID-19 population and compared 716 people with SARDs and another 716 people from the general public at 4 months, as well as 2379 people each in similar groups at 6 months. They used real-time electronic medical record data from the TriNetX research network to identify ICD-10 codes for inflammatory arthritis, connective tissue diseases, and systemic [vasculitis](#). They also used ICD-10 codes and positive PCR tests to identify people with COVID-19.

Mean age was 57 years and women accounted for 79% of both groups evaluated at 4 months. Those with SARDs were 23% more likely to be hospitalized (relative risk [RR], 1.23; 95% CI, 1.01 - 1.50). This group was 75% more likely to be admitted to the ICU (RR, 1.75; 95% CI, 1.11 - 2.75), 77% more likely to require mechanical ventilation (RR, 1.77; 95% CI, 1.06 - 2.96), and 83% more likely to experience acute kidney injury (RR, 1.83; 95% CI, 1.11 - 3.00).

Risk of death was not significantly higher in the SARDs group (RR, 1.16; 95% CI, 0.73 - 1.86).

When D'Silva expanded the study to more people at 6 months, they added additional 30-day outcomes of interest: renal replacement therapy, VTE, and [ischemic stroke](#). Risk of need for renal replacement therapy, for example, was 81% higher in the SARDs group (RR, 1.81; 95% CI, 1.07 - 3.07). Risk of stroke was not

Quick Fact Check

Do Viral Infections Trigger Autoimmune Disease?

For more than 50 years, researchers have attempted to find a pathogen, especially a virus, that sets in motion the autoimmune mechanisms of rheumatoid arthritis and other systemic rheumatic diseases. None have stood the test of time. Recent studies have found an association of respiratory viral infections, including coronaviruses, with new cases of RA. However, there is no conclusive evidence that the current COVID-19 pandemic will result in more new cases of autoimmune diseases.

significantly different between groups. The improvement in mechanical ventilation risk between 4 and 6 months was not completely unexpected, D'Silva said. The relative risk dropped from 1.77 to 1.05. "This is not particularly surprising given national trends in the general population reporting decreased severe outcomes of COVID-19 including mortality as the pandemic progresses. This is likely multifactorial including changes in COVID-19 management (such as increasing use of nonintubated prone positioning rather than early intubation and treatments such as [dexamethasone](#) and remdesivir), decreased strain on hospitals and staffing compared to the early crisis phase of the pandemic, and higher testing capacity leading to detection of milder cases."

When the 6-month analysis was further adjusted for comorbidities and a history of prior hospitalization within 1 year, only risk for acute kidney injury and VTE remained significant with relative risks of 1.33 and 1.60, respectively, likely because comorbidities are causal intermediates of COVID-19 30-day outcomes rather than confounders.

When asked to comment on the results, session comoderator [Victoria K. Shanmugam, MD](#), said in an interview that the study "is of great interest both to rheumatologists and to patients with rheumatic disease."

The higher risk of hospitalization, ICU admission, mechanical ventilation, acute kidney injury, and [heart failure](#) "is an important finding with implications for how our patients navigate risk during this pandemic," said Shanmugam, director of the division of rheumatology at George Washington University in Washington.

Lower Risks Emerge in Systematic Review

The 15 observational studies in the systematic review included 11,815 participants. A total of 179, or 1.5%, tested positive for COVID-19.

"The incidence of COVID-19 infection among patients with rheumatic disease was low," Sood said.

Within the COVID-19-positive group, almost 50% required hospitalization, 10% required ICU admission, and 8% died. The pooled event rate for hospitalization was 0.440 (95% CI, 0.296 - 0.596), while for ICU admission it was 0.132 (95% CI, 0.087 - 0.194) and for death it was 0.125 (95% CI, 0.082 - 0.182).

Different Calculations of Risk

The two studies seem to offer contradictory findings, but the disparities could be explained by study design differences. For example, D'Silva's study evaluated a population with COVID-19 and compared those with SARDs vs a matched group from the general public.



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Sood and colleagues assessed study populations with rheumatic disease and assessed incidence of SARS-CoV-2 infection and difference in outcomes.

"We are asking very different questions," D'Silva said.

"The study by D'Silva et al was able to account for different factors to reduce confounding," Sood said, adding that D'Silva and colleagues included a high proportion of minorities, compared with a less diverse population in the systematic review, which featured a large number of studies from Italy.

►► Read also: [Abstract 0430](#), [Abstract 0008](#).

Keeping coronavirus vaccines at subzero temperatures during distribution will be hard, but likely key to ending pandemic

Source: <https://medicalxpress.com/news/2020-09-coronavirus-vaccines-subzero-temperatures-hard.html>



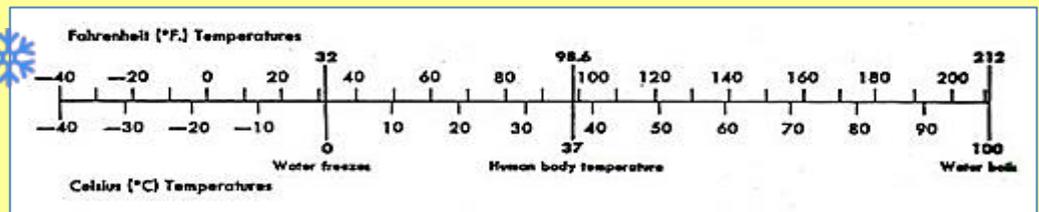
Nov 10 – Just like a fresh piece of fish, vaccines are highly perishable products and must be kept at very cold, specific temperatures. The majority of [COVID-19 vaccines under development](#) – like the [Moderna and Pfizer vaccines](#) – are new RNA-based vaccines. If they get too warm or too cold [they spoil](#). And, just like fish, a spoiled vaccine must be thrown away.

So how do companies and public health agencies get vaccines to the people who need them?

The answer is something called the vaccine cold chain—a [supply chain](#) that can keep vaccines in tightly controlled temperatures from the moment they are made to the moment that they are administered to a person.

Ultimately, hundreds of millions of people in the U.S. and [billions globally](#) are going to need a coronavirus vaccine—and potentially [two doses of it](#). This mass vaccination effort is going to require a complex vaccine cold chain on a scale like never before. The current vaccine cold chain is not up to the task, and expanding the supply chain is not going to be easy.

Cold chain problems mean wasted vaccines



Most vaccines need to be stored within [1 degree Fahrenheit](#) of their ideal [temperature](#). Traditional vaccines are usually stored between [35 degrees Fahrenheit and 46 degrees Fahrenheit](#), but some of the leading COVID-19 vaccines need to be stored at much colder temperatures.

Moderna's vaccine requires a storage temperature of [minus 4 degrees Fahrenheit](#), whereas Pfizer's vaccine candidate requires a storage temperature of [minus 94 degrees Fahrenheit](#).

These are not easy temperatures to maintain accurately.

A study from 2019 estimated that [25% of vaccines are degraded](#) by the time they arrive at their destination. If a vaccine is exposed to temperatures outside its range, and this gets noticed, then the vaccines are always thrown away. Rarely, a temperature mistake is missed and one of these vaccines is administered. Research shows that these vaccines [won't cause any adverse effects](#), but could offer [decreased protection](#) and might require a patient to be revaccinated.

Temperature mistakes are mostly due to inappropriate shipping procedures in the cold chain, and these losses are estimated at [US\\$34.1 billion annually](#). But that number does not even take into account the cost—physically as well as financially—of any illnesses that could have been prevented by timely deliveries of high-quality vaccines.

As a scholar of operations management, I study [perishable product supply chains](#) in the [pharmaceutical industry](#) and how they relate to [product quality](#). With billions of vaccines needed to address the pandemic, a high spoilage rate would result in an immense financial loss and a huge delay in vaccinations that could result in deaths and a longer global shutdown.



The cold chain today

Experts estimate that somewhere between 12 billion and 15 billion COVID-19 vaccines are needed globally.

Currently, the world is capable of producing and distributing around [6.4 billion flu vaccines per year](#). In 2021, experts expect companies will produce [around 9 billion COVID-19 vaccines](#), and the cold chain must be able to handle this huge increase on top of the vaccines that must be distributed every year already.

[The cold chain](#) requires three major pieces of infrastructure: planes, trucks and cold storage warehouses. How the infrastructure is connected and utilized depends on the vaccine production locations and the points of demand.

Once a COVID-19 vaccine is produced, it likely will be immediately transported by truck to the nearest suitable airport. Since a COVID-19 vaccine is particularly valuable and time sensitive, it will likely be shipped via air transport across the country or world. After these planes are unloaded, the vaccines will be taken via truck to appropriate warehouse storage facilities for transportation to distribution facilities. Some of the vaccines may be directly shipped from the warehouses to [health care facilities](#) where the vaccinations will take place.

Preparations and solutions

So what can companies, health agencies and governments do to help expand the cold chain?

The first step will be to identify where the vaccines will be produced. If production is done mainly abroad, companies will need to use trucks and planes for transportation within their own countries and for further distribution to others.

There is also a lot of uncertainty about which COVID-19 vaccine will be approved first. Different vaccines may require different temperatures and different handling procedures. Hence, staff throughout the cold chain would need different training on how to handle each vaccine.



Another question is how frequently [deliveries will need to be made to points of care](#). This will depend on the refrigeration capacity of health care organizations and hospitals, staffing resources, the locations the vaccines will be given and many other factors, including the shelf life of the vaccine itself.

Finally, there is the simple problem of how to expand shipping and storage capacity.

Typical restaurant freezers have a range of [5 degrees Fahrenheit to minus 10 degrees Fahrenheit](#) and simply can't reach the temperatures required by something like the Pfizer vaccine. Specialized equipment is needed.

Several major logistics companies, including **UPS** (photo – left) and DHL, are already investing in new storage facilities for cold chain management. UPS is adding [freezer farms of 600 freezers](#) capable of reaching minus 80 degrees Celsius near UPS air hubs in Louisville,

Kentucky, and the Netherlands. Each location will be able to hold [48,000 vials of vaccine](#) and could easily store either the [Pfizer vaccine](#) or the [Moderna vaccine at the necessary low temperatures](#).

Installing freezers capable of the low temperatures needed by the Pfizer vaccine isn't possible in many places, so it is essential that processes be put into place to make sure those areas can receive a steady supply of the vaccine.

Airports and logistics companies are [currently evaluating](#) whether they can meet this need. The results remain to be seen.

These are just a few of the major problems and potential solutions, but there are dozens of interesting scenarios that could arise.

For example, if the U.S. government gets involved in distribution, there is a possibility that the [military would transport vaccines](#). Constant electricity becomes essential as well. In regions where fire risk is leading to blackouts or in developing nations where the grid is not as reliable, thousands of vaccines could be lost if the power goes out. It is also expected that [only certain airports certified for handling pharmaceuticals](#) will be able to accept such



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valuable, perishable cargo, so bottlenecks may occur there. And finally, it's possible that with [the airline companies reeling from the pandemic](#), there might not be [enough active planes](#) to meet the demand for shipping these vaccines.

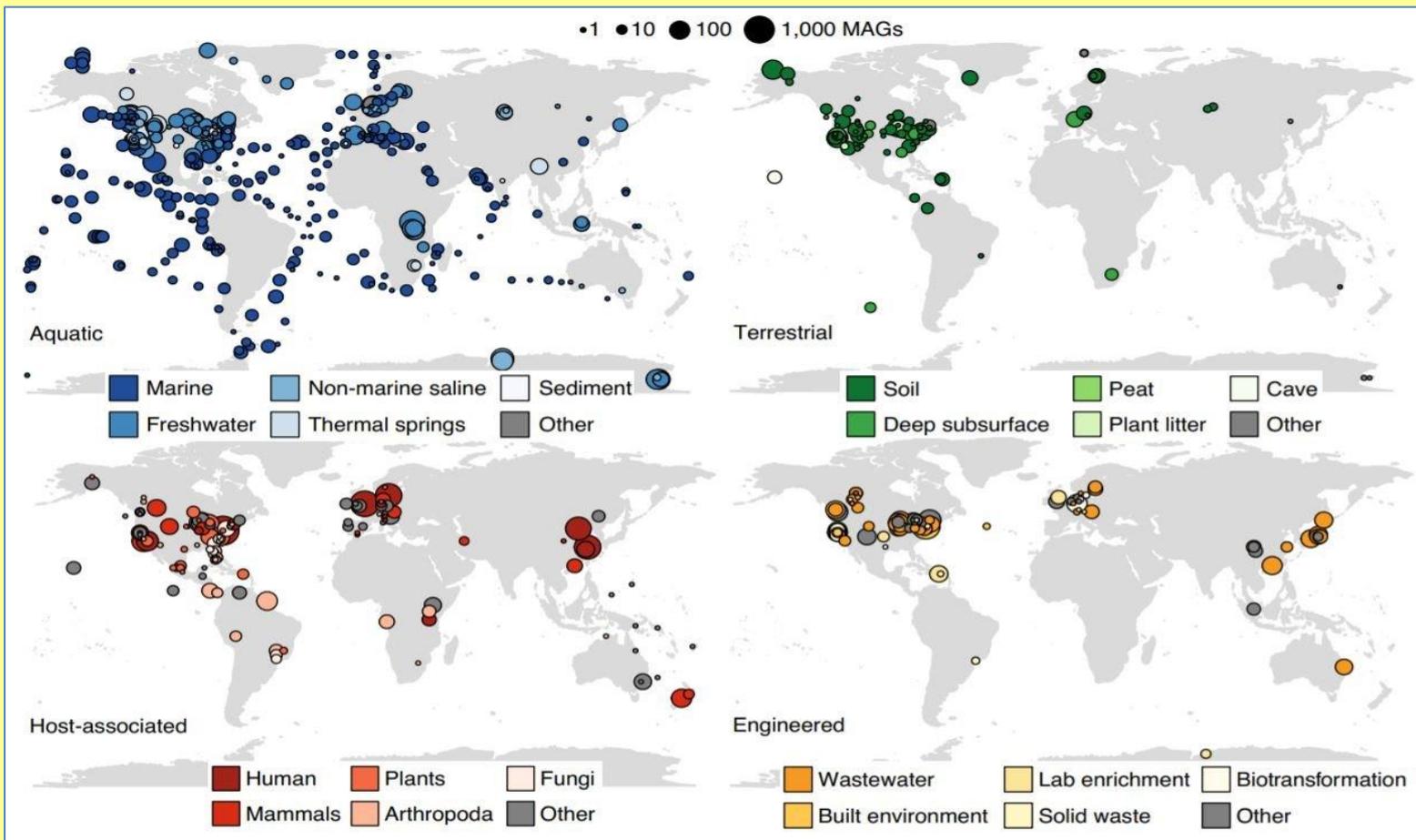
Every vaccine produced could save a life and bring the world closer to a return to normalcy, but getting the vaccines to where they need to be is not going to be easy. Preparing and fortifying the cold chain for [vaccine](#) distribution will ensure that vaccines are not wasted and will help the world get through this pandemic sooner.

Scientists Just Discovered a Whopping 12,000 New Species of Microbes

Source: <https://www.sciencealert.com/scientists-have-just-uncovered-12-000-new-species-of-bacteria>

Nov 10 – Growing microbes in a petri dish is pretty simple – swab basically [anything](#), wipe it on an agar plate, let it sit for a few days in a warm room and presto! You've grown some new furry friends.

But the microbial species you can cultivate in a petri dish are only a tiny fraction of the bacteria, [archaea](#) and other microorganisms that would have been picked up by the swab - only the ones suited to the conditions you grew them in.



A map of the locations and types of MAGs sequenced. (Nayfach et al., Nature Biotechnology, 2020)

The overwhelming majority of them do not like the environments we can provide, and therefore won't obediently grow in a petri dish. Now, an international team of researchers has found 12,556 new species of bacteria and archaea that have never been grown in a lab, using an incredibly cool technique called [metagenomics](#).

"We were able to reconstruct thousands of [metagenome-assembled genomes \(MAGs\)](#) directly from sequenced environmental samples without needing to cultivate the microbes in the lab," said DOE Joint Genome Institute [geneticist and first author, Stephen Nayfach](#).

"What makes this study really stand out from previous efforts is the remarkable environmental diversity of the samples we analysed."



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The team had access to a [huge database](#) of over 10,000 metagenomes – a term meaning all of the genetic material from an environmental sample. Any DNA they can extract is cloned and then [sequenced using tiny strands of genome](#), before they try to fit these short pieces of DNA all together again.

It sounds like trying to reassemble a jigsaw puzzle that's been put through the blender, but using a technique called '[binning](#)', the team was able to piece together 52,515 MAGs from the data – many of them high quality, and all having over 50 percent of their genome complete.

The team isn't the first to find microbes using metagenomics – [back in 2018 we wrote about scientists discovering 16 giant viruses](#), while [in 2017 scientists found 20 new evolutionary branches in the tree of life](#) using these methods.

But in this new work, the researchers were trying to analyse samples from across a huge range of areas to fill in some of the gaping holes we have in our knowledge of microbes.

"We performed metagenomic assembly and binning on 10,450 globally distributed metagenomes from diverse habitats, including ocean and other aquatic environments, human and animal host-associated environments, as well as soils and other terrestrial environments, to recover 52,515 MAGs," [the team writes in their paper](#).

"The catalogue expands the known phylogenetic diversity of bacteria and archaea by 44 percent."

When the team checked against genomes from [isolates](#), MAGs from previous studies, and genomes from single cells, they found that 12,556 of the 50,000 MAGs had never been sequenced before.

Now, it's important to note that these genomes are not as good as the ones that you would get from growing bacteria and archaea in a lab, and then sequencing them. The binning process might mix up some pieces of genome between the bacterial species, and chunks of the genome will often be missing; but without the ability to grow these particular species in a lab, it's still an incredible way to discover the microbes in the world around us.

"Looking across the tree of life, it's striking how many uncultivated lineages are only represented by MAGs," [Nayfach said](#).

"While these draft genomes are imperfect, they can still reveal a lot about the biology and diversity of uncultured microbes."

▶▶ The research has been published in [Nature Biotechnology](#).

This Interactive Tool Figures Out Your COVID-19 Risk of Attending an Event

Source: <https://www.sciencealert.com/this-interactive-tool-figures-out-your-covid-19-risk-of-attending-an-event>

Nov 10 – Planning to attend an event but unsure of the [COVID-19](#) risk, and if you should go at all? There's an evidence-based interactive webtool that can help.

Developed by researchers at Georgia Institute of Technology and simple in its design, [the online tool](#) uses data updated daily to estimate the chance that one or more people at an event are COVID-19 positive.

Navigating risk can be tricky, especially when the number of COVID-19 cases is changing every day, and infection rates can be starkly different from one place to the next.

This tool uses real-time data on local COVID cases in the US to quantify and visualise the expected risk for gatherings of different sizes: from a dinner party of 10 people, a wedding reception with 100 guests, to a sporting game with 100,000 spectators.

It has also recently been expanded to estimate risk in several European countries, including Italy, Switzerland, and the UK.

"As cases have begun to rise here [in the US] and schools and businesses are reopening, people are asking hard questions," quantitative biologist Joshua Weitz, senior author of a new paper on the tool, [told Wired in July](#).

"Can I send my child into a classroom? Can I safely go into a bar or a restaurant? Answering those questions is the core of what we are trying to do."

Most other interactive maps and dashboards, such as [this one from the World Health Organisation](#) (WHO), display COVID-19 case numbers and deaths; by contrast, this tool links data on documented cases in each US state with risk assessments by event size. Having this info can help people, policy makers and health officials assess the daily risk in their area and plan accordingly.

The results are displayed as a heat map where users can compare US states or zoom into their local county, and toggle between events of different sizes to see how the risk escalates as numbers grow.

"By providing a quantitative tool to convey the ongoing risk of the [pandemic](#), we hope to supplement and bolster local public health advisories," [the researchers said](#).

The tool pools real-time data from state public health departments, the [COVID Tracking Project](#), a volunteer organisation collecting data on COVID cases in the US, and the [New York Times' open-access dataset](#) of [coronavirus](#) cases.

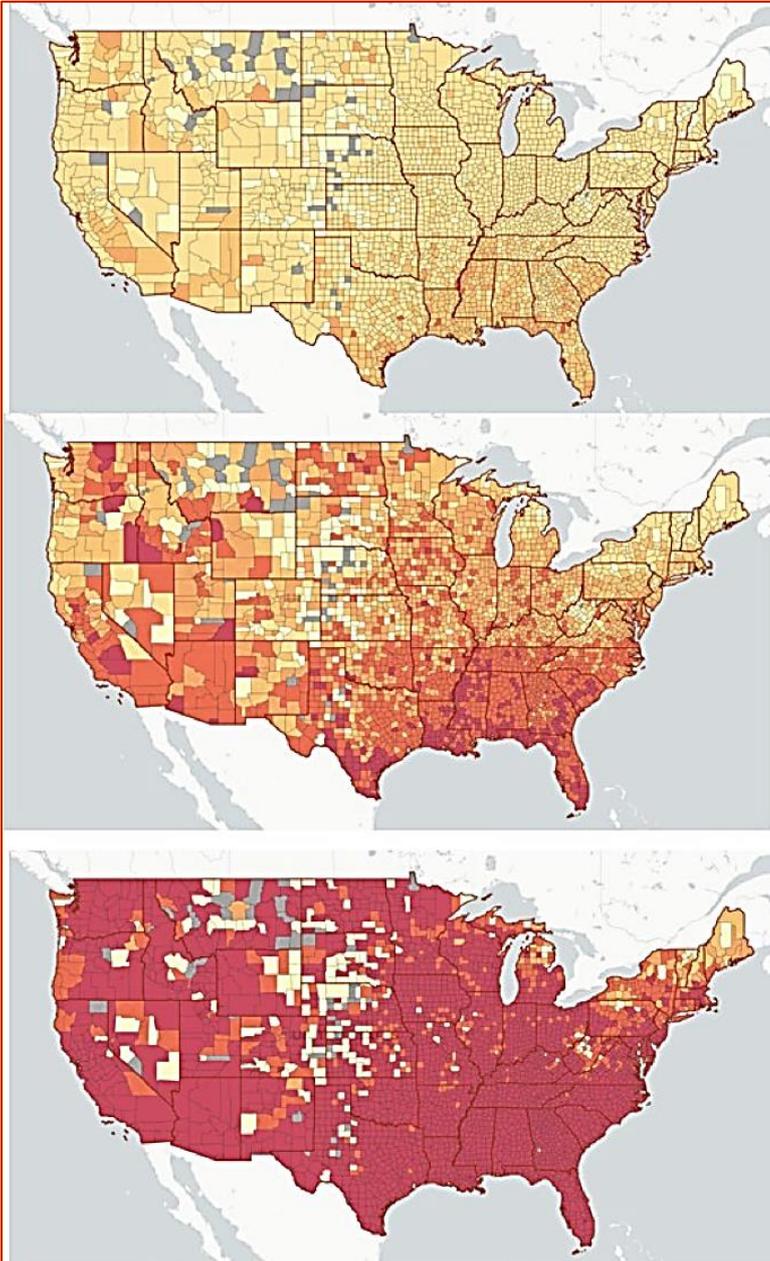


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"Our risk calculations tell you only how likely it is that at least one person at any event of a given size is infectious." [the researchers write in the study](#).

"This is not the same as the risk of any person being exposed or infected with COVID-19 at the event."

The risk estimates are based on how many people turn up to an event and how many cases have been detected in that area (in the past ten days), but not their behaviour once they arrive.



The researchers did, however, adjust case numbers in their model to account for the [paucity of testing in the US](#). "Cases may be under-reported due to testing shortages, asymptomatic 'silent spreaders' and reporting lags," [the team explains](#).

With the available data, the nationwide analysis shows that most US counties share an inevitably high risk with events attended by more than 1,000 people, and a lower risk when events are small (fewer than ten guests). The risk varies much more county-to-county for events with 50 to 150 people.

Maps visualising the county-level risk of at least one COVID-19-positive person attending an event in the US with 10 (top), 100 (middle) or 1,000 people (bottom) - Chande et al., *Nature Human Behaviour*, 2020.

"The visualised risk maps are intended to inform individuals on the need to take preventative steps to reduce new transmission, for example, by avoiding large gatherings and wearing masks when in close contact with others," the researchers [said in their paper](#).

"As a result, individuals can visualise themselves in a group and decide whether this risk is worth taking."

If you are attending an event, no matter the size, the onus is on everyone there to [wear a mask](#), practise social distancing, and wash their hands regularly.

"Such precautions are still needed even in small events, given the large number of circulating cases," [the researchers write](#).

It should be pointed out though that the model, focusing just on the number of event attendees and recent cases, doesn't take the type of venue into account.

But we know that [SARS-CoV-2 spreads through the air](#), so event planners and health authorities should make the distinction between [indoor venues that may have poor ventilation](#), where [super-spreading events](#) are more likely to take place, and outdoor events with plenty of space and fresh air, where the risk is generally lower.

The model also assumes that someone who is COVID-19 positive is just as likely to attend an event as someone without the disease; in reality, the former should follow public health advice and stay at home if they know they have the [virus](#).

Making assumptions like these is part and parcel of modelling; we just need to be aware of them so we understand its limitations.

The biggest uncertainty in the model still remains the actual number of recorded and documented COVID-19 cases, which we can only begin to appreciate with more testing.

- ▶▶ The research is published in [Nature Human Behaviour](#)
- ▶▶ The interactive webtool can be accessed [here](#).



Here's a Timeline on How The COVID-19 Vaccine Might Reach People, if All Goes Well

Source: <https://www.sciencealert.com/this-timeline-shows-when-pfizer-s-new-coronavirus-vaccine-could-reach-ordinary-people>

Nov 09 – Drugmaker Pfizer said on Monday that its [coronavirus](#) vaccine had succeeded in the final stage of [clinical trials](#), and is more than 90 percent effective in preventing [COVID-19](#).

[As Business Insider's Andrew Dunn reported](#), developing a vaccine for a brand-new [virus](#) in less than a year is something that has never been achieved.

But announcing a vaccine and having large numbers of people receive it are two different things.

Here is Business Insider's summary of what needs to happen next, and how long it might take:

- Pfizer wants more data on the vaccine's safety before moving ahead. It says the data will be available the week of November 16.
- The US Food and Drug Administration then needs to decide whether to give emergency approval. It is unclear how long this might take, but the agency has said it wants to move fast. (Another caveat: The authorization at first may only be for the [most at-risk groups like the elderly and healthcare workers](#).)
- Pfizer said some doses can be delivered this year - but only 50 million for the whole world.
- Each dose takes two shots, so the 50 million doses are only good for 25 million people. Patients also have to wait three weeks between their first and second shots.
- 2021 is when the bulk of doses will arrive - up to 1.3 billion. This is when people who aren't considered high risk might start to get it.
- The vaccine has to be moved at ultra-cold temperatures - as low as minus 94 degrees Fahrenheit or minus 70 degrees Celsius - which could make it hard to get to some places quickly.
- Other logistical issues - [like a shortage of glass vials](#) - could stand in the way of a smooth vaccine rollout.

A number of countries have already put in orders for millions of doses of the vaccine, in the hopes that it will work to protect their populations, including the US, the UK, Canada, Japan, and countries across the European Union.

Other companies around the world are also working on producing coronavirus vaccines, with results expected soon.

Infectious-Disease Expert Urges for Caution Over Pfizer's Vaccine. Here's Why

Source: <https://www.sciencealert.com/infectious-disease-expert-urges-for-caution-over-pfizer-s-vaccine-here-s-why>

Nov 10 – On Monday, Pfizer marked a milestone in society's fight against the [coronavirus pandemic](#), announcing its experimental vaccine [was highly effective at preventing COVID-19](#) in a 43,538-person study.

The US\$220 billion drugmaker said a two-dose regimen of its shot was found to be more than 90 percent effective in preventing [COVID-19](#), based on 94 cases of the disease observed in the large-scale trial.

But even with the good news, there are caveats and unanswered questions for Pfizer and its German partner BioNTech.

William Haseltine, a longtime biotech executive and infectious-disease expert, told Business Insider he wanted to see the underlying data to support the efficacy claim.

Haseltine [has previously criticised other front-runners](#) in the race for a coronavirus vaccine, namely Moderna, for touting study results in news releases before releasing detailed data. With Pfizer's release on Monday, however, Haseltine said there wasn't any data in the release.

The analysis was based on 94 cases of COVID-19 among study participants, but Pfizer didn't share an exact breakdown of how many got sick from getting Pfizer's vaccine versus the placebo. The release also didn't specify how many of the cases were severe or mild or if different age groups had varying levels of protection.

Beyond saying there have been no serious safety concerns, Pfizer didn't provide any details on the safety profile, such as the frequency and severity of typical side effects. CEO Albert Bourla said in a statement the company would share additional efficacy and safety data "in the coming weeks."

"This is science by public pronouncement," Haseltine said.

Haseltine is a former Harvard medical professor who founded two research centres focused on [HIV/AIDS](#) and [cancer](#) at the school. The virology and infectious-disease expert is now the chairman and president of Access Health International, a nonprofit healthcare think tank.



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He has also founded and led several biotech companies, including Human Genome Sciences, which was [eventually bought by GlaxoSmithKline for US\\$3 billion](#).

During the pandemic, he has advocated the US [to embrace an expansive testing strategy](#), previously saying the country's response was overly reliant on a vaccine.

"It is very welcome news that the vaccine has a measurable effect," Haseltine said, adding there was still much to learn about Pfizer's shot.

"There are many, many outstanding questions which are left unanswered," he added.

We don't know if Pfizer's vaccine prevents infection, raising possibility of asymptomatic carriers

Most of the questions have to do with the limitations of the study. The trial was designed to see if there were fewer cases of symptomatic COVID-19, the disease caused by the coronavirus, in people getting the vaccine rather than placebo.

It brings up one crucial distinction that could have a major influence on the pandemic response: Does this vaccine prevent infection as well as disease?

Pfizer's trial, and the ongoing studies of other leading coronavirus-vaccine developers, aren't regularly testing volunteers to gauge asymptomatic infections. That may mean vaccinated people could still become asymptomatic carriers and unknowingly spread the [virus](#) to others.

"That's a major point that I don't think most people appreciate," Haseltine said. "It doesn't mean an end to the [epidemic](#)."

Haseltine also raised the question of if the vaccine reduces serious disease and ultimately affects the number of hospitalizations and deaths.

Again, the study's findings are limited by its main goal, which did not distinguish between a mildly ill COVID-19 patient - maybe someone with a minor [fever](#) and cough for a few days - and someone who is critically ill.

Finally, Pfizer's news release made no mention of if the vaccine appeared as effective in different subgroups, such as older people, who are more susceptible to the worst outcomes of the virus.

How to Safely Form a Pandemic 'Social Bubble', According to 5 Disease Experts

Source: <https://www.sciencealert.com/how-to-safely-form-a-social-bubble-this-winter-according-to-5-disease-experts>



Nov 09 – More than nine months into the [coronavirus pandemic](#), the weather is getting cold. Thanksgiving and Christmas are on the horizon. Naturally, many Americans will be [tempted to mingle indoors](#) with friends and family.

Forming "social bubbles" - small groups that agree to spend time together indoors, exclusively with each other - may be the safest way to do that.

But public-health experts say the approach is still somewhat risky, given that the US is seeing record-high numbers of new coronavirus cases. The tighter the bubble group's restrictions, however, the more that risk goes down.

"You have to remember that there are no zero-risk scenarios and most people's bubbles are bigger than they think they are," Dr. Anne Rimoin, an epidemiology professor at UCLA's Fielding School of Public Health, told Business Insider.

"You will need to trust the people you are 'bubbling' with and that everyone will be honest and open about any exposures that they have had - or that the people around them have had."

Business Insider asked five infectious-disease experts for their advice on creating a safe social bubble, or "pod". Some recommendations were more conservative than others, but all experts agreed on a few key things to avoid.

Tips for a safe bubble

On a scale of one to 10, the risk of forming a social bubble is "everywhere from two to nine," depending how people in the bubble behave, Dr. Murray Cohen, a retired CDC epidemiologist and medical advisor for [Wello](#), told Business Insider.

But there are some strategies for keeping that risk low:

1. Keep your bubble small.

In an ideal scenario, experts recommend avoiding close, indoor contact with anyone outside your household. If you do decide to expand your bubble, as few households as possible is still best.



"You should look at the local guidelines on how many households or number of people are allowed to get together," Rimoin said. "For example, in Los Angeles County, the Department of Health limits three households getting together." Saskia Popescu, an infectious-disease expert at George Mason University, also recommended teaming up with only one or two other households' maximum. Other experts said a good rule of thumb is to cap the group at around six to 10 people. Lisa Lee, an epidemiologist at Virginia Tech, said there are six people in her "pandemic pod", including her. But bubbles can be larger if everyone inside follows rigorous safety measures like routine testing and limited outside activities. "The NBA very effectively had a social bubble of all 30 teams," Cohen said. "It's really more a matter of what you do inside and outside the bubble than it is how big the bubble is."

2. Quarantine for two weeks beforehand.

Coronavirus symptoms can take up to 14 days to manifest after a person gets infected, so experts recommended waiting two weeks before forming a bubble to make sure all members are symptom-free. During that time, the entire group should avoid non-essential activities.

"Everyone needs to be very careful in that two weeks before they go into that group to try to minimise the risk," Scott Weisenberg, an infectious-disease specialist at NYU Langone Health, told Business Insider.

Some experts said it would be helpful to make sure everyone in the bubble has tested negative before coming together, but they also cautioned that testing could provide a false sense of security. If members venture out in public in-between getting tested and joining the group, there's still a chance they could be infected.

Cohen also recognised that it's still difficult for many Americans to get a [coronavirus test](#).

"Since testing is so spotty right now, I don't think that makes a difference," he said. "What you're really going to work on is symptoms."

3. Keep the windows open.

Outdoor gatherings are generally safer than indoor ones, but they're less feasible during the winter. The next-best option, experts said, is keeping a room well-ventilated.

"If people have to be indoors, keeping the window open and trying to mimic an outdoor environment as much as possible can lower the risk," Weisenberg said.

4. Masks and social distancing are still advised.

Experts widely agree that masks and social distancing should still be enforced inside a bubble. Ideally, people should remain 6 feet (2 metres) apart, though 4 feet (1 metre) of separation in a cramped space is still better than nothing, Weisenberg said.

Wearing masks, even just some of the time, can help lower the group's risk.

"The bubble is just a strategy to try to reduce overall exposures and let people have some social contact, but it doesn't mean we can let our guard down," Weisenberg said.

"All it takes is one person in that group to have an exposure."

Risks to avoid in your pod

Some Americans should steer clear of social bubbles due to their age, profession, or pre-existing conditions. Here's what experts said won't work when forming a group.

1. Don't mingle with vulnerable individuals.

Since bubbles still carry some risk, experts don't recommend forming them with elderly people (typically those over 60), pregnant women, or people with pre-existing health problems, including obesity, high blood pressure, and [diabetes](#).

"Always be mindful: It's not perfect. You might slip up," Cohen said. "So for God's sake, don't have my 94-year-old mother in there."

2. Bubbles shouldn't include teachers, students, or essential workers.

A bubble effectively "pops" if even one group member spends time indoors with other people. That includes teachers and students who have resumed in-person school. People should also be wary of pairing up with essential workers, who are more likely to face daily exposure to the [virus](#).

"If you've got people going back to offices or workplaces of any kind, they have just violated whatever a social bubble is," Cohen said.

3. Steer clear of indoor dining.

Experts still caution against most indoor dining, whether as individuals or as a pod.



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"If I go to a restaurant and I'm not wearing a mask while I'm eating, even if I'm more than 6 feet away, there's going to be some risk of me getting the virus from people around me," Weisenberg said.

4. Avoid multiple, overlapping bubbles.

Experts had mixed takes on whether two social bubbles could expand to form one larger bubble. If people are being extra careful, Cohen said, it's possible that all members could mingle indoors.

"It's almost more like a Venn diagram," Cohen said.

If two bubbles are virus-free, then the combined group likely won't have any cases, either. In general, though, the safest option is to limit interactions to just your immediate group.

"The critical piece is that you don't bubble with someone, who then bubbles with someone, who then bubbles with someone," Popescu said.

"That's always my concern, it really needs to be someone that you trust."

Photos do not lie!

Mayor of London getting his flu shot complete with plastic needle protector!



Viral Optimism: The Pfizer-BioNTech Vaccine

By Dr. Binoy Kampmark

Source: <https://www.globalresearch.ca/pfizer-biontech-vaccine/5729086>



Nov 10 – The announcement that Pfizer Inc., along with its collaborative partner BioNTech SE, had come up with a successful vaccine candidate to combat the novel coronavirus SARS-CoV-2 [sent the markets soaring](#). In New York, Pfizer's shares rose by 15 percent in pre-market trading; those of BioNTech, Nasdaq-listed, rose 25 percent. "Today is a great day for science and humanity," a confident Pfizer Chairman and CEO Albert Bourla [crowed](#). "We are reaching this critical milestone in our vaccine development program at a time when the world needs it most with infection rates setting new records, hospitals nearing over-capacity and economies struggling to reopen."

Bourla was in no mood to be modest about the record of the mRNA-based vaccine candidate, called BNT162b2. "With today's news, we are a significant step closer to providing people around the world with a much-needed



breakthrough to help bring an end to this global health crisis. We look forward to sharing additional efficacy and safety data generated from thousands of participants in the coming weeks.”

The phase 3 clinical trial began on July 27, using 43,538 study participants.

“The first interim analysis of our global Phase 3 study provides evidence that a vaccine may effectively prevent COVID-19,” [explained Uğur Şahin](#) of BioNTech, its co-founder and CEO. “This is a victory for innovation, science and a global collaborative effort.”

Bourla, perhaps realising that sceptics and the unsure will be eyeing such claims with reservation, has done much to squeeze the public relations process. In an [open letter](#) on October 16, he assumed a voice almost presidential in character. Forget elected officials or world leaders – here was Bourla as de facto vaccine president and humanitarian rescuer, “wanting to speak directly to the billions of people, millions of businesses, and hundreds of governments around the world that are investing their hopes in a safe and effective COVID-19 vaccine to overcome this pandemic.”

He promised transparency in the three areas where success had to be shown before approval for public use could be sought. The vaccine had to first be effective in preventing COVID-19 “in at least a majority of vaccinated persons.” It had to be demonstrated as safe “with robust safety data generated from thousands of patients.” It also had to be shown “that the vaccine can be consistently manufactured at the highest quality standards.”

Pfizer has also not exactly been transparent in releasing the full details of its preliminary analysis, but it certainly has been keen to celebrate the findings so far. The vaccine candidate, for instance, was “more than 90% effective in preventing COVID-19 in participants without evidence of prior SARS-CoV-2 infection in the first interim efficacy analysis.” Data was also drawn from 94 confirmed COVID-19 cases, though nothing has been said about the vaccine’s effectiveness on the issue of re-infection.

Of the enrolled participants, 42% had “diverse backgrounds” (“racially and ethnically”). No serious safety concerns were noted. Submission to the US Food and Drug Administration for Emergency Use Authorization is anticipated once “the required safety milestone is achieved”. The clinical trial is set to continue to its final analysis of 164 confirmed cases “to collect further data and characterize the vaccine candidate’s performance against other study endpoints.”

Such news, despite being based on interim data as yet unpublished in peer-review literature, delighted certain members of the scientific community. Sir John Bell, regius professor of medicine at Oxford University, could [barely contain](#) his excitement. “I am probably the first guy to say that [life will be back to normal by spring], but I will say that with some confidence.” **Anthony Fauci** of the US National Institutes of Health found the returns of the trial “just extraordinary”.

But even amidst the frothy enthusiasm, notes of caution gurgled. Erika Edwards for NBC News [lists a few reservations](#). “Pfizer’s vaccine is a new type of technology that’s never been used in mass human vaccination before and experts caution that much remains unknown about its safety, how long it might work and who might benefit most.”

One [such expert](#) is **Gregory Poland**, director of the Mayo Clinic’s Vaccine Research Group in Rochester, Minnesota.

“We don’t know anything about groups they didn’t study, like children, pregnant women, highly immunocompromised people and the eldest of the elderly.” Virologist Brenda Wren of the London School of Hygiene and Tropical Medicine [is another](#). “It is a case of ‘so far so good’ but more confirmatory safety and efficacy studies are required.”

The heralded nature of the untried technological feature of the vaccine – at least when it comes to being applied to humans – lies in the speed and scale it can be manufactured at. Messenger-RNA (mRNA) tutors the immune system to target the spike protein of the virus. As **Isabelle Bekerredjian-Ding** of Germany’s Paul Ehrlich Institut [describes](#) it, “An mRNA is basically like a pre-form of a protein and its [sequence encodes] what the protein is basically made of later on.” Once delivered into the body, [the cells read](#) the mRNA as a set of instructions to build the viral protein in question. The molecules of the virus are thereby created but do not form the virus itself. The immune system, tricked as it were, picks up on the presence of such viral proteins, producing a defensive response.

Pfizer’s bubbly confidence will have to be read alongside its history of data manipulation and publication strategy, all in the service of profit maximisation. In 2008, [it was found](#) that Pfizer had tinkered with the publication of studies on the use of its epilepsy drug Neurontin, enabling it to sell the drug for uses not approved by the US Food and Drug Administration. Studies undertaken showing negative outcomes for the use of the drug for unapproved uses were suppressed or delayed.

In 2014, the company [agreed](#) to pay \$325 million to resolve claims it defrauded insurers and health care benefit providers by marketing Neurontin for those unapproved uses. Despite forking out in the settlement, Pfizer refused to admit wrongdoing. Worth thinking about as more data from the BNT162b2 trials is gathered and released.

Dr. Binoy Kampmark was a Commonwealth Scholar at Selwyn College, Cambridge. He lectures at RMIT University, Melbourne.



Pfizer's Ultra-Cold Vaccine Could Be Difficult to Distribute

By Michael Head

Source: <http://www.homelandsecuritynewswire.com/dr20201110-pfizer-s-ultracold-vaccine-could-be-difficult-to-distribute>

Nov 10 – The excitement that greeted [the news](#) of a vaccine candidate that may be highly effective against COVID-19 was indeed something to behold. If the final results show anything like the numbers quoted in the press release, then the world can indeed be pleased and the scientists behind the scenes very proud of themselves.

One complicating factor will be the [maintenance of the cold chain](#). Vaccines are fragile products: they need to be stored at specific temperatures, and some are sensitive to light and need to be transported in dark glass vials. These precise conditions must be maintained throughout the vaccine journey, right until the point when you're in the GP surgery with your sleeve rolled up and the nurse opens the fridge door to extract the required immunization.

As an example, let's say you live in rural Ghana, in West Africa, and the vaccine itself is coming from the UK. The cold chain will have to cover that vaccine leaving the UK manufacturing site, being loaded onto a vehicle and driven to a storage site near the airport, shifting on the airplane to Ghana, storage in or near Accra (the capital city), transport to a rural district health center, and then potentially further transport in a vehicle, or even on foot, across difficult terrain to physically get to a remote population.

That final stage is something healthcare workers in Ghana and all low and middle-income countries do many times a year – for example, with polio vaccination campaigns – and it can be heroic and sometimes [dangerous work](#). Wherever we live in the world, these people deserve our thanks.

Healthcare workers in these settings are well-practiced at delivering vaccines everywhere, but you can see the number of separate steps where the cold chain has to be maintained. [Essential kit](#) may include a portable fridge in the back of a 4x4, or a cool bag that is carried by hand. Those cool bags may contain “freezer packs” that keep the products sufficiently cool for at least a few hours so that the vaccines don't spoil.

Eighty Below

The Pfizer/BioNTech vaccine needs to be stored at -80°C, which is tricky. This is not an insurmountable problem, but it poses extra logistical challenges. It requires specialist equipment known as “ultra low temperature freezers”. These are typically found in specialist research facilities or biobanks.

Since most routine vaccinations require refrigeration or freezing at much lesser temperatures, a GP practice in the UK is unlikely to already have that facility, let alone a health center in rural Ghana.

Governments the world over will now be wondering how many of these freezers they'll need to buy. And at a cost of [a few thousand pounds per unit](#), plus [running costs](#) of maybe £500-£750 per year, the bill could get large very quickly. This kind of financial outlay may also be beyond rural Ghana and other resource-poor settings. It's not just the cost of buying the vaccine itself that we need to think about.

s workable. In sub-Saharan Africa, a more useful product may potentially be one that needs one dose and has a less stringent cold chain, even if overall vaccine effectiveness is slightly lower.

The short and medium-term future for COVID-19 vaccine development looks very exciting. However, success in clinical trials is still a long way from the endgame of a highly effective immunization distributed to all corners of the globe. For now, we await further development with hope, but perhaps also more than a little expectation.

Michael Head is Senior Research Fellow in Global Health, University of Southampton.

Intranasal fusion inhibitory lipopeptide prevents direct contact SARS-CoV-2 transmission in ferrets

By Rory D. de Vries, Katharina S. Schmitz, Francesca T. Bovier, et al.

Source: <https://www.biorxiv.org/content/10.1101/2020.11.04.361154v1.full.pdf>

Abstract

Containment of the COVID-19 pandemic requires reducing viral transmission. SARS-CoV-2 infection is initiated by membrane fusion between the viral and host cell membranes, mediated by the viral spike protein. We have designed a dimeric lipopeptide fusion inhibitor that blocks this critical first step of infection for emerging coronaviruses and document that it



completely prevents SARS-CoV-2 infection in ferrets. Daily intranasal administration to ferrets completely prevented SARS-CoV-2 direct-contact transmission during 24-hour co-housing with infected animals, under stringent conditions that resulted in infection of 100% of untreated animals. These lipopeptides are highly stable and non-toxic and thus readily translate into a safe and effective intranasal prophylactic approach to reduce transmission of SARS-CoV-2.

Common SARS-CoV-2 Mutation May Be Making COVID-19 More Contagious

Source: <https://www.medscape.com/viewarticle/940401>

Nov 04 – Most SARS-CoV-2 virus strains feature a specific mutation that makes them more transmissible, to the point that these strains now predominate globally, new evidence shows.

In contrast to a greater variety of strains early in the pandemic, now 99.9% of circulating SARS-CoV-2 strains in the study feature the D614G mutation on the spike protein. In addition, people infected with a D614G strain have higher nasopharynx viral loads at diagnosis.

It's not all bad news. This single-point mutation was not associated with worse clinical COVID-19 severity. Also, the mutation isn't expected to interfere with the efficacy any of the antibody cocktails, small molecule therapies or vaccines in development.

Furthermore, "as bad as SARS-CoV-2 is, we may have dodged a bullet in terms of how quickly it mutates," study author Ilya Finkelstein, PhD, told *Medscape Medical News*. This virus mutates much slower than [HIV](#), for example, giving researchers a greater chance to stay one step ahead, he said.

Molecular Sleuthing

The research was possible because colleagues at the Houston Methodist Hospital system sequenced the genome of 5085 SARS-CoV-2 strains early in the outbreak and during a second wave of infection over the summer, Finkelstein said.

The unique data source also includes information from plasma, convalescent plasma, and patient outcomes. Studying a large and diverse population in a major metropolitan area like Houston helps create a "molecular fingerprint" for the virus that will continue to be very useful, said Finkelstein, a researcher and director of the Finkelstein Lab at the University of Texas Austin.

D614G was the most common genetic substitution the researchers found, appearing in 82% of SARS-CoV-2 strains during the first wave from March 5 to May 11. The proportion with this mutation jumped to 99.9% by the second wave, defined as May 12 to July 7 in the study.

The jump in mutation frequency "occurred very rapidly, in a matter of just a few months," the researchers note.

The presence of the mutation during the first wave was independently associated with [mechanical ventilation](#) days, overall length of stay, and ICU length of stay. However, it was not associated with any significant differences in patient outcomes.

The D614G mutation is now so common worldwide that these viruses are considered reference strains. Researchers believe D614G predominates because it increases the spike protein's ability to open cells for the virus to enter.

Despite the large number of virus strains evaluated, the samples only represent about 10% of COVID-19 cases in Houston during the study, a potential limitation. Also, some collected samples could not be used for high-quality genome analysis because of limited virus nucleic acid.

Also, it remains unclear if host-virus immune interactions play a significant role. However, the researchers note in the paper that "available data suggest that in the aggregate, host genetics does not play an overwhelming role in determining outcome in the great majority of adult patients, once virus infection is established."

Surveillance Ongoing

"The findings will help us to understand the origin, composition, and trajectory of future infection waves and the potential effect of the host immune response and therapeutic maneuvers on SARS-CoV-2 evolution," the researchers add.

Going forward, the ongoing molecular surveillance of SARS-CoV-2 "may provide critical insights into the origin of the new infection spikes and waves that are occurring as public health constraints are further relaxed, schools and colleges reopen, holidays occur, commercial air travel increases and individuals change their behavior because of COVID-19 'fatigue,'" the researchers note.

They add that the genome data will also be useful in assessing ongoing molecular evolution in spike and other proteins "as baseline herd immunity is generated, either by natural exposure to SARS-CoV-2 or by vaccination."



Further Validation Warranted

"The study is very interesting and well performed," Professor Noam Shomron, PhD, a member of the faculty of medicine at Tel Aviv University, Israel, told *Medscape Medical News*.

Analyzing the "SARS-CoV-2 molecular evolution in a specific region in the USA...could be viewed as a microcosm of what occurs in other large cities in the USA," he said.

However, "before jumping to conclusions, this should be further validated," added Shomron, who authored a [study suggesting differences](#) in genetic alleles could partially explain variations across countries in the infection rates, severity, and mortality associated with SARS-CoV-2.

"We know that many other features and contributors might affect the results — even social constraints could generate a bias in the observations," he said.

►► The study was [published online](#) October 30 in the journal *mBio*.

Dynamics' Nanowave Air zaps the coronavirus with UV light

Source: <https://venturebeat.com/2020/11/09/dynamics-nanowave-air-zaps-the-coronavirus-with-uv-light/>

Nov 09 – [Dynamics](#) is unveiling [Nanowave Air](#), a new air filter that sucks in germs — including the coronavirus — and zaps them with high-intensity ultraviolet (UV) light.



Pittsburgh, Pennsylvania-based Dynamics first made a name for itself with flexible printed circuit boards for the electronic smartcards that have been replacing traditional credit cards over the past decade. CEO Jeff Mullen said in an interview with VentureBeat that the same technology has enabled a portable UV solution.

Mullen said the device is the first proven to "inactivate" the aerosolized SARS-CoV-2 virus (which causes COVID-19) continuously in fast-moving air.

[Dynamics landed on our radar](#) in 2010, when it won the [DEMO award](#) for its plan to bring credit cards into the 21st century with computerized and flexible smart cards and online payment systems. Mullen set the company up across the street from Carnegie Mellon University, where he got his MBA. Over the years, [Dynamics raised multiple rounds](#) of funding and established itself as a market innovator.

Now it is combining the edge-to-edge flexible electronics it used in credit cards with high-intensity UV technology to make its Nanowave devices.

"We're a leader in edge-to-edge flexible electronics, where the entire device flexes," Mullen said. "And one of our core technologies is ultraviolet. We have proprietary robots that apply massive amounts of high-intensity UV light to our electronics, and that is one of the reasons we can make them so broad and flexible."

When the pandemic hit, the company was already working on a smaller version of the UV light devices. The team realized their device could be redesigned to combat the virus and started testing the technology in May.

Mullen said the Nanowave Air was the first device proven to inactivate the COVID-19 virus in fast-moving air at the federal NIH-Affiliated Regional and Biocontainment Laboratories. The technology inactivated the COVID-19 virus at the labs' maximum airflow speeds while exceeding the viral detection limits of those tests, Mullen said.

Dynamics is now making the technology available in the U.S. for \$3,450 through the company's [website](#).

What it can do

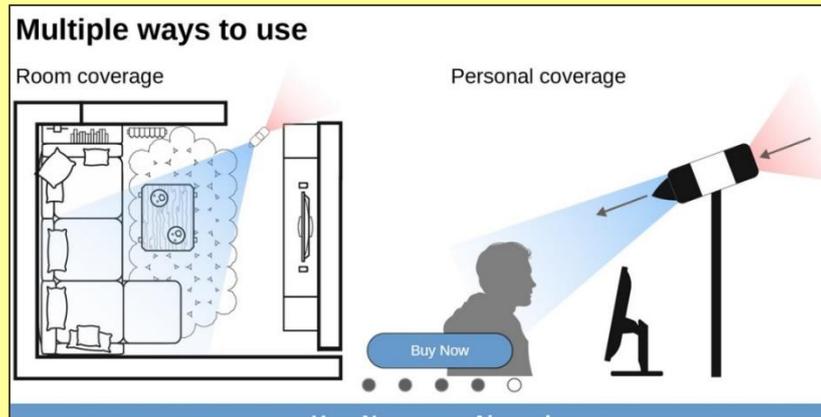
Mullen said the Nanowave Air can inactivate up to 99% of the COVID-19 virus at up to 5 liters of air per second. When air is moving through the device at this speed, the virus is being inactivated in less than two-thousandths of a second.

To create the technology, Dynamics had to first understand how to inactivate the virus for different applications and in different environments. Dynamics performed over 80 experiments against the COVID-19 virus in liquid, on surfaces, and in the air. In May 2020, it achieved what is believed to be the first documented inactivation of the virus with ultraviolet type C radiation.

For the past 50 years, ultraviolet light has needed minutes or hours to perform any meaningful level of inactivation. To do so in such a short time, the Nanowave Air device uses



a flexible UV-C lamp that is physically contorted in the device to provide ultra-high intensity UV-C radiation.



“Dynamics has created one of the first viable tools for inactivating the COVID-19 virus,” Carnegie Mellon University professor Elias Towe said in a statement. “The performance of the device, as measured at major U.S. laboratories, is impressive. What is remarkable is that Dynamics modified some of their unique know-how in flexible microelectronic techniques and merged these with emerging UV-C light technologies to produce intensities sufficient to inactivate the virus.”

Nanowave Air includes four high-performance motors that pull air into the device at up to 300 liters per minute for instant virus inactivation. The motors

are so powerful that inactivated air can be pushed over 10 feet away from the device. This capability is necessary to achieve a variety of high-performance air applications.

Air may be inactivated in a room at different speeds based on the number of devices deployed. A single device, for example, can process the amount of air in a standard 800 cubic feet in roughly 75 minutes. This may be particularly useful for reception areas, office spaces, retail spaces, bathrooms, elevators, meeting rooms, and even vehicles. For large spaces or faster processing times, additional units may need to be deployed.

Nanowave Air may also provide an individual with continuously inactivated air if a device is pointed directly at them. This may be particularly useful in dental offices, doctor offices, aesthetic salons, check-out lines, and cubicles.

Nanowave Air has airspeed settings of 100, 200, and 300 liters per minute so the device can be customized for different applications. It can push the air outward about 17 feet, which means it can circulate a lot of air in a room.

Nanowave Air has received certification from the Federal Communication Commission (FCC) certification, Edison Testing Laboratories (ETL), and Conformance Europeene (CE). As certified by ETL, all UV-C is contained in the device. With these certifications, Nanowave Air meets the electrical and safety criteria needed to launch in numerous countries, the company said.

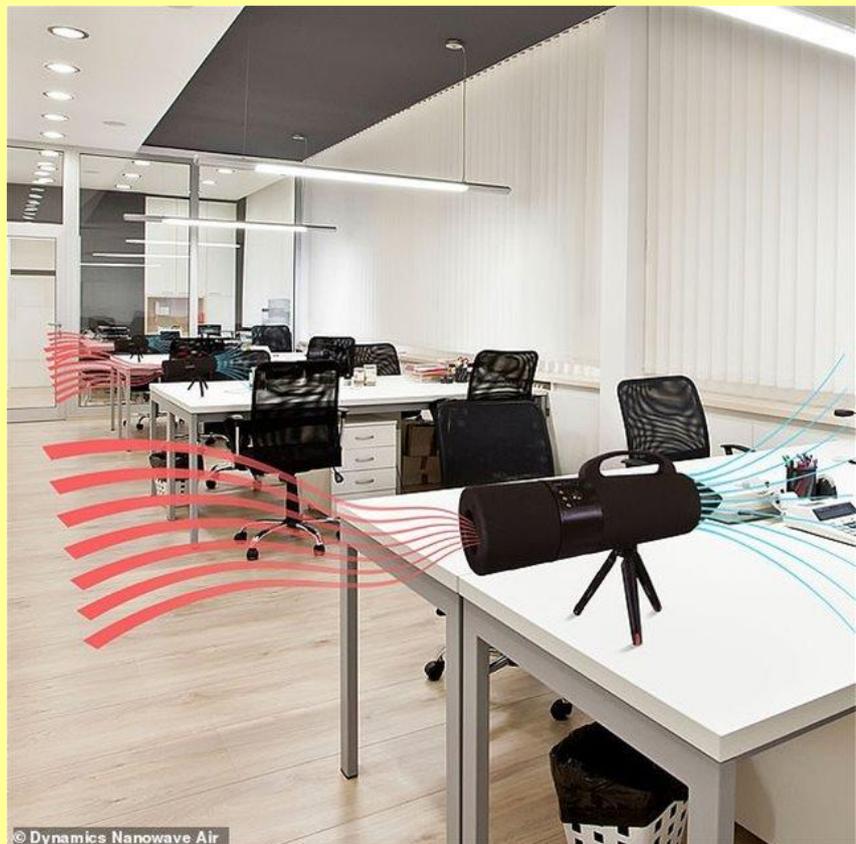
“We have this unique vantage point because of technologies we’re comfortable with and we use every day,” Mullen said. “It has the opportunity to be really meaningful. Of all of the ideas, this was the application that we could get to the market first and make a difference.”

What it looks like and does

It looks like a big black crayon sitting on a tripod. The air is pulled into the device from high-compression fans in the rear. Then it shoots clean air out the other side. The device weighs close to nine pounds, and you can pick it up with one hand. It is engineered so that UV light, which can be harmful to the eyes and skin, cannot escape.

The COVID-19 virus is about 80 nanometers to 120 nanometers in width. Typical air filters have a pore width of 300 nanometers, which means they cannot capture the virus in a standard filter.

There are a lot of “UV wands” on the market, but those are focused on cleaning surfaces, and you have hold them very close (i.e., almost touching). The products also say you have



to hold them in place for a period of time (e.g., 10 to 30 seconds). To clean a kitchen table with a wand would take hours, Mullen said. And UV disinfectant cases for cell phones say you have to keep them in the cases for 10 to 30 minutes. Even more concerning, the emitted UV light can be dangerous.

"Putting all that aside, I believe the CDC has proven that numerous wands do not inactivate SARS-CoV-2," said Mullen. "I think there are warnings and websites dedicated to this. You don't want to 'inactivate' something and remove your gloves just to then get infected because your product didn't work."

Mullen reiterated that Nanowave Air can inactivate fast-moving air in less than 2 milliseconds and inactivate 300 liters of air per minute. This is important because it has been heavily reported, including by the CDC, that the primary source of COVID-19 transmission is through aerosols.

Dynamics' device is expensive because it has hundreds of components, and the company designed it to maximize its speed to the market. Over time, the company hopes to bring those costs down.

"This is a physics engineering problem," Mullen said.

The devices are being made at the company's factory in Pittsburgh, and Mullen said Dynamics is gearing up for high volumes. He also said he is grateful for the team's culture of fast-cycle engineering collaboration, which led to the product's timely creation.

"It's the team that is first, and everyone works together," he said.

The company is continuing to work on other devices that could help in the fight against the pandemic, Mullen said.

"Dynamics is realizing the value of flexible electronics, which allows you to flex all of these devices that used to be rigid and had to be made in very specific shapes," Mullen said. "We always talked about using flexible electronics to solve hard problems in any industry."

Scientists Just Found a Mysteriously Hidden 'Gene Within a Gene' in SARS-CoV-2

Source: <https://www.sciencealert.com/scientists-find-mysterious-gene-within-gene-hidden-in-the-coronavirus-genome>

Nov 11 – Researchers have uncovered a mysterious gene in the genetic code of the [coronavirus SARS-CoV-2](#) – a segment virtually hidden from view in the virus's genome, and largely overlooked until now.

The newly identified gene – called **ORF3d** – is an example of what's called an [overlapping gene](#): a kind of 'gene within a gene' that's effectively concealed in a string of nucleotides, because of the way it overlaps the coded sequences of other genes.

"In terms of genome size, SARS-CoV-2 and its relatives are among the longest RNA [viruses](#) that exist," [explains](#) bioinformatician Chase Nelson from the American Museum of Natural History.

"They are thus perhaps more prone to 'genomic trickery' than other RNA viruses."

Viruses are actually quite prone to hosting overlapping genes, so it's not exactly a shocking discovery. Whether *ORF3d* truly represents genomic trickery remains to be seen, but in any case, it's certainly tricky to see.

Overlapping genes are difficult to identify in genetic sequences, as genomic scan systems can often miss them when running through strings of genetic code: programmed to pick up individual genes, but not necessarily seeing overarching instructions shared between the nucleotides of adjacent genes in a sequence.

In the context of viruses like SARS-CoV-2, that could make for a serious blind spot. Scientists have been [racing to understand as much as possible](#) about this devastating virus since early this year, and while some aspects of its genetic make-up have been elucidated (including the [firm consensus that it was not 'made in a lab'](#)), much remains that we just don't know yet.

"Missing overlapping genes puts us in peril of overlooking important aspects of viral biology," [Nelson says](#).

"Overlapping genes may be one of an arsenal of ways in which coronaviruses have evolved to replicate efficiently, thwart host immunity, or get themselves transmitted."

As for *ORF3d*, there's much yet to learn about why it's there, lurking in the genome and straddling other genes.

Scanning through genomic databases, the researchers found the gene has been identified before, but only in one variant of coronavirus that affects pangolins (found in Guangxi, China).

It has also previously been misclassified as an unrelated gene, *ORF3b* – which is present in other coronaviruses, including SARS-CoV – but they are not actually the same thing.

"The two genes are unrelated and encode entirely different proteins," [Nelson says](#). "This means that knowledge about SARS-CoV *ORF3b* should not be applied to SARS-CoV-2 *ORF3d*."

One thing we do know about the mysterious gene, based on previous blood work with human [COVID-19](#) patients, is that *ORF3d* does elicit a strong [antibody](#) response.



As for whether T-cells would also be triggered – or what other viral purposes the overlapping *ORF3d* might have – we're still in the dark. It might be relatively benign. It might not be.

"We don't yet know its function or if there's clinical significance," [Nelson says](#).

"But we predict this gene is relatively unlikely to be detected by a T-cell response, in contrast to the antibody response. And maybe that has something to do with how the gene was able to arise."

One thing's for sure. In a virus that only has about 15 known genes, the discovery of another one – let alone an overlapping gene – is a significant development. Just how significant, scientists will now try to find out.

▶▶ The findings are reported in [eLife](#).

This Impressive Plasma Jet Eradicates Coronavirus on Surfaces in Seconds

Source: <https://www.sciencealert.com/jets-of-cold-plasma-can-safely-eradicate-coronavirus-from-many-surfaces>

Nov 11 – Amongst the many problems we've had with the spread of [COVID-19](#) is the [coronavirus's](#) ability to survive on surfaces for hours on end. While we can effectively wipe down hard materials or sterilize them with alcohol, what about more delicate surfaces like cardboard?

Even in the atmosphere, [SARS-CoV-2](#) can survive [up to a few hours](#); on cardboard it can last for up to 24 hours, and viable particles have been detected on plastic up to three days after it was contaminated.

Scientists across many disciplines are throwing their vast talents into tackling the [pandemic](#). Now, a team led by engineer Zhitong



Chen from the University of California in Los Angeles may have found a solution. They just demonstrated cold plasma² has the ability to destroy the virus on a wide range of surfaces without damaging the material. "Everything we use comes from the air," [explains](#) aerospace engineer Richard Wirz. "Air and electricity: It's a very healthy treatment with no side effects."

Plasma, the least well known of the four main states of matter (the other three being solid, liquid and gas), occurs naturally in our upper atmosphere. It forms when electrons become separated from their atoms (making the atoms positively charged), and together create a soup of charged particles that are unstable and so more reactive than in their equivalent gas state.

Cold plasma has already [been shown to work](#) against drug resistant bacteria. It interferes with their surface

structure and DNA [without harming human tissue](#). It even [works against cancer cells](#).

Chen, Wirz and colleagues designed and 3D-printed an atmospheric plasma jet device fuelled by argon gas - an inert and stable element that's one of the most abundant gases in our air. The device sends speeding electrons through the gas, [stripping the gas atoms of outer electrons](#) as they collide; it requires just 12 W of continuous power to work.

² Plasma is one of the four fundamental states of matter (i.e., solid, liquid, gas, and plasma) and was so named since the charged species that comprise the plasma can behave somewhat similar to the cellular components of blood that are bound by blood plasma. Cold atmospheric plasma (CAP) operating at atmospheric pressure and room temperature has been shown to safely and effectively treat contaminated surfaces and can treat both smooth and highly featured surfaces.



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The team directed a near-room-temperature stream of reactive particles onto contaminated surfaces, exposing them to an electric current, charged atoms and molecules (ions), and UV radiation.

They tested the plasma's effect on six surfaces, including cardboard, football leather, plastic and metal and found that on each of these, most of the virus particles were inactivated after only 30 seconds. Three minutes of contact with the plasma destroyed all of the virus.

The team believes it's the reactive oxygen and nitrogen ions, formed as the [plasma interacts with air](#), that are destroying the viral particles; when they tested a helium-fed plasma, which produces less of these species of atoms, it was not effective even after five minutes of application.

[They explain](#) that as charged particles gather on the virion's surface, they can damage its envelope through electrostatic forces leading to its rupture. The ions can also break structurally important bonds such as those between two carbon atoms, carbon and oxygen, and carbon and nitrogen atoms.

[Experiments on the effects of plasma](#) on bacteria and [viruses](#) have revealed the damage to the virus's outer envelope can include proteins important for binding to host cells.

"These results also suggest that cold plasma should be investigated for the inactivation of aerosol-borne SARS-CoV-2," the Wirz and colleagues [wrote in their paper](#).

Last year another team [created a plasma filter](#) that could sterilise the air from 99 percent of viruses. In their device, as air moves through gaps in a bed of borosilicate glass beads, it's oxidised the unstable atoms that form the plasma. This damages viral particles, leaving them with a greatly diminished ability to infect us.

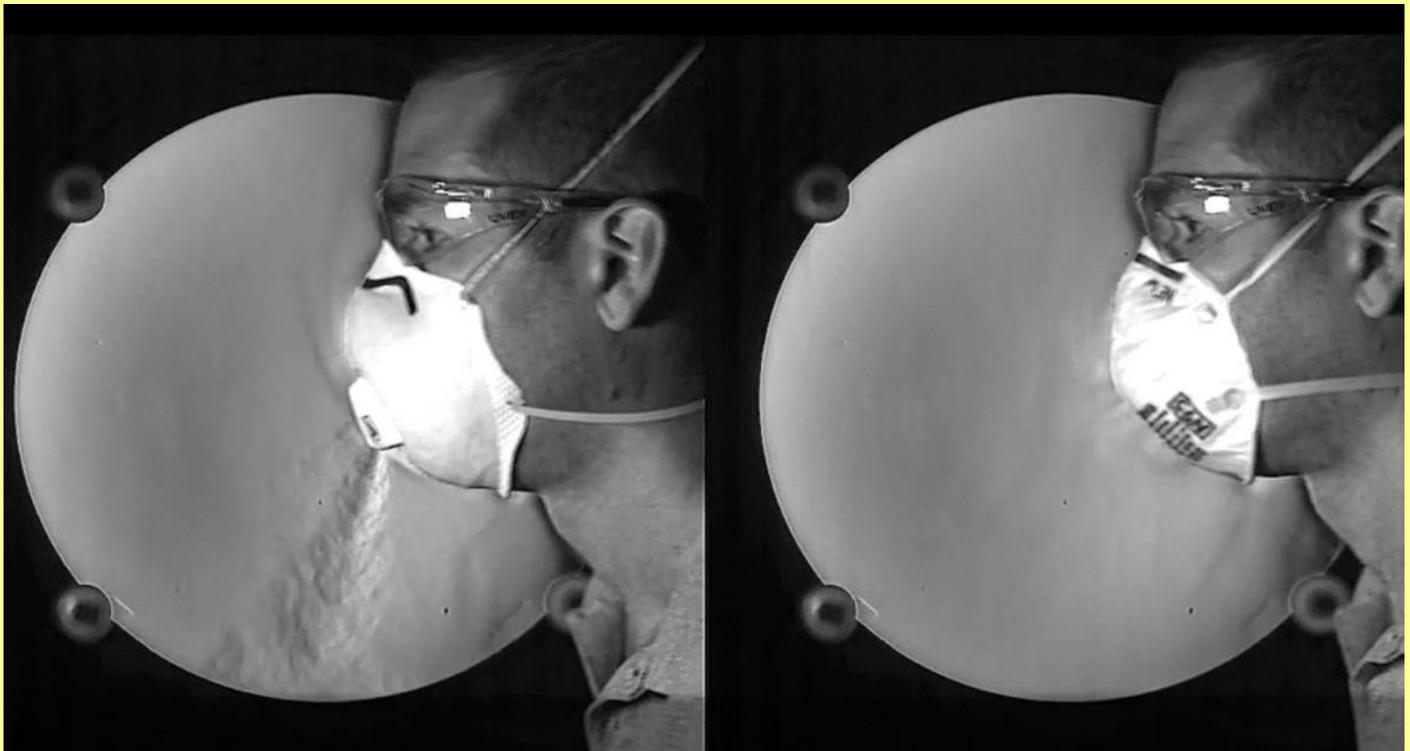
Of course, there is still a way to go from proof of concept to a device we can all use. But Wirz and team are now working on building such a device.

"This is only the beginning," Wirz [said](#). "We are very confident and have very high expectations for plasma in future work."

►► This research was published in [Physics of Fluids](#).

New video illustrate why valved masks will not slow COVID-19 spread

Video: https://www.youtube.com/watch?v=8iHcz4qc618&feature=emb_logo





The first interim data analysis of the **Sputnik V** vaccine against COVID-19 phase III clinical trials in the Russian Federation demonstrated **92% efficacy**

November 11, 2020

Source: <https://sputnikvaccine.com/newsroom/pressreleases/the-first-interim-data-analysis-of-the-sputnik-v-vaccine-against-covid-19-phase-iii-clinical-trials/>

- The Sputnik V vaccine efficacy amounted to 92% (calculation based on the 20 confirmed COVID-19 cases split between vaccinated individuals and those who received the placebo). Currently 40,000 volunteers are taking part in double-blind, randomized, placebo-controlled Phase III of Sputnik V clinical trials, out of which over 20,000 have been vaccinated with the first dose of the vaccine and more than 16,000 with both the first and second doses of the vaccine.
- Efficacy was demonstrated on the basis of a first interim analysis obtained 21 days after the first injection.
- There were no unexpected adverse events during the trials. Monitoring of the participants is ongoing.
- The world's first registration of COVID-19 vaccine, done in Russia on the 11th of August under the emergency use authorization mechanism, enables the Russian Federation to administer the vaccine outside of the clinical trials to volunteers such as medics and other high-risk groups. Trials conducted under the civil use of the vaccine in Russia (not being a part of clinical trials) based on the monitoring of additional 10,000 vaccinated confirmed vaccine efficacy at a rate of over 90%.
- The interim research data will be published by the Gamaleya Center team in one of the leading international peer-reviewed medical journals. Following the completion of Phase III clinical trials of the Sputnik V vaccine, Gamaleya Center will provide access to the full clinical trial report.
- Currently Sputnik V Phase III clinical trials are approved and are undergoing in Belarus, UAE, Venezuela and other countries, as well as Phase II-III – in India.
- The Sputnik V vaccine is based on a well-studied human adenoviral vector platform that had proven safe and effective with no long-term side effects in more than 250 clinical trials globally conducted during the past two decades (while the history of use of human adenoviruses in vaccine development started in 1953). More than 100,000 people have received approved and registered drugs based on the human adenoviral vectors.
- The uniqueness of the Russian vaccine is in using two different human adenoviral vectors that enable to provide strong and long-term immune response after the second injection.

On Dutch Mink Farms, SARS-CoV-2 Jumps Between Minks and Humans

The role of mink in the transmission of SARS-CoV-2, most recently in Denmark, has garnered much attention. Now, an in-depth, genomic investigation of outbreaks on 16 infected mink farms in the Netherlands found viral transmission between human to mink, as well as from mink to human. The authors emphasize that the fur production sector should not become a reservoir for future spillover of SARS-CoV-2 to humans. [+ MORE](#)

Respirator 2.0: new n95-alternative introduces sensors for a better fit

Source: https://www.eurekaalert.org/pub_releases/2020-11/bawh-r2n110920.php



Nov 11 – Investigators from Brigham and Women's Hospital and Massachusetts Institute of Technology have been working to design a better, reusable respirator that could serve as an alternative to an N95 respirator. In the latest iteration of their work, they have introduced sensors to inform the user if the respirator is on properly and whether the filters are becoming saturated. The team tested the respirator, known as the transparent, elastomeric, adaptable, long-lasting (TEAL) respirator, at the Brigham and at Massachusetts General Hospital (MGH), and reports a 100 percent success rate for fit testing among 40 participants, with feedback demonstrating exceptional fit, breathability and filter exchange. Results are published in [ACS Pharmacology & Translational Science](#). "During the COVID-19 pandemic, the need for respirators and masks has been urgent. Our team has worked to develop a respirator platform that not only fits comfortably and snugly but can also be sterilized and re-sterilized," said corresponding author [Giovanni Traverso, MB, BChir, PhD](#), a gastroenterologist and biomedical engineer in the [Division of Gastroenterology](#) at the Brigham and assistant professor in the Department of Mechanical



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Engineering at MIT. "In this study, we looked at up to 100 re-sterilization cycles and found that the TEAL respirator we've designed can withstand that."

The team evaluated 7 different methods for repeatedly sterilizing the TEAL respirator, including 100 cycles of autoclaving, 100 cycles of microwaving, prolonged exposure to UV treatment, high heat (200 °C), 100 percent isopropyl alcohol, and bleach. The researchers found minimal change to the respirator's elasticity after repeated sterilization.



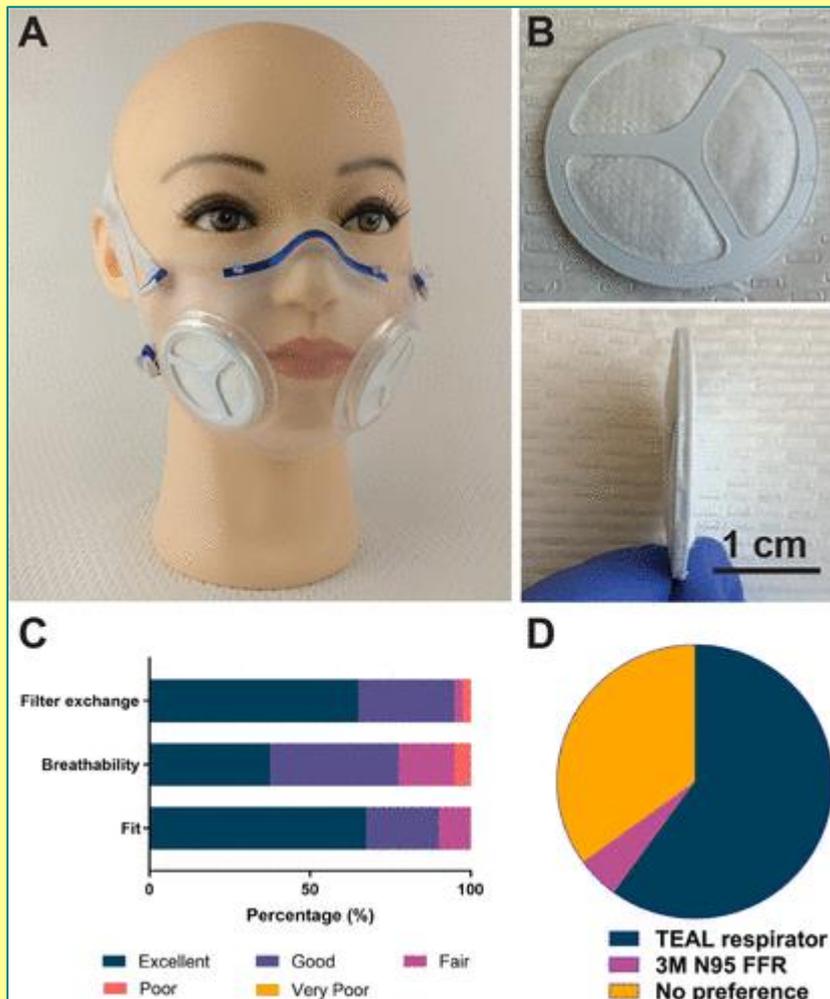
The TEAL respirator is comprised of a transparent, stretchy shell that can be sterilized and filters that can be replaced by the user. The team found that all participants could successfully replace their filters and most participants (90 percent) reported an excellent or good fit for the respirator.

"TEAL is the first elastomeric respirator designed for use in a surgical setting, preserving the sterile field and providing the user a comfortable, reusable



personal protective equipment solution," said co-author [Adam Wentworth, MS](#), a senior research engineer in the Brigham's Division of Gastroenterology and the Traverso lab.

(A) TEAL system on a mannequin and (B) front and side image of N95 filter cartridges. (C) User experience among 40 participants on a Likert scale including evaluation of fit, breathability, and filter exchange and (D) preference between the TEAL respirator and a standard hospital FFR.



The respirator's sensors can help detect respiratory rate, exhalation temperature, and exhalation and inhalation pressures. The team also added a thermochromic coating to the respirator -- a coating that changes color from black to pink when the respirator is in direct contact with a person's face and therefore has a snug fit.

The researchers evaluated the respirator's performance in a clinical setting, enrolling 47 subjects from the Brigham and MGH (40 of the subjects underwent

fit testing). Participants were asked to score the respirator on its fit, breathability and ease of filter exchange, and were also asked if they preferred the TEAL respirator to other options.



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Of those queried, 60 percent preferred the TEAL respirator compared to 5 percent who preferred standard hospital-supplied respirators. The remaining 35 percent had no preference.

"We were excited to receive the feedback from the trial participants that they would love to continue using and testing the respirator, given its comfort, transparency and ease of use," said co-author [James Byrne, MD, PhD](#), a resident in the Department of Radiation Oncology at the Brigham and a postdoctoral fellow in the Traverso lab.

Byrne notes that in addition to its other features, the TEAL respirator's transparency may offer some advantages over more traditional respirators.

"One of the big benefits of the TEAL respirator is that it enables visualization of the lips," he said. "This can be immensely helpful in communication and expression, especially during this time when communication through N95 respirators and surgical masks makes it challenging to understand one another."

The sample size of the study was small, and the investigators acknowledge the importance of additional evaluation in a larger cohort of individuals and over a longer timeframe to further test the respirator's functionality. To use the respirator in a health care setting, additional testing according to National Institute for Occupational Safety and Health (NIOSH) criteria will be needed.

Wentworth, Byrne, Traverso and co-authors have filed multiple patents surrounding the respirator and sensors. In addition, Wentworth, Byrne and Traverso have a financial interest in TEAL Bio, a biotechnology company focused on developing the next generation of personal protective equipment. A co-author is on the board of directors for Analog Devices.

Funding for this work was provided by the Prostate Cancer Foundation (Prostate Cancer Foundation Young Investigator Award), the Department of Mechanical Engineering at MIT, Brigham and Women's Hospital, the Karl van Tassel Career Development Professorship, the National Institutes of Health (NIHK23DA044874, R44DA051106, 456 5T32DK007191-45), investigator-initiated research grants from e-ink corporation, Gilead Sciences, Philips Biosensing, and the Hans and Mavis Lopater Psychosocial Foundation.

►► **Paper cited:** Wentworth, A et al. "Prospective Evaluation of the Transparent, Elastomeric, Adaptable, Long-Lasting (TEAL) Respirator" ACS Pharmacology & Translational Science [DOI: 10.1021/acspsci.0c00157](https://doi.org/10.1021/acspsci.0c00157)

Don't Use N95 Masks for More Than 2 Days, Research Suggests

Source: <https://www.medscape.com/viewarticle/940168>

Nov 02 – When reused for more than 2 days, nearly half of N95 masks fail, new research shows.

"N95 respirators used past day 2 had significant failure rates," Ronald Check, MD, St. Luke's University Hospital, Bethlehem, Pennsylvania, said in a presentation of his research at the American College of Emergency Physicians (ACEP) 2020, which was held online.

In the study, investigators evaluated masks that had been reused by healthcare workers in a single-center trauma unit. They recruited individuals who had been assigned masks that were of the correct size and that had been fit tested. Persons whose mask had not been fit tested were excluded from the study. Fit testing continued periodically throughout the workers' shift. At those times, the masks were checked for fit and for the quality of the seal. For 5 days, the researchers evaluated masks using Occupational Safety and Health Administration qualitative fit-test guidelines. For the first 58 masks evaluated, they found that 9% of masks failed on day 1 (n = 1/11), 6% failed on day 2 (n = 1/15), and on day 3, 50% of masks failed (n = 7/14). On day 4, the failure rate continued to climb, with 4 of 6 failing. On day 5 of use, 5 of 11 failed. Researchers continued evaluating masks, to a total of 115.

They found that 3 of 28 masks failed on the first day, 2 of 29 failed on day 2, 9 of 26 failed on day 3, 5 of 11 failed on day 4, and 10 of 21 failed on day 5. The larger dataset confirmed the original dataset; when used for more than 2 days, the odds ratio for failure was 7.1 (95% CI, 2.5 – 20; P < .0001).

"This suggests that disposable N95 respirators should only be safely used for two shifts," Check said.

CDC Protocol Extended for Reuse of N95

Because of a worldwide shortage of N95 masks, healthcare workers have been forced to reuse masks intended for single use.



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"Soon after the first case was identified in late January in the United States, hospitals throughout this country were quickly faced with PPE [personal protective equipment] shortages," Check said.

That led the Centers for Disease Control (CDC) to implement protocols for extended use, "which meant donning for multiple patients without doffing," Check said. The CDC also extended use and reuse protocols such that healthcare workers could don and doff the same respirator multiple times for an extended period.

Check pointed out several limitations to the study. "We utilized a qualitative fit-testing strategy instead of a quantitative one," Check said. In addition, the number of times masks were used and the numbers of hours during which they were worn were self-reported, "and we did not control for the exact type of N95 respirator and the number of donnings and doffings," he said.

He also said that study participants may have used different methods for decontaminating masks, and "this was not controlled."

PPE Needs to Be Provided Daily

"The rates of mask failure after multiple days of use are staggering," Megan Ranney, MD, MPH, of Brown University, Providence, Rhode Island, told *Medscape Medical News*. Ranney is the cofounder of [GetUsPPE](#), a foundation providing free PPE to frontline workers and underresourced communities.

"We must, as a specialty and a nation, continue to push for our hospitals to be able to obtain and distribute a new N95 to every frontline provider every day," she said.

Although this study was small, "it highlights the dangers of reusing N95s and reinforces the importance of having adequate supplies of PPE for emergency departments..."

"There should be hard-and-fast rules that we can't use them for more than 1 to 2 days," Ranney added.

Science made simple

How do mRNA vaccines differ from more conventional ones?

All vaccines have the same goal: to trick the body into thinking it has had the virus.

Traditional vaccines essentially inject people with a dead, weakened, or part of a virus so the body makes antibodies against it, as it would in a natural infection.

But the process behind mRNA (messenger RNA) vaccines is completely different. They work by harnessing human cells to become their own miniature vaccine factories, by delivering genetic instructions that prompt the body to produce virus proteins – without exposing the body to it. Once this happens, the immune system begins to build up protective antibodies to guard against infection.

Are there other mRNA vaccines in development for Covid-19?

Yes, an American company called Moderna is also developing a coronavirus vaccine using the same process. Scientists will be watching keenly to see if Moderna's version is as successful.

There are more than 240 vaccines in development worldwide against Covid-19.

Most use a protein subunit. A viral vector is the second most popular vaccine, followed by the mRNA or DNA method, which both use the same technique. There are around 50 of these in development.

COVID-19 'war games': the computer program that could help save your job

Source: <https://www.reuters.com/article/health-coronavirus-industry-jobs/covid-19-war-games-the-computer-program-that-could-help-save-your-job-idUSL8N2GC54H>



Nov 11 – Bank of England Chief Economist Andy Haldane has signed up to judge the winner of a 'war game' designed to help firms find alternatives to mass layoffs in the face of a coronavirus-driven slowdown. Confronted with the most unpredictable pandemic in memory, cost-conscious firms have already axed millions of staff worldwide, while UK redundancies hit a record high of 314,000 in the quarter to Sept. 30, official data showed on Tuesday.



Unilever-owned [UNA.AS](#) tech firm uFlexReward created the COVID-19 War Game to allow executives to explore the impact of huge job cuts on their future earnings prospects.

▶▶ [Read the full article at source's URL.](#)

How Pfizer Plans to Distribute Its Vaccine (It's Complicated)

Source: <https://www.nytimes.com/2020/11/12/business/pfizer-covid-vaccine-coronavirus.html>

Nov 12 - For months, scientists and public health experts have been saying the most crucial part of defusing the Covid-19 pandemic will be developing a safe and effective vaccine. So it was cause for celebration this week [when Pfizer announced](#) that an early analysis showed its vaccine candidate was more than 90 percent effective.

Now the drug maker, the government and the public health community face a new challenge: quickly making millions of doses of the vaccine and getting them to the hospitals, clinics and pharmacies where they will be injected, two separate times, into people's arms. If Pfizer receives authorization for its vaccine from the Food and Drug Administration in the coming weeks, as expected, the company in theory could vaccinate millions of Americans by the end of the year, taking advantage of months of planning and decades of experience.

"I am very confident. I live and breathe this," Tanya Alcorn, a Pfizer executive overseeing the supply chain for the vaccine, said in an interview on Wednesday. "We have developed a system that does not waste any precious vaccine."

But Pfizer — like other manufacturers that may soon be authorized to roll out their vaccines — does not fully control its own destiny. The effort will hinge on collaboration among a network of companies, federal and state agencies, and on-the-ground health workers in the midst of a pandemic that is spreading faster than ever through the United States.

Before Pfizer can begin shipping its vaccine, federal and state governments must tell it where to send how many doses. McKesson, a major medical supplier, will have to provide hospitals and other distribution sites with the syringes, needles and other supplies necessary to administer the vaccine.

Employees at those locations will need to be trained to store and administer the vaccine. They will also have to ensure that, three weeks after people get the vaccine, they return for a second dose. And millions of Americans must be persuaded to get the shots in the first place.

"We have a lot of confusion at the state and the local health departments level, and a lot of concern about the nitty-gritty of deployment," said Dr. Saad B. Omer, the director of the Yale Institute for Global Health. "Which places, where to vaccinate, how to get the vaccine there, how to identify people in various risk groups, how to document, how to call back people for the second dose." Even in normal times, **mass-vaccination campaigns** involve many moving parts within a vast network of suppliers, transporters and middlemen.

The particulars of Pfizer's vaccine will make this effort even more complex. The vaccine, developed [with the German company BioNTech](#), has to be stored at around minus 70 degrees Celsius (minus 94 Fahrenheit) until shortly before it is injected. [That is about the temperature of the South Pole on a winter day](#) and colder than any of the other leading vaccines in development.

Pending results from other front-runners in the vaccine race could change the stakes. [Moderna Therapeutics](#) said on Wednesday that it had seen enough Covid-19 cases in its late-stage study to do an early analysis of its vaccine, which uses the same "messenger RNA" technology that Pfizer's does. The technology has never produced an approved vaccine.

[Nine other candidates](#) are also in the final stage of testing. If any of those, win approval from the F.D.A., that will reduce the importance of Pfizer's vaccine but also introduce new questions, such as which hospitals and people get the different vaccines.

For now, though, Pfizer is in the spotlight.

If an analysis planned for next week confirms the vaccine's safety, the company is likely to ask the F.D.A. this month for emergency authorization to distribute its vaccine. In that case, limited doses will most likely be shipped to large hospitals and pharmacies to be provided to health care workers and other vulnerable groups.

But the specifics of how that will work are hazy at best.

Pfizer does not yet know where the government wants the vaccine sent or who will be first in line to receive it, said Ms. Alcorn, the supply-chain executive.

"We're working very closely, in the U.S., in particular, with Operation Warp Speed to identify those distribution points," Ms. Alcorn said, referring to the federal initiative to produce and distribute Covid-19 vaccines. "We don't have them today."



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Pfizer is making the vaccine at facilities in Kalamazoo, Mich., and Puurs, Belgium. The doses distributed in the United States will mostly come from Kalamazoo.

In Kalamazoo, **vaccines will go into vials** (five doses per vial). Vials will go into trays (195 vials per tray). Trays will go into specially designed cooler-type boxes (up to five trays per box). Pfizer plans to have about 100,000 of the coolers by the end of this month and more than double that total by March.

The reusable boxes, each toting between 1,000 and 5,000 doses and stuffed with dry ice, are equipped with GPS-enabled sensors. Pfizer employees will be able to monitor the boxes' locations and temperatures as FedEx and UPS transport them to hospitals and clinics nationwide.

The boxes "will have eyes on them at all times," Ms. Alcorn said.

Representatives of UPS and FedEx said they had been planning to play a major role in distributing vaccines and were ready to go. Once the Pfizer coolers reach their destinations, hospitals or pharmacies will have a few choices of how to store the vaccine. The easiest option is using ultracold freezers, but not many sites have them. Otherwise, the facilities can stash the trays in conventional freezers for up to five days. Or they can keep the vials in the cooler for up to 15 days, so long as they replenish the dry ice and don't open it more than twice a day.

Then there is the thorny question of **who will receive vaccines first**. That will be up to state governments.

Pfizer **has said** it expects to be able to produce 50 million doses this year. The chief executives of Pfizer and BioNTech have suggested that half of those may go to the United States. Since each person needs two doses, about 12.5 million Americans could be vaccinated.

"If you're talking about 12.5 million people, you're going to have to make some very tough-minded decisions about who this goes to," said J. Stephen Morrison, senior vice president at the Center for Strategic and International Studies, a research firm. "It's a pretty small number of doses that are going to be distributed."

One of the biggest early challenges may be distributing the vaccine in rural areas, which may not be able to administer doses quickly enough before they go bad. It isn't clear how states with large rural populations are going to deal with this.

Industry executives acknowledge another potential hurdle: Will Americans resist the vaccine? The country has long had a noisy minority of people who oppose vaccinations. Safety concerns are only likely to be heightened by the speed with which the coronavirus vaccines have been produced.

"The challenge, of course, that's out there is: Are people going to go get vaccinated?" Ms. Alcorn said. "It would be a shame that we did all this work, and then we don't have the public trusting that there's a safe vaccine."

For all the difficulties of making and distributing the vaccine, public health experts said the hardest part of the process could soon be complete. Having devised and tested an apparently effective vaccine, figuring out the logistics is more about applying existing know-how, said Dr. Omer of the Yale Institute for Global Health.

"The good news," he said, "is that these are not insurmountable problems."

Lessons from the Roosevelt: A Call for Improving the U. S. Navy's Preparedness for Biological Threats

By Brian L. Pike and Gregory D. Koblentz

Source: <https://warontherocks.com/2020/11/lessons-from-the-roosevelt-a-call-for-improving-the-u-s-navys-preparedness-for-biological-threats/>

Nov 12 – The evening sick call aboard USS Theodore Roosevelt unfolded on the night of March 23, 2020 in much the same way that it had for the past two weeks since the COVID-19 surveillance unit had arrived on board. In short, it had been largely uneventful. That changed when the night's last batch of test results appeared on the laptop that the surveillance unit had brought with them. There, on the screen, were the unmistakable analytical curves of a positive COVID-19 result. It was just after 11:00 p.m. Recognizing the potential implications of a positive result and fearing a mistake had been made, the team lead for the surveillance unit insisted that the test be repeated, start to finish, a process that would take approximately two hours. As the results of the repeat test appeared on the laptop in the early morning hours of March 24, it was clear. There had not been a mistake. The novel coronavirus had snuck aboard USS Theodore Roosevelt as a microscopic stowaway. Although it wasn't known at the time how many sailors were already infected, it was clear that keeping the outbreak contained on an aircraft carrier the size of a small city would be a challenge.



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There are important lessons to be learned from the outbreak of COVID-19 aboard USS Theodore Roosevelt that should inform the U.S. Navy's preparedness for and response to future biological threats. For weeks before the outbreak aboard USS Theodore Roosevelt, the world watched as the novel coronavirus spread around the globe. As individual countries [struggled](#) to contain the contagion, the [World Health Organization](#), [U.S. Centers for Disease Control and Prevention](#), and [independent researchers](#) issued a stream of dire projections. And, perhaps most relevant to the U.S. Navy, news outlets shared [troubling reports](#) of cruise ships left [hobbled](#) by the virus, with hundreds of infected passengers trapped onboard and the ships themselves unable to enter port. Fearing a worst-case scenario of its own shipboard outbreak, the Navy prudently deployed specialized disease surveillance units to a limited number of ships in the Pacific in the interest of detecting an outbreak early, should one occur. These units, rapidly assembled from available assets within the Navy's own [Bureau of Medicine and Surgery](#), were composed of active duty medical professionals and equipped with tools specifically calibrated to conduct surveillance for the COVID-19 virus.

One such unit landed aboard USS Theodore Roosevelt on March 11, two days after the ship's [port visit](#) to Da Nang, Vietnam. It was this unit that detected the ship's first cases of COVID-19, which set into motion a series of public health measures including flying infected sailors off of the ship for medical attention; tracing the contacts of the infected sailors and quarantining them; implementing additional disinfection procedures and social distancing efforts; and, ultimately, docking the ship in Guam so the crew could be disembarked and the ship could be disinfected. In the extraordinary circumstances of the global pandemic, it seemed that the Navy's foresight in sending a specialized disease surveillance unit to USS Theodore Roosevelt paid off. The presence of this unit aboard the ship meant that the outbreak was detected days, if not weeks, earlier than it might have been otherwise. In contrast, the French Navy [did not begin testing](#) the crew of its nuclear-powered aircraft carrier Charles de Gaulle until almost a week after the first symptoms were reported, by which time 40 sailors had fallen sick. As a result, the carrier returned to port where [testing revealed](#) that almost two-thirds of the crew, [1,046 out of 1,760 sailors](#), had contracted COVID-19.

Military threats, however, are rarely communicated so clearly or so far in advance as that of COVID-19. The next biological threat to a U.S. Navy ship, be it a pandemic or an [intentional biological attack](#), may not provide the kind of advanced warning needed to deploy the specialized disease surveillance units and capabilities necessary for early detection. This reality speaks to the need for enhanced biological detection capabilities that may be practically deployed across the fleet. It also raises the question of whether, and to what extent, technical experts in detection and surveillance need to be deployed.

To start, what the outbreak on USS Theodore Roosevelt makes clear is that such enhanced detection capabilities should include the ability to monitor crew health. The first sign of the outbreak aboard USS Theodore Roosevelt came when a sailor tested positive for COVID-19 after presenting to the ship's sick call with symptoms on the evening of March 23, a full 14 days after the ship left Vietnam. In other words, the virus was spreading amongst the ship's crew for two weeks before it was detected. Future capability development efforts should anticipate similar scenarios in which the first signs of a biological threat manifest as symptoms, not necessarily as alerts from environmental sensors. In the absence of a technical solution for enhanced health monitoring, or until such technology matures, strengthening epidemiology-based shipboard surveillance may provide a partial solution to the early discovery of a biological agent that is able to otherwise avoid detection. This may require increased manning for personnel with technical backgrounds in disease surveillance or specialized training of existing personnel. Either way, identifying and interpreting physiological changes among a ship's crew may be the difference between success and failure in combating a future biological threat.

If the Navy's response to a future threat rests partly on identifying physiological changes amongst a ship's crew or enhanced epidemiologic surveillance, having the ability detect a biological agent without any prior knowledge of the agent itself is equally important. The disease surveillance unit that was deployed to USS Theodore Roosevelt was armed with a polymerase-chain reaction-based detection capability specifically designed to detect COVID-19. However, tailoring a detection capability to the moment was only possible because of the advanced warning that the emerging pandemic provided. Efforts to develop detection capabilities that do not require an *a priori* knowledge of the threat should continue. While advanced technologies (e.g., high throughput sequencing) have begun to close this capability gap, work remains in lowering barriers for end-users and delivering such capabilities to each of the military services. As in the case of conducting surveillance for physiological changes among a ship's crew, until such detection capabilities are more broadly available and distributed, there may be a need to increase the number of deployed technical experts, armed with existing technologies, to mitigate any detection gaps that may currently exist.

While enhanced detection capabilities are needed, they are also not sufficient. The best detection capabilities are only as good as the ability to synthesize the data they generate into actionable information for commanders. The integration of data from sensors, biomedical samples, environmental samples, and epidemiological investigations will be necessary to ensure that commanders have the situational awareness necessary to respond effectively to any outbreak affecting their command. Detecting an outbreak, especially one involving a virus as stealthy as COVID-19, is akin to hunting a submarine in the depths of



the ocean and requires the same types of data fusion and command and control capabilities to fully support decisions regarding force protection, contamination avoidance, and contamination mitigation and response.

If the outbreak aboard USS Theodore Roosevelt highlights the need for improved detection capabilities, it also demands that the Navy assess its plans and preparedness for responding to a biological threat at sea. As the [publicly released report](#) on the investigation into the outbreak aboard the ship makes clear, the contingency plans to cope with a shipboard outbreak of disease — from either a naturally circulating pathogen, as in the case of the COVID-19 virus, or from a biological attack — could be improved. Despite the success in detecting the outbreak, [25 percent of the crew](#) was ultimately infected, one sailor died, and USS Theodore Roosevelt was forced out of operation for 10 weeks. Should the next shipboard outbreak involve a more deadly pathogen or a ship that needs to keep fighting through an outbreak of disease, the consequences of an inadequate or ill-executed contingency plan could be far worse.

With large numbers of sailors working in confined spaces, cohabitating in shared berthing, sharing meals in large dining facilities, and using communal toilets and showers, Navy ships are particularly vulnerable to the spread of disease. Fully manned warships conducting routine operations also generally lack the space to safely isolate infected sailors and quarantine large numbers of exposed ones. Thus, perhaps even more so than in the civilian world, the need to effectively respond to a biological threat at sea is crucial. These factors and USS Theodore Roosevelt's own response to the novel coronavirus outbreak suggest that the Navy should improve upon its tactics, techniques, and procedures and increase its capabilities and resources for contending with a biological threat at sea. Are ships equipped with sufficient personal protective equipment or, alternatively, is personal protective equipment strategically stockpiled on-shore to allow for rapid deployment and resupply? Are isolation and quarantine procedures adequate? Are such procedures practiced onboard ships to the extent that they should be? To what extent should future response plans include contingencies for disembarking a large fraction of the crew, as was conducted in the case of USS Theodore Roosevelt? Are tactics, techniques, and procedures for safely evacuating sick or infected personnel sufficiently detailed? Are materiel solutions for such evacuations, like the U.S. Coast Guard-developed [Portable Isolation Unit](#) or U.S. Transportation Command's [Transport Isolation System](#) capability, necessary and/or sufficient? Off ship, do medical treatment facilities have the capacity to diagnose and safely isolate and treat patients with highly infectious diseases? These questions and others should comprise an intensive review of the Navy's biodefense posture with respect its ability to combat the next biological threat.

Minimizing the fleet's vulnerabilities to biological threats of the future will mean learning from the COVID-19 outbreak aboard USS Theodore Roosevelt. Preparing for the future means acting now to enhance the Navy's shipboard capabilities. The Navy may not be lucky enough next time to receive a warning far enough in advance of an impending threat to deploy assets that are not already organic to a ship. At the same time, any advantage gained from identifying an outbreak of disease aboard a ship is lost if the plans to contain and manage an outbreak are not fully developed or actionable. A comprehensive review of the Navy's response procedures is an important step towards ensuring that it is prepared to mitigate future biological threats when they do appear.

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Disclaimer: Lt. Cmdr. Pike is an active-duty member of the United States Navy. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, nor the U.S. Government. Furthermore, this work was prepared as part of Lt. Cmdr. Pike's official duties. Title 17, U.S.C., §105 provides that copyright protection under this title is not available for any work of the U.S. Government. Title 17, U.S.C., §101 defines a U.S. Government work as a work prepared by a military Service member or employee of the U.S. Government as part of that person's official duties.

6 Reasons Why Herd Immunity Without a Vaccine Is a Terrible Idea in This Pandemic

Source: <https://www.sciencealert.com/six-reasons-why-herd-immunity-is-a-really-bad-idea>

Nov 12 – It's a tantalising prospect to think that herd immunity could end the [coronavirus pandemic](#). If true herd immunity were achieved, the coronavirus would no longer spread, and we could go back to normal life as we knew it before.



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But herd immunity is tricky to pull off. It can only be achieved in two ways: by getting lots of people sick, or by giving lots of people an effective, safe vaccine.

The goal is the same: to get a sizeable majority of the population resistant to infection, so that a disease can no longer spread among our collective 'herd'.

The consensus among epidemiologists is that chasing herd immunity without a vaccine would not work. It risks too many unnecessary deaths.

Even so, the concept has become a topic of conversation in households, on social media, on TV, in bars - with people asking: "Why not try it?" Those conversations gained steam last month when the White House propped up The [Great Barrington Declaration](#), a document [drafted](#) at a Libertarian think tank suggesting that most people should try to go for herd immunity, encouraging infections among the world's young, healthy population.

"For people who are under ... let's say 60 or 50, the lockdown harms are, mentally and physically, worse than COVID," Jay Bhattacharya, one of the authors of the declaration said last week, during a [debate hosted by the medical journal JAMA](#).

Opposite him was epidemiologist Marc Lipsitch from Harvard, one of the thousands of leading experts who signed on to a stinging [rebuttal](#) of the declaration, who explained why the approach is so dangerous.

"I think it's a great idea to look for creative solutions, but nobody responsible would abandon what we know works, which is controlling viral spread," Lipsitch said.

Their conversation threw up six overarching reasons why achieving natural herd immunity - the kind that doesn't require a coronavirus vaccine - won't work.

One: Nobody thinks it's a good idea to get everybody infected, but just targeting the young is near impossible

You'd be hard pressed to find a serious public health expert who thinks natural herd immunity will work.

[Leaders in Sweden recently backtracked](#) on their [unique](#) stab at herd immunity against the [virus](#) because it killed so many people in their nursing homes.

Bhattacharya name-checked Sweden as a good example of herd immunity done right.

But, when pressed, he agreed that letting anyone in the population get sick in order to drive up disease resistance in the community is not a good idea. "You should social distance when you can, definitely use masks when you can't social distance," he said. "All of the mitigation measures are really important."

Even Sweden's approach did not follow what the Great Barrington Declaration suggests: "focused protection" for the vulnerable, and focused infection of the young and healthy.

Bhattacharya asked listeners for their ideas about how to achieve this focused approach, and added a few of his own ideas, including employing rapid testing in nursing homes and multi-generational households, and isolating cases.

"We protect the vulnerable with every single tool we have," he said. "We use our testing resources. We use our staff rotations in nursing homes. We use PPE. We do all kinds of things."

The problem is, [those ideas](#) are already being tried across the US, to [only mixed success](#).

Nevada has found the US's new federal rapid testing protocol in nursing homes so unreliable that the [state sought to ban them](#) last month, a nursing home workforce [already spread thin is getting sick](#), and case isolation is near-impossible to achieve in the dangerous pre-[symptomatic phase of many illnesses](#), when people may transmit their virus to others before they even know they have it.

Two: COVID-19 has many long-term side effects that will impact lives and the healthcare system for years to come

The second issue with this idea of "focused protection" is that we don't actually know who we need to protect.

"For younger populations, and people who are less at risk, frankly, COVID is less of a risk than the lockdown," Bhattacharya said, reiterating that such closures harm people's psychological, mental, and physical health.

But [COVID-19](#) doesn't just kill people. It also has [devastating long-term effects](#) on many of its survivors, including debilitating [brain fog](#), [hair loss](#), [swollen toes and scaly rashes](#), [tinnitus](#), and [loss of smell](#).

The [Centres for Disease Control and Prevention](#) notes that nearly half (45.4 percent) of the adult population in the US is at risk for COVID-19 complications - including death - "because of cardiovascular disease, [diabetes](#), respiratory disease, hypertension, or [cancer](#)."

Three: We don't actually know who COVID-19 kills and why

The argument for "focused protection" also ignores the reality of what we have learned about the coronavirus: it has killed people of every age, race, and sex, as it tears through community after community across the planet.

In the US, more than 45,500 people under the age of 65 have died from the coronavirus to date, according to [the CDC](#).



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It's impossible to know, before someone becomes infected, what their true risk is. [Children](#) have died. So have [college students](#), and many others who did not necessarily have hallmark preconditions.

Scientists are still studying the virus to better understand how it works, but a unifying thread among severe cases may be how many [ACE-2 receptors](#) (which the virus uses to invade our cells) we have.

Four: Lockdowns save lives

Lockdowns, though they are an extreme disease-fighting measure, have saved tens of thousands of lives around the world, on nearly [every continent](#).

It's true that there have been adverse consequences. Many people have lost their jobs, shuttered their businesses, missed doctor's appointments, experienced more loneliness, and started drinking more alcohol.

When schools are closed, more kids go hungry, and education gets interrupted too. [Domestic](#) abuse, child abuse, substance abuse, and [suicidal ideation](#) have all gone up in recent months in the US.

"I have not been able to go to church in person, really, in seven months," Bhattacharya lamented.

However, these measures have bought critical, life-saving time for developing vaccines, formulating drugs, and discovering best practices for patient treatment. "Six months from now, [a] case might be prevented by vaccination, or might be treated by a better therapeutic," Lipsitch said.

Bhattacharya also argued that lockdowns are "the single biggest generator of inequality since segregation."

But that is a deeply misleading statement. Racial inequality, for example, has not been generated by the pandemic, if anything it's only [been unmasked](#).

"Obviously, the African-American community has suffered from racism for a very, very long period of time," Dr. Fauci [told members of Congress in June](#)."

And I cannot imagine that that has not contributed to the conditions that they find themselves in, economically and otherwise."

Five: Getting rid of the virus is possible, and it doesn't require killing people

Bhattacharya, and other backers of herd immunity, often peddle a false dichotomy between lockdowns and "normal life," with no grey area or room for virus-fighting in between.

But that either-or approach doesn't take into account how much mitigation measures like distancing, avoiding crowds, and getting everybody wearing masks [can really help slow viral transmission](#).

Besides, the US hasn't ever really, truly [tried to lock down yet](#). Even in the spring, "we really functionally shut down only about 50 percent," [Fauci recently told](#) members of Congress.

Countries including [Australia](#), [New Zealand](#), and [China](#) have [already achieved the "impossible goal" of zero \(or, near zero\) COVID, and have largely gone back to normal life after strict lockdowns](#).

[Taiwan](#) even [did it without locking down](#) at all, by instituting strict screening and surveillance measures, effective isolation and quarantining, and widespread masking.

Six: Natural herd immunity probably won't work for this pandemic, no matter how hard we try

The US, like everywhere else in the world, still has a long way to go to hit even some of the lowest posited herd immunity thresholds, which require [50 percent \(or more\) of the population to be exposed, and subsequently immune](#). At best, only around [10 percent to 20 percent](#) of people nationwide have been exposed.

But even if everyone was to become exposed to the virus, natural herd immunity likely still wouldn't work.

This is because of the way that our immunity against all coronaviruses - from common colds to this novel coronavirus - [waned over time](#). Immunity to this virus through prior infection is not definitive, or lasting: coronavirus reinfections [are possible](#), and they're happening in some rare cases already.

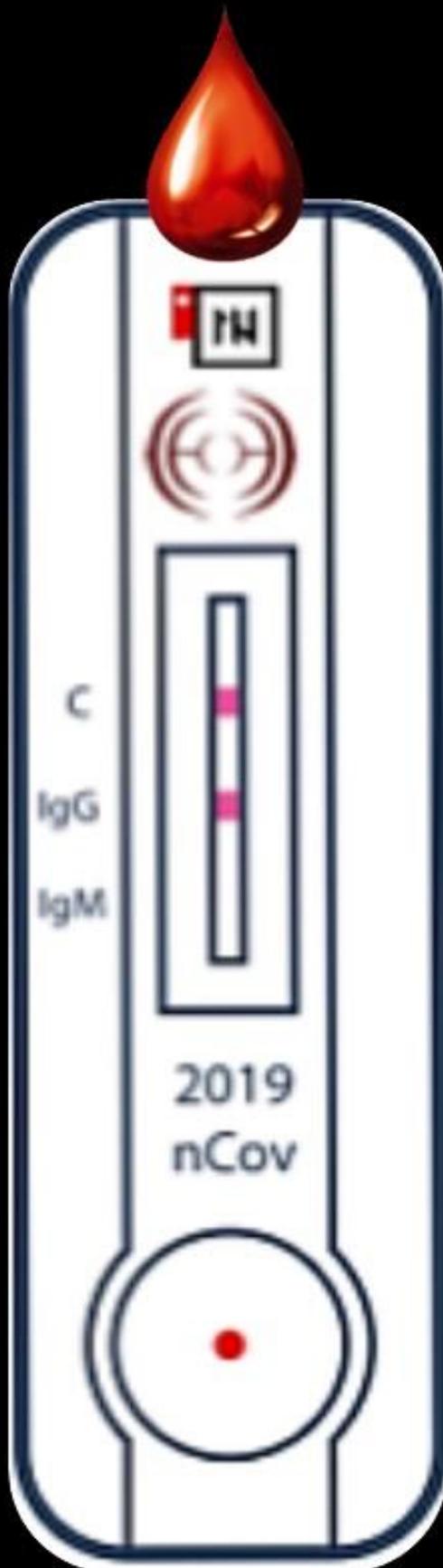
That's why serious scientists agree it's better to wait for a vaccine, and build up our collective immunity against the virus simultaneously.

"Humans are not herds," the [WHO Executive Director of Health Emergencies Mike Ryan said](#) in May, slamming the idea.

"I think we need to be really careful when we use terms in this way around natural infections in humans, because it can lead to a very brutal arithmetic which does not put people, and life, and suffering at the centre of that equation."

[One projection suggests](#) that attempting herd immunity in the US would result in 640,000 deaths by February 2023.





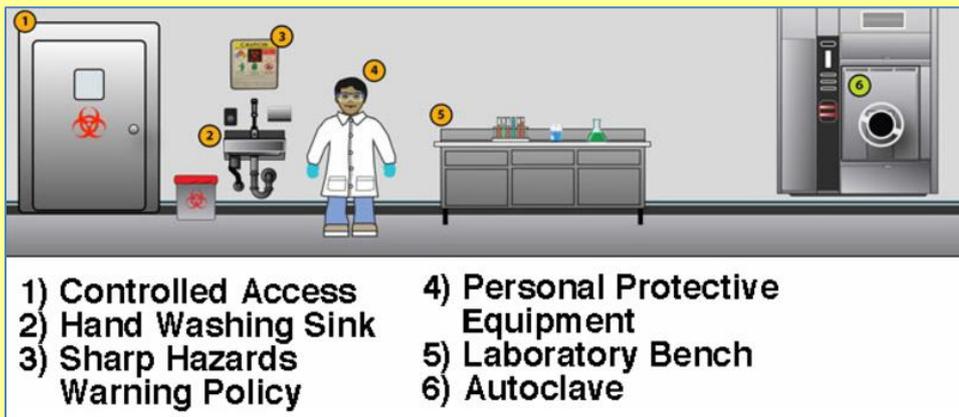
The combination use of IgG and IgM test can detect virus infection and immune status of the body effectively

- The relative overall **sensitivity** of ZEKMED/HZS IgG/IgM Rapid Test Cassette is 97% compared with PCR results, and the relative overall **specificity** of the Test is 99.9 % compared with PCR results
- Fast Results within **15 min**
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 - ▶ FDA & Health Canada approval
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- 100% compliance with UK Medicines & Healthcare products Regulatory Agency
- **Manufactured in Switzerland**

The Evolving Role of Biocontainment Facilities in Response to COVID-19

Source: <https://www.tradelineinc.com/reports/2020-11/evolving-role-biocontainment-facilities-response-covid-19>

Nov 11 – The unprecedented health and economic impact of the COVID-19 pandemic is driving many institutions to increase investment in new biocontainment facilities or rapidly pivot to upgrade and repurpose existing containment spaces in an urgent attempt to respond to the crisis. Hundreds of organizations nationwide began applying for grants after the National Institutes for Health (NIH) received \$3.6 billion in funding dedicated to COVID-19 research as part of an emergency stimulus bill passed earlier this year. The NIH now has until 2024 to release the funds. Additionally, private donors, non-governmental organizations, and other entities worldwide are providing billions in funding for development of testing and vaccine programs. This surge of financing is expected to fuel a growth in the creation of new biocontainment spaces in the near future and long term. Since designing, building, and commissioning new biocontainment labs is an expensive and time-consuming process, some institutions are electing to upgrade existing BSL-2 facilities to make them BSL-3, while others are choosing to move existing research programs to make room for new pandemic-related initiatives.



BSL-1 Safety Requirements

Biosafety level (BSL) ratings specify the biocontainment measures required to isolate dangerous biological agents in an enclosed laboratory facility. (Features numbered in green are risk-based enhancements.)

“In the run-up to the pandemic, there was a dearth of activity in many of the high-containment centers that were

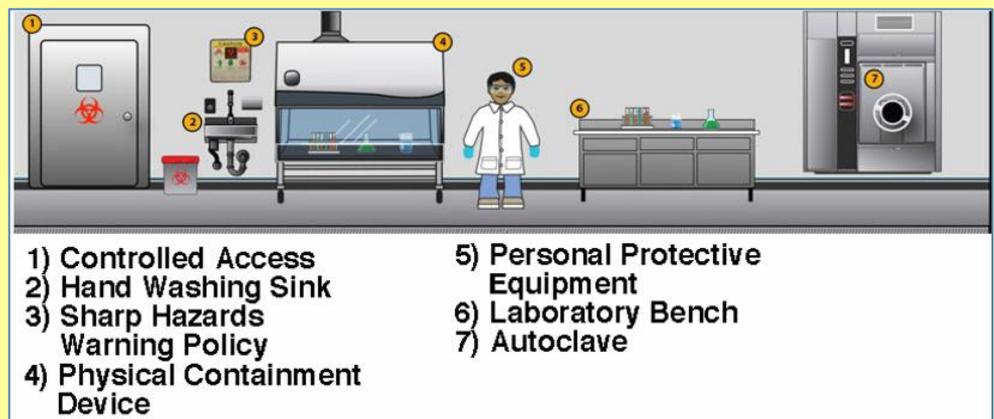
built nationally,” says Jeffrey Zynda, science and technology practice leader at Perkins+Will in Boston. “That was primarily due to a lack of funding and the fairly expensive operational costs that come with doing research in these types of facilities. Now, everyone is seeing the future potential of capturing research dollars and grants as being tied to infectious disease research, at least in the short to midterm. So more institutions that may not already have high-containment facilities are clamoring for them.”

BSL-2 Safety Requirements

Biosafety levels of containment are specified in the United States by the Centers for Disease Control and Prevention.

In addition to public health labs and regional biocontainment labs funded by the NIH, academic research institutes, pharmaceutical labs, healthcare centers, clinical diagnostic testing centers, and other organizations are restructuring and/or expanding their containment capabilities to be able to work with infectious agents like COVID-19, and create BSL-2 spaces that can be used for doing lower risk work like high-volume diagnostics.

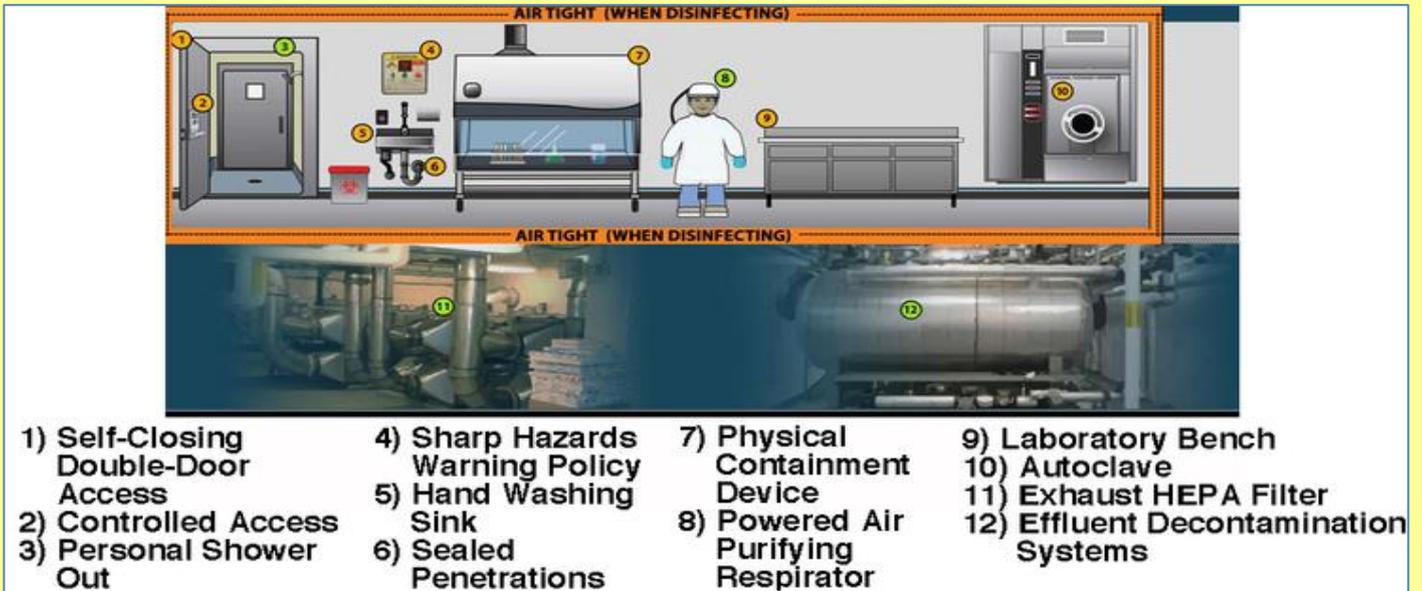
“Obviously, this is something people want to research right now so they can try to get ahead of it and also be a part of something that we can expect to be pretty well-funded in the coming years,” says Ross Ferries, science planner at Flad Architects in Atlanta. “We’re currently working with some institutions that are trying to convert existing spaces to BSL-3 for work on COVID-19. Certainly, there are a lot of different BSL-3 labs out there that were previously doing research on other agents that have now shifted their focus to COVID-19, which means that they will likely be trying to replace facilities for whoever was displaced in the process.”



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Rapid Response

One institution that was able to rapidly respond to the crisis was the Louisiana State University (LSU) Health Sciences Center in Shreveport, La., which, in just 12 days, pivoted to adapt existing containment spaces and research expertise to create a high-capacity diagnostic testing facility called the Emerging Viral Threat (EVT) lab. The EVT lab, which opened March 25, was the first facility in north Louisiana approved to conduct COVID-19 testing. In addition to being able to determine if a patient has COVID-19, the lab can screen samples for mutations of the virus and conduct antibody testing.



BSL-3 Safety Requirements: Containment levels range from BSL-1 to BSL-4. (Features numbered in green are risk-based enhancements.)

“When the outbreak hit, some of our top-notch virologists who are internationally recognized reached out to their contacts at the University of Alabama and University of Washington,” says Dr. Chris Kevil, vice chancellor for research at the LSU Health Sciences Center. “On March 12, I got an email saying that they could get the testing protocol to start clinical testing. We had a BSL-3 space and a wing of our research building that we had just made into an open bay concept laboratory that was BSL-2. So I took the idea to the chancellor and said, I think we can do this... Over the course of that afternoon and the next morning, we developed plans to launch the lab. We swiftly got a series of robotics and PCR (polymerase chain reaction) thermocyclers and were able to convert a room into a hot lab in conjunction with our building engineers, so we could take in specimens, inactivate them, and then perform the viral RNA extractions for PCR testing—all within 12 days.”

After starting out testing around 20 to 50 samples a day, the EVT lab ramped up to doing around 8,000 samples per week. Since then, they’ve become the largest contributor of viral genome sequencing for COVID in the state.

“What we’ve learned along the way is that, obviously, when you do something like this, there are a lot of moving parts,” says Kevil. “You’ve got supply chain issues, you’ve got engineering issues, you’ve got containment issues. So it was essential to have everybody on board at the same time. It was really about strategic management and team leadership. One group took care of supply chain and ordering; another group took care of operations of the lab. Another group took care of engineering and making sure the lab actually functioned appropriately.”

Thanks in part to the success of the EVT lab, LSU Health has decided to add an additional floor to the top of a new medical education building slated to break ground in early 2021 that will house another BSL-3 facility along with another BSL-2 compartment for clinical laboratory testing. The added space will allow the institution to handle PCR testing, serology with antibody testing, viral neutralization assays, and next generation sequencing.

“There’s an awareness now at the state and federal level that this is a public health mission, and that we need to have an academic medical center in this part of the country that can pivot and respond quickly to a viral outbreak like we’ve done. That means we really need to be able to maintain a CLIA-certified clinical reference laboratory (certified by the federal



Clinical Laboratory Improvement Amendments). And if the need for it decreases, the function of the lab adjusts as needed. But as the need for it expands, we can expand the lab while simultaneously doing experiments that are relevant from a medical and biomedical research standpoint in the meantime.”

Speed, Cost, and Lessons Learned

In addition to taking years to design, build, and commission, high-containment facilities are also expensive to staff, operate, and maintain. BSL-3 and BSL-4 facilities require airtight environments with sealed penetrations, once-through air, negative pressure, HEPA filtration, and a highly trained staff, among other features. Despite the fact that the facility design is rigorous, many of the key biosafety measures actually come from the protocols that researchers use while working in the space and how they enter and exit. That said, there are ways to expedite the design and certification process and control costs within certain parameters that include hiring experienced designers and commissioning agents and ensuring the project is flexible and right-sized for the intended mission. A significant barrier to doing things quickly, however, is a shortage of people who are experienced in running successful high-containment capital projects. In the 10 years from 2002 to 2012, the U.S. and other developed countries built a lot of new high-containment facilities fueled by a wave of government grant funding after 9/11. In the process, they created a cadre of capital project managers at institutions around the world who gained, in many cases through costly mistakes, critical knowledge and lessons learned about design, construction, and capital project management processes that are unique to high containment. “The problem is that over the past nine years, there has been little construction activity for high containment, and many of those people with institutional knowledge about these kinds of capital projects have retired or moved on to other fields,” says Steve Westfall, CEO of Tradeline Incorporated and executive editor of *Management Principles for Building and Operating Biocontainment Facilities*, which chronicles 10 years of planning and project management lessons learned and identifies 50 unique management principles for containment projects. According to Westfall, not only institutions new to high containment, but even many of those that built facilities more than 15 years ago, are now faced with running high-containment capital projects with inexperienced personnel. “There is not a lot of recorded wisdom out there for building, modifying, or expanding high containment,” says Westfall. “That becomes evident when you Google ‘building biocontainment facilities.’”

“If you’re just doing diagnostics, that can be done in a BSL-2 facility,” says Debra Sharpe, biosafety officer at Cleveland Clinic and president of Sharpe Solutions International. “But if you’re going to be propagating something like the coronavirus, the reality is that you can’t build those types of facilities very quickly. It’s not going to happen within a 12-month window, like many people think. And if you want to test medical countermeasures and therapeutics, you’re going to need animal models. That means you need an ABSL-3 facility, which is even more expensive. There aren’t a lot of ways to fast-track the process, but the first step is hiring architects and engineers who have experience building these facilities and commissioning agents who have lots of experience getting them built and registered.”

“Having an existing research building that has a robust mechanical system is a good start,” says Ferries. “We’re currently working with one group that has an animal research facility, which is inherently the type of construction required. If you have concrete block construction with high-end finishes and once-through air, then it may just be a matter of adding HEPA filtration and handwash sinks in the right place with a few other upgrades.”

“The focus is starting to shift towards what I would call scalable containment, which is a different approach to biocontainment,” says Zynda. “I think the question comes down to whether you’re building a facility that needs to survive for an incredibly long period of time with relatively little to no maintenance, or are you building something that might be around for a year until there’s a significant vaccine breakthrough and then it becomes irrelevant overnight? A lot of colleges and universities have invested in doing COVID testing with light containment as part of their return to campus programs. These aren’t necessarily BSL-3 level containment facilities, but they’re a step towards that. We should take this opportunity to reconsider our standard approaches to biocontainment. If we look to the flexible film isolation technologies that have been the backbone of containment in the U.K. and parts of Southeast Asia, there are some cost-effective ways of creating bio-bubbles or similar approaches to containment in the short-term rather than building an incredibly robust and costly secondary barrier that is the lab itself.”

“Sustainability becomes really critical in these facilities because, while there may be resources available to cover these kinds of operations for the next one, two, maybe three years, the reality is that you have to be diversified enough as an operation to sustain it,” says Kevil. “You’re not going to survive on grant dollars alone. You’ve got to find other revenue streams, whether it’s doing public health outreach and training, providing diagnostics to a CLIA-certified laboratory, or doing genomics and molecular testing.”

Only A Matter of Time



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Of course, this isn't the first time a national crisis has spurred rapid growth in the development of America's biocontainment capabilities. During the anthrax scare after 9/11, the federal government provided a surge of funding that led to an increase in high-containment facilities that were constructed quickly and are still in place today. But receiving certification by the Centers for Disease Control is a key operating component for doing research with infectious agents. And that takes time.

"A lot of people were surprised by this event, but it wasn't surprising to those of us who work in the space," says Sharpe. "Public health professionals like myself have been predicting this for over 30 years. It was just a matter of when. The difference is that most of us thought it was going to be an influenza virus. A coronavirus is not something a lot of people expected. That being said, we expect there will potentially still be an influenza pandemic in the future. Hopefully, we will be better prepared. We've certainly had some wakeup calls. I responded to the Ebola outbreak in 2014 when I went to Nigeria and trained 850 healthcare providers. But it seems like every time something like this happens, we start over again like there was no prior history or warning. Certainly, things like NIH funding helps. When there are opportunities to get that grant money, organizations are more incentivized to build these kinds of facilities."

"I see this having a huge impact over the next 10 years," says Ferries. "If you look at what happened when there were a few attempted bioterrorist attacks with anthrax after 9/11—that spawned a huge amount of funding from the NIH for national and regional biocontainment labs. All from something that didn't really harm that many people or have a huge economic impact. If you think of the number of people that have been infected and the scale of economic impact caused by COVID-19, it's surely going to change the way we fund public health protection."

"I think if there is a lesson to be learned from this pandemic, it's that the specific virus is somewhat irrelevant," says Zynda. "There will be other pandemics. And that means biocontainment facilities are an investment worth making, especially if it's going to be one of the key areas of funding moving forward. So, we've assisted some clients by suggesting that rather than building a large amount of space to handle every plausible scenario, they should scrutinize the amount of containment space they really need. Maybe it's a pocket system that's only a hundred square feet for doing the most critical activities. Where you can do other things outside of it through proper risk assessment and management. That way you can build a minimal footprint while being a little smarter about how you spend money and effort. Sometimes, that's plausible to support the research mission and other times it's not. But I think we're starting to see the need for the ability to ramp up containment in a more practically implementable way."

There Is No Silver Bullet Coronavirus Test, But Here's How Diagnostics Can Help

By Katie Jennings

Source: <https://www.forbes.com/sites/katiejennings/2020/11/02/there-is-no-silver-bullet-coronavirus-test-but-heres-how-diagnostics-can-help/>

Nov 02 – The coronavirus outbreaks at the White House, first among President Trump and his inner circle and now circulating [among Vice President Mike Pence's](#) staff, illustrate some of the limits of Covid-19 diagnostic tests. Even among the "[most tested man in America](#)," there will always be lag time from virus exposure to a positive test result—and this window varies depending on the type of test. That's concerning because it's possible someone might be infectious before it shows up on a test, but the truth is, we just don't know yet when exactly a person starts to be contagious.

But that doesn't make tests a useless tool in containing the pandemic. Far from it. Experts say what's more important is the overall strategy and combining different tests. Plus, the rapid development of new technologies means the testing landscape—and resulting public health strategies—could look very different in a few short months.

"There is no perfect test that can be routinely used," says Mike Pellini, a diagnostics expert and managing partner of venture capital firm Section 32. Pellini, a medical doctor and the former CEO of Foundation Medicine, advocates a combination of lab-based tests, rapid point-of-care tests and population-based tests, like monitoring sewage waste, as being crucial to getting the pandemic under control. "Each of these tests has their pluses and minuses, and that's why the notion of context is so critical as we make these selections," he says.

The first step is understanding the role of diagnostics. "What they are is a conduit to data that informs a decision" says Rahul Dhanda, cofounder and CEO of Sherlock Biosciences, which received the [first emergency authorization](#) for a Crispr-based Covid-19 test. "If you're positive, the actions are clear. You isolate whether you're symptomatic or asymptomatic. You monitor your symptoms and you inform medical professionals." And testing is also only one part of the bigger prevention and containment strategy, which includes masks and contact tracing.

Even as academic centers and companies have rushed to design Covid-19 diagnostics from the outset of the epidemic, scaling new technologies is a costly and time intensive process. Even legacy technologies have to be managed with care, as the U.S. learned to its detriment



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when the CDC's initial Covid-19 test turned out to be a failure due to cross contamination in the laboratory where the tests were assembled, according to a [Washington Post investigation](#).

The National Institutes of Health is helping to identify and speed up commercialization of promising tests through the RADx initiative, which stands for "Rapid Acceleration of Diagnostics." This program has awarded more than \$476 million in contracts to [22 different companies](#). "I'm very excited," says Tiffani Bailey Lash, a physical chemist and the NIH program director of RADxTech. "As we move forward into the future, it can certainly help in [areas beyond Covid-19]. It's kind of limitless at this point."

In the meantime, here are some answers to questions you might have about different types of diagnostic tests and what they can and can't tell us.

Why are there different types of Covid-19 tests?

Different types of tests are better for different settings. The most time intensive, but accurate, test relies on a technique called polymerase chain reaction (PCR). In order to detect the presence of the Sars-CoV-2 virus in a nasal swab or saliva sample, PCR makes millions of copies of the viral RNA, akin to a tiny Xerox machine. This complicated process must be performed in a laboratory setting with licensed personnel. The big benefit of these tests is they can detect very, very tiny amounts of virus in a sample, but the cost is around \$100 per test.

The time and expense of a PCR test isn't very practical for a work or school setting, where hundreds or thousands of people need to regularly get tested. This is where rapid antigen tests come in. These tests, which are less sophisticated but can deliver results in minutes, determine whether molecular markers on the outside of the coronavirus are present in a sample. The downside is that these tests can sometimes produce false negatives, meaning some people who have the virus may not test positive. In some cases, the CDC recommends the [results be verified](#) by a PCR test. Rapid antigen tests can cost as [low as \\$5](#).

There is a third type of test, called a serology test, which analyzes the antibodies in a blood sample. The presence of certain antibodies, the body's immune response to virus invaders, can indicate whether a person had a Covid-19 infection in the past.



However, these tests do not determine if a person has an infection at the time of the test. And while some have suggested the results of these tests might be used as an "immunity card"—leaving people free to interact and work around others, even infected people, experts warn this may not be a good idea. That's because there have already been documented cases of Covid-19 reinfection, and it's unclear what role antibodies play in determining the risk of reinfection.



How long after I've been exposed to coronavirus will I test positive?

That's still not clear. But it's more likely that a PCR test would pick up an infection earlier than an antigen test. "The data suggests—none of this definitive—that two, likely three days after exposure is when a PCR test would pick up that a person has been infected," says Pellini.

Can a Covid-19 test tell whether I am infectious?

Not exactly. For PCR tests there is a measurement called the cycle threshold, or CT value. The higher the number of cycles, the smaller amount of viral RNA is in the sample, because smaller amounts need greater levels of amplification. A CT value below 29 is considered a strong positive, while a CT value of 40 is considered weak, says Lash.

The CT value "is not an absolute quantitative measure of infectiousness," she cautions. These numbers should not be interpreted as hard and fast rules about infectiousness, and they can vary from test to test. "But having the information can be a data point for medical practitioners to consider when assessing individual cases," Lash adds. Antigen tests, on the other hand, are "most effective when the person is most infectious," she says, because there needs to be "thousands and more of virus particles" within the sample in order to identify these protein markers.

Does having more virus in my body mean I'll be sicker?

Scientists aren't sure what having a higher viral load (lower CT value) means in terms of a patient's response to the virus yet. "We haven't done the analysis as a society or as a scientific community to determine whether viral load has a particular impact on outcomes," says Dhanda. The hope is that as scientists begin to collect more data on coronavirus patients, the relationship between viral load and certain symptoms or side effects may be able to be teased out.

Can I have Covid-19 and still test negative?

Yes. You could have been exposed to Covid-19 and have the virus replicating in your body but the amount of virus could still be too small to be picked up. There would be a much higher chance of a PCR test identifying the virus in the earlier stages of infection.

If I have Covid-19 and test negative, am I contagious?

That's not clear. "The onset and duration of viral shedding and the period of infectiousness for Covid-19 are not yet known with certainty," [according to the CDC](#). The incubation period, meaning the time from Covid-19 exposure to symptoms, ranges from 2 to 14 days. After symptoms appear, it's thought that people may continue to shed the virus for around 10 days, but depending on the severity of the case, that could be as long as 20 days. Again, none of the tests available on the market are able to tell whether someone is definitely infectious. A measure like the CT value in PCR should be considered along with other factors.

Do these tests work on asymptomatic patients?

Researchers are still trying to figure this out. In order to get an emergency use authorization from the FDA, manufacturers need to perform studies and present data on how the Covid-19 tests perform on known positive patients. Many companies are still gathering data on how the tests perform on asymptomatic patients. The RADx program has asked participants to collect data from both symptomatic and asymptomatic patients, says Lash.

What will happen with all this new technology after Covid-19?

Hopefully it will be repurposed to serve as diagnostics for a range of other diseases, including cancer, heart, lung and blood disorders, and sexually transmitted diseases.

Katie Jennings is a staff writer at Forbes covering healthcare, with a focus on digital health and new technologies. She was previously a healthcare reporter for POLITICO covering the European Union from Brussels and the New Jersey Statehouse from Trenton. She has also written for the Los Angeles Times and Business Insider. She was a 2019-2020 Knight-Bagehot Fellow in business and economics reporting at Columbia University.

Covid-19 vaccine may have unpleasant side effects. That will mean it's working.

Source: <https://news.yahoo.com/covid-19-vaccine-may-unpleasant-100438136.html>

Nov 12 – Pfizer is expected to seek federal permission to release its [Covid-19 vaccine](#) by the end of November, a move that holds promise for quelling the pandemic but also sets up a tight time frame to make sure consumers understand what it will mean to get the shots.

The vaccine, and likely most others, will require two doses to work, injections that must be given weeks apart, company protocols show. Scientists anticipate that the shots will cause enervating flu-like side effects — including sore arms, muscle aches and fever — that could last days and temporarily sideline some people from work or school. And even if a vaccine



proves 90 percent effective, the rate Pfizer touted for its product, 1 in 10 recipients would still be vulnerable. That means, at least in the short term, as population-level immunity grows, people can't stop social distancing and throw away their masks.

Left out so far in the push to develop vaccines with unprecedented speed has been a large-scale plan to communicate effectively about those issues in advance, said Saad Omer, director of the Yale Institute for Global Health.

"You need to be ready," he said. "You can't look for your communication materials the day after the vaccine is authorized."

Omer, who declined to comment on [reports](#) that he's being considered for a post in the new administration of President-elect Joe Biden, called for the rollout of a robust messaging campaign based on the best scientific evidence about vaccine hesitancy and acceptance. The Centers for Disease Control and Prevention has created a strategy called "[Vaccinate with Confidence](#)," but it lacks the necessary resources, Omer said.

"We need to communicate, and we need to communicate effectively, and we need to start planning for this now," he said.

Such broad-based outreach will be necessary in a country where, as of mid-October, only [half of Americans](#) said they'd be willing to get a Covid-19 vaccine. Initial doses of any vaccine would be limited at first, but experts predict they may be widely available by the middle of next year. Discussing potential side effects early could counter misinformation that overstates or distorts the risk.

"The biggest tragedy would be if we have a safe and effective vaccine that people are hesitant to get," said Dr. Preeti Malani, chief health officer and a professor of medicine at the University of Michigan in Ann Arbor.

Pfizer and its partner, the German company BioNTech, said Monday that their vaccine appears to protect 9 in 10 people from getting Covid-19, although they didn't release underlying data. It's the first of four Covid-19 vaccines in large-scale efficacy tests in the U.S. to have posted results.

Data from early trials of several Covid-19 vaccines suggest that consumers will need to be prepared for side effects that, while technically mild, could disrupt daily life. A senior Pfizer executive [told the news outlet Stat](#) that side effects from the company's vaccine appear to be comparable to those of standard adult vaccines but worse than those of the company's pneumonia vaccine, [Pevnar](#), or typical flu shots.

The two-dose Shingrix vaccine, for instance, which protects older adults against the virus that causes painful shingles, results in sore arms in 78 percent of recipients and muscle pain and fatigue in more than 40 percent of those who take it. Pevnar and common flu shots can cause injection-site pain, aches and fever.

"We are asking people to take a vaccine that is going to hurt," said Dr. William Schaffner, a professor of preventive medicine and health policy at Vanderbilt University Medical Center. "There are lots of sore arms and substantial numbers of people who feel crummy, with headaches and muscle pain, for a day or two."

Persuading people who experience those symptoms to return in three to four weeks for a second dose — and a second round of flu-like symptoms — could be a tough sell, Schaffner said.

How public health experts explain such effects is important, Omer said. "There's evidence that suggests that if you frame pain as a proxy of effectiveness, it's helpful," he said. "If it's hurting a little, it's working."

At the same time, good communication will help consumers plan for such effects. A Covid-19 vaccine is expected to be distributed first to health care staffers and other essential workers, who may not be able to work if they feel sick, said Dr. Eli Perencevich, a professor of internal medicine and epidemiology at University of Iowa Health Care.

"A lot of folks don't have sick leave. A lot of our essential workers don't have health insurance," he said, suggesting that essential workers should be granted three days of paid leave after they're vaccinated. "These are the things a well-functioning government should provide for to get our economy going again."

Making sure consumers know that a vaccine is likely to require two doses — and that it could take a month for full effectiveness to kick in — is also crucial. The Pfizer phase 3 trial, which has enrolled nearly 44,000 people, started in late July. Participants received a second dose 21 days after the first. The reported 90 percent efficacy was measured seven days after the second dose.

Communicating effectively will be vital to ensuring that consumers follow through with the shots and — assuming several vaccines are approved — that their first and second doses are from the same maker. Until full protection kicks in, Omer said, people should continue to take measures to protect themselves: wearing masks, washing hands, socially distancing. It's important to let people know that taking appropriate action now will pay off later.

"If we just show them the tunnel, not the light, then that results in this mass denial," he said. "We need to say, 'You'll have to continue to do this in the medium term, but the long term looks good.'"

The best communication can occur once full data from the Pfizer trial and others are presented, said Dr. Paul Offit, a vaccinologist at Children's Hospital of Philadelphia who sits on the Food and Drug Administration's [advisory board](#) considering Covid-19 vaccines.

"When you look at those data, you can more accurately define what groups of people are most likely to have side effects, what the efficacy is, what we know about how long the



efficacy lasts, what we know about how long the safety data have been tested," he said. "I think you have to get ready to communicate that. You can start getting ready now."

'SeaDream': Covid-19 cases confirmed on first cruise to resume sailing in the Caribbean

Source: <https://www.thenationalnews.com/lifestyle/travel/seadream-covid-19-cases-confirmed-on-first-cruise-to-resume-sailing-in-the-caribbean-1.1110657>

Nov 13 – The cruise ship has been forced to cut its journey short after at least five passengers tested positive for the coronavirus. One of the first cruise ships to ply through Caribbean waters since the pandemic began ended its trip early after at least five passengers tested positive for Covid-19, officials have confirmed.



The *SeaDream I* is carrying 66 crew and more than 50 passengers, with the majority of passengers hailing from the US, according to Sue Bryant, who is aboard the ship and is a cruise editor for *The Times* and *The Sunday Times* in the UK.

She said one passenger became sick on Wednesday, November 11 and forced the ship to turn back to Barbados, where it had departed from on Saturday, November 7. However, the ship had yet to dock in

Barbados as local authorities tested those on board. The captain announced that at least five passengers have tested positive, Bryant said.

The incident marked the first time *SeaDream* had resumed its West Indies voyages since the pandemic, with the ship originally scheduled to return to Barbados on Saturday, according to an online itinerary. The ship had made several stops in St Vincent and the Grenadines before turning back.

The Norway-headquartered SeaDream Yacht Club, the ship's parent company, wouldn't say how many passengers tested positive in the initial round of testing.

Bryant said passengers were required to have a negative PCR test to enter Barbados and underwent another test on the dock administered by the ship's doctor.

"We all felt very safe," she said, adding that the ship had been implementing strict hygiene protocols. "Yet somehow, Covid appears to have got on board."

On Thursday, November 12, SeaDream said the ship's medical staff had tested all crew members and all tested negative. The company also said it is currently retesting all guests, noting they're all under quarantine along with non-essential crew members.

"We are working closely with local health and government authorities to resolve this situation in the best possible way," SeaDream said. "Our main priority is the health and safety of our crew, guests and the communities we visit."

Government officials in Barbados did not return messages for comment.

Waters around the Caribbean have been largely bereft of cruise ships this year, with the US Centres for Disease Control and Prevention suspending cruise ship operations at US ports in mid-March. The no-sail order expired on October 31.

Last week, the Cruise Lines International Association, which represents 95 per cent of global ocean-growing cruise capacity, said its members were voluntarily suspending cruise operations in the US until Thursday, December 31.



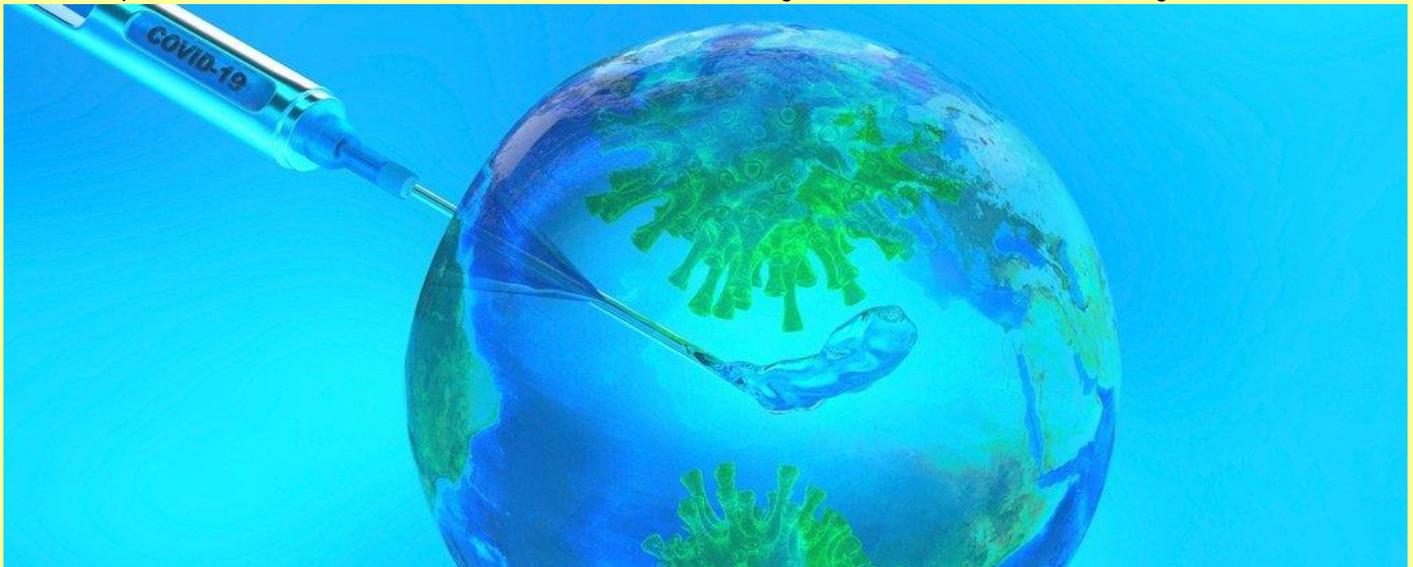
SeaDream was among the first cruise lines to resume service in Europe. In August, the company reported that an asymptomatic passenger had tested positive for the coronavirus after disembarking from *SeaDream I* in Denmark. All other passengers and crew tested negative, the company said.

EDITOR'S COMMENT: Cruise? With US passengers in the midst of a pandemic? Is it a joke or what? A cruise ship is a big or huge investment and hundreds or thousands of people/families depend on it for living. But profit could not excuse the consequences or even a single life loss. Perhaps in 2022 and if everything goes according to the plan (global vaccination).

Here's How a COVID-19 Vaccine Might Work in The Real World, According to The Numbers

By Adam Kleczkowski

Source: <https://www.sciencealert.com/here-s-how-a-covid-19-vaccine-might-work-in-the-real-world-according-to-the-numbers>



Nov 13 - Pfizer and BioNTech have just released [interim results](#) of their [COVID-19](#) vaccine trial.

Although it is not the only vaccine in the [late stages of testing](#), the [large size and careful design of the trial](#), not to mention the promising results, have caused understandable enthusiasm around the world.

As we get nearer the long-awaited start of a COVID-19 vaccine roll-out, it is worth looking at how statisticians help medics establish the safety of vaccines.

How effective is the vaccine?

It is not easy to find out how effective a vaccine is. First, researchers need to know whether just an act of injecting somebody can help. The trials involve a large number of people, with half of them given a vaccine and the other half a placebo.

Then the participants need to be exposed to the infection with the expectation that most of those in the control group become ill, but vaccination protects at least some in the treated group.

In some cases, such as for [HIV](#) or [Ebola](#), even giving a placebo can be [ethically controversial](#) as they have such a high death rate. For [coronavirus](#), the researchers need to rely on natural infection because no study, at the moment, intentionally exposes participants to the coronavirus. As a result, the efficacy calculation is based on a relatively small number of those who caught COVID-19 by contact with other infected people.

Vaccine efficacy reflects a proportion of the number of those who became ill in the vaccinated group and in the non-vaccinated group. [The Pfizer/BioNTech trial](#) involved nearly 44,000 participants, with 21,999 given the vaccine.

The researchers use statistical analysis to set up milestones at which they can be increasingly confident that the vaccine works – or it does not – as the cases trickle in.

If the numbers are small, it would not be clear whether the difference in the outcomes between the placebo and the treated groups is real or just a result of a random fluke.



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Statisticians use the so-called "[power analysis](#)" to discover how many cases we need to observe. For the Pfizer and BioNTech vaccine, the target was 164 cases when the final estimation of efficacy can be made, but this was based on the assumption that the vaccine is only 60 percent effective.

This was based on the [seasonal flu vaccine efficacy](#). However, with the numbers exceeding expectations, the company decided to release the results at one of the interim analysis points.

Ninety-four cases were reported and the split of about 86 cases in the placebo group and eight cases among vaccinated yielded 90 percent efficacy. This level of protection against infection is [remarkable](#).

Even though the study is based on a relatively small number of cases, statistical analysis allows the researchers to extrapolate to what might happen when the vaccine is rolled out.

The [trial included](#) different ages as well as people from different ethnic minority groups, but more studies would be needed to assess how the most vulnerable groups are protected.

The final efficacy is likely to be lower, as administering the treatment is difficult for [many logistical reasons](#), including the requirement of mRNA-based vaccines, of which the Pfizer vaccine is one, [to be stored at very low temperatures](#).

In the real world, the vaccine might not be stored at the correct temperature and hence may spoil.

How safe is the vaccine?

If the vaccine is to be widely applied, the medical community and the public need to be reassured about its safety.

The Pfizer vaccine was administered to 21,999 people. [Some people reported](#) a reaction similar to the one after the [seasonal flu vaccination](#), but **so far no serious side-effects have been reported**. But how can we be sure that this holds if the treatment is rolled out to millions of people?

Statisticians came up with the "[rule of three](#)". The rule tells us that if 21,999 participants were treated with no side-effects, then with 95% confidence, the probability of a side-effect from the vaccine is expected to be less than three (hence the name) divided by 21,999 and so less than one in 10,000.

The chance of these side-effects is probably even lower, but the researchers will be keen to extend the trials further to confirm this. Safety is just as important as efficacy. If you take a probability of one in 10,000 and extrapolate that out to the 300 million population slated for vaccination in the US alone, the number of people with side effects could be as high as 30,000.

Clearly, the doctors need to ensure they are [not causing harm](#), but also any serious side-effect attributable to the vaccine would damage the reputation and [significantly affect the take-up](#).

How to use the vaccine so it is effective and safe?

Medical authorities are now designing ways to implement vaccination in nationwide programmes, but the details on how to do this depend on several factors.

The UK government has ordered [40 million doses of the Pfizer vaccine](#), which – with two-dose treatment – would vaccinate 20 million people, that is, everyone aged 55 and up. However, the roll-out will not be fast since production and delivery [will take time](#).

The strategy also depends on what the vaccination programme is supposed to achieve. Childhood vaccines, such as measles, are given to newborns to maintain [herd immunity](#). In this case, only a relatively small proportion of the population needs to be vaccinated. With the rapid spread of COVID-19 – and high levels of existing infection – the proportion would need to be much higher.

Predictions for the level of immunity required to reach herd immunity depend on our estimate of the COVID-19 [basic reproductive number](#), R. In absence of any control measures, R [is estimated to be around 3](#) and so at least 67 percent of the public need to be fully immune just for the [epidemic](#) to stop growing.

Higher values would need to be achieved if the aim is to eradicate the [virus](#).

This level will [hardly be achievable](#) with 60 percent efficacy, even if the whole population is vaccinated. The value of R=3 assumes the return to the behaviour before the [pandemic](#). If we keep some level of restrictions and use masks, R [could be lower](#) and the herd immunity easier to achieve.

On the positive side, our simple models [might be too pessimistic](#) about the herd immunity levels. Additionally, if perhaps as many as 20 percent of the public already have had COVID-19, the required level of vaccination might be much easier to achieve.

Alternatively, vaccination [can be applied](#) to these segments of the society who are either at high risk of infection (healthcare and care home workers) or high risk of death (vulnerable, care home residents). This is the [recommended strategy](#) in the UK.



Are we there yet?

The results of the Pfizer vaccine trial are highly promising. But the road to eradicating the coronavirus is [likely to be long and difficult](#). Besides establishing the potential for the vaccine to protect against the virus, we also need to know whether it gives a lasting immunity or whether it would need to be applied repeatedly, for example, as with [tetanus](#) or [seasonal flu](#) vaccines.

But the policymakers and researchers also need to balance the requirement for stopping the pandemic with the [fears of side-effects](#) and the resulting [vaccine hesitancy](#).

While it is easy to dismiss these concerns, they need to be taken seriously if the vaccination is to be successful.

Adam Kleczkowski is Professor of Mathematics and Statistics @ University of Strathclyde.

Meet IRIS

Source: <https://biopix-t.com/>

IRIS is a compact device for performing real-time nucleic acid amplification. IRIS was created using three-dimensional (3D) additive manufacturing technology and operates via a Smartphone application.

The device can be used to extract rapidly quantitative information at a wide dynamic range of bacterial DNA, viral RNA and single point mutations. Detection can occur from genomic DNA or directly from crude samples (swabs, saliva and biopsy tissue).

Key features

- ❖ Ultra-fast detection time (5 to 20min)
- ❖ Use of crude sample (swab, saliva and biopsy tissue)
- ❖ Point-of-Care applications
- ❖ Battery operated
- ❖ Compact size
- ❖ Portable lightweight
- ❖ Up to 8-sample analysis
- ❖ User-friendly operation
- ❖ Smartphone application (Android, IOS)

Greek startup Biopix-T is on the brink of marketing the Iris appliance, which can detect Covid-19 in just half an hour.

The company created by researchers at the Foundation for Research and Technology-Hellas (FORTH) on Crete is hoping to start selling the portable appliance at the start of 2021.

Iris is a device that was created with the use of 3D printing and which conducts DNA tests. It can detect the RNA of the coronavirus in just **30**

minutes, Dr George Papadakis, one of the inventors of Iris and co-founder of Biopix-T, tells Kathimerini.

“Detection can occur from biological samples such as **saliva**, which allows the completion of tests in areas outside laboratories, such as hotels, airports, and even at home,” adds Papadakis.

The major advantage of this pocket Covid-detection lab is its particularly small size and cost: “Iris weighs just 370 grams and costs **less than 1,000 euros**. We do not need any expensive materials for its construction, as is the case with the appliances used for PCR molecular analysis; those appliances weigh more than 5 kilos and cost more than €10,000, while the analysis of each test takes more than an hour-and-a-half,” Papadakis points out.



The molecular detection of SARS-CoV-2 through Iris offers equally reliable results as the typical coronavirus test: “This has been confirmed by the Pasteur Institute in Athens, where patients’ samples have been successfully retested. Out of the 38 samples that the institute examined with its own technology, Iris detected 37 – i.e., a success rate over 97%. We also analyzed the 51 negative samples with 100% accuracy,” the Greek doctor stresses.

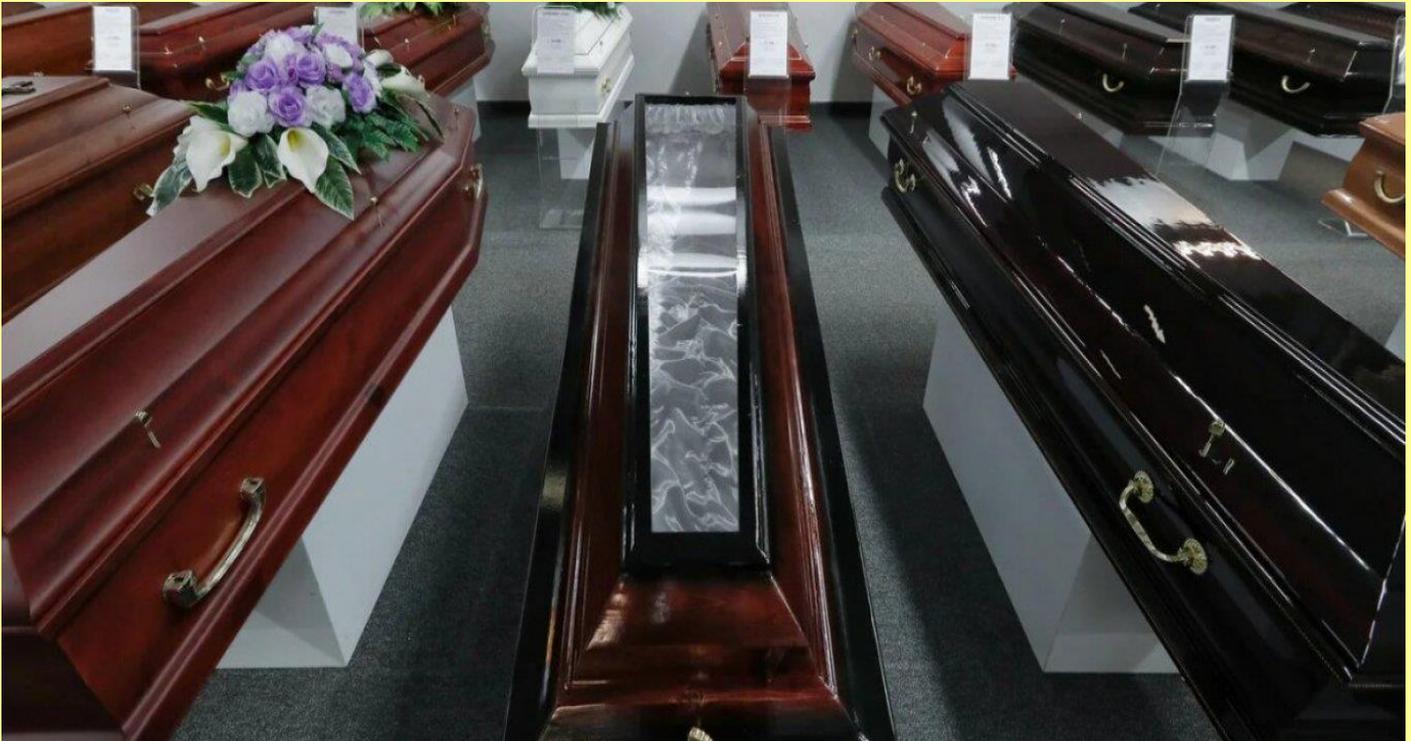
The company has already been approached by several countries around the world, from Africa, Europe, Asia and America, asking for the device to be sent over, while in Greece it has so far only been approached by private clinics. It has also secured funding from the European Commission, being among the 23 proposals selected from a pool of 450 when Brussels asked for innovative solutions to contain the pandemic.

Read more: [George Papadakis et.al, Real-time colorimetric LAMP methodology for quantitative nucleic acids detection at the point-of-care, BioRxiv 2020](https://doi.org/10.1101/2020.10.28.20214441)

Victims of Covid-19 in Moscow will be buried in the transparent lid coffins

Source: [https://rusbankrot.ru/en/society/victims-of-covid-19-in-moscow-will-be-buried-in-the-transparent-lid-coffins-/](https://rusbankrot.ru/en/society/victims-of-covid-19-in-moscow-will-be-buried-in-the-transparent-lid-coffins/)

Video: <https://www.youtube.com/watch?v=VFcAzQTbwww>



Nov 11 – The representative of the Ritual State Budgetary Institution Artem Yekimov said that from now on, the funerals of those who died from the coronavirus would be held with the use of transparent lid coffins. Previously, such people were buried in closed coffins.

As it was reported by TASS, the funeral agency introduced a new service to make the funerals more similar to the traditional ones. Due to the sanitary and epidemiological situation, contact with the coronavirus victims is prohibited - glass lids will help the relatives to take part in a farewell ceremony.

It is noted that it is necessary to maintain social distance and not forget about masks and gloves in the cemeteries and farewell halls of Moscow. It should be noted that funeral agencies offer the "online farewell" service - they can remotely arrange the burial, lay floral tributes, etc.

According to the official data for November 11, 19,851 new cases were detected in Russia. 18,616 patients have recovered and 432 have died. In Moscow, over the last 24 hours, 4477 cases were recorded. The number of active cases is approaching 130 thousand people, the number of deaths - 7,429.



The COVID-19 RT-PCR Test: How to Mislead All Humanity. Using a “Test” To Lock Down Society

By Dr. Pascal Sacré

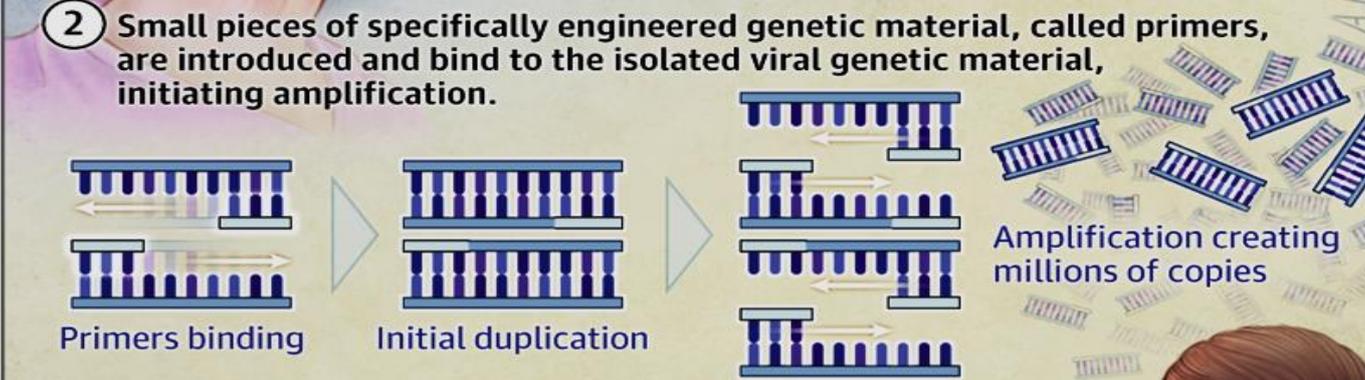
Source: <https://www.globalresearch.ca/covid-19-rt-pcr-how-to-mislead-all-humanity-using-a-test-to-lock-down-society/5728483>

How does PCR testing for COVID-19 work?

Polymerase chain reaction (PCR) testing can detect even very small amounts of viral genetic material in a sample by duplicating it many times over through a complex laboratory process called amplification.

- 1** A test sample is swabbed from the back of the nose and processed to isolate genetic material.


- 2** Small pieces of specifically engineered genetic material, called primers, are introduced and bind to the isolated viral genetic material, initiating amplification.


- 3** Fluorescent markers bound to the copies during PCR are released and can be detected when amplification occurs.



Positive result	When there is viral genetic material in the sample, amplification occurs, releasing enough fluorescent markers to be detected.
Negative result	If there is no viral genetic material in the sample, amplification will not occur and no fluorescent markers will be detected.

Dr Pascal Sacré is a physician specialized in critical care, author and renowned public health analyst, Charleroi, Belgium. He is a Research Associate of the Centre for Research on Globalization (CRG).



Believing in Conspiracy Theories Goes Hand in Hand with Vaccine Hesitancy

Source: <https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/believing-in-conspiracy-theories-goes-hand-in-hand-with-vaccine-hesitancy/>

Nov 11 – This week’s potential breakthrough on a COVID-19 [vaccine](#) has garnered much attention – but not everyone is happy. Anti-vaxxers and conspiracy theorists have been quick to spread misinformation.

Gul Deniz Salali, a British Academy Research Fellow and Lecturer in Evolutionary Anthropology/Medicine has written for [The Conversation](#) and Gavi, the Vaccine Alliance, about how conspiracies and vaccine hesitancy can threaten to derail science’s solution to the pandemic:

While developing an effective vaccine probably won’t bring an immediate end to the pandemic, it’s clear that things can’t begin to return to normal without one. Anything that reduces a future vaccine’s effectiveness will be a problem. This includes vaccine hesitancy – when people are reluctant or refuse to be vaccinated.

In a [recent survey](#), a colleague and I asked 1,088 people in the U.K. about their thoughts on a COVID-19 vaccine. About one in seven (14%) were “hesitant” to take one, and a further 3% said they would reject a vaccine outright.

This correlates with other studies. A YouGov survey earlier this year found that [one in six Britons](#) would either “definitely” or “probably” not get a COVID-19 vaccine. And in a recently published [international study](#), only 71% of British people said they would get vaccinated against the disease. Given that [50-75%](#) of people need to be immune to control the virus’s spread, this is worrying.

Our survey also examined what factors were associated with people’s decision-making about whether to accept a COVID-19 vaccine. A key factor we found to be associated with vaccine hesitancy was whether a person believed in the conspiracy theory that the coronavirus was artificially created. Among those in the U.K. who thought the virus came from a lab, only 69% said they would accept a COVID-19 vaccine. But acceptance rose to 88% among those who believed the virus originated naturally in wildlife.

This reinforces [previously found associations](#) between holding a conspiratorial worldview and being vaccine hesitant. Other [recent studies](#) have also found an association between believing COVID-19 conspiracies and being reluctant to take a COVID-19 vaccine.

The conspiracy about the virus’s artificial origins in particular was among those identified in one [international study](#) looking into this. But why do people who believe in conspiracies also reject vaccines? We can’t be sure, but we know people who believe in one conspiracy are [more likely to believe in others](#), and so may be more likely to believe false information about COVID-19 vaccines being harmful or the pandemic being a hoax.

We also know that people who hold a conspiratorial worldview are more likely to [reject scientific propositions](#) more widely. Vaccine hesitancy may just be a part of this.

Our survey also found that several other behavioural and demographic factors were associated with vaccine acceptance.

For instance, we asked participants about the level of their anxieties related to the pandemic, such as being more worried about catching or passing on the virus. A one point increase in their pandemic-related anxiety score (on a scale of one to four) increased the odds of vaccine acceptance by 36%.

In a separate question, we also asked respondents to give a percentage score for how likely they thought it was that they would catch COVID-19. A 10% increase in a person’s perceived risk of catching the disease increased the odds of them accepting the vaccine by 12%.

The frequency of watching, listening to or reading the news about the pandemic was also positively associated with vaccine acceptance among U.K. respondents.

Level of education did not predict vaccine acceptance, but did correlate with beliefs on the virus’s origin. Respondents with postgraduate and graduate degrees were more likely to believe in the natural origin of the virus compared with those without.

This is consistent with previous findings on the [link between](#) believing in conspiracies and lower levels of education. Likewise, existing research suggests that people who are vaccine hesitant are not necessarily less educated, as we found here.

Given the association between holding a conspiratorial worldview and a general rejection of scientific propositions – such as the safety of vaccines – combating vaccine skepticism will require us to think more strategically about how we communicate science.

Researchers have acknowledged the [ineffectiveness](#) of trying to reduce conspiratorial thinking simply by challenging people’s worldviews. This is mostly because people tend to discount information or evidence that challenges their preexisting beliefs (what’s known as “motivated reasoning”).

Nevertheless, understanding the cognitive mechanisms that motivate people to accept and reject vaccines should be our first step towards planning more effective strategies to promote vaccination uptake. Based on what we found in our survey, it may be that avoiding focusing



on the scientific rights and wrongs of vaccination and instead underlining the actual risk of disease is a more effective way of improving vaccine uptake.

New saliva-based antibody test for SARS-CoV-2 highly accurate in initial study

Johns Hopkins University Bloomberg School of Public Health

Source: <https://www.jhsph.edu/news/news-releases/2020/new-saliva-based-antibody-test-for-sars-cov-2-highly-accurate-in-initial-study.html>

Nov 13 – A new **saliva-based** test developed by a team at Johns Hopkins Bloomberg School of Public Health has been found to accurately **detect the presence of antibodies to SARS-CoV-2**, the virus that causes COVID-19, from small samples of saliva, according to a study led by Bloomberg School researchers. Such tests, the results of which can be obtained in a matter of hours, are seen as potential alternatives to blood-sample antibody tests for research and clinical use.

The test is based on multiple fragments, or "antigens," from the SARS-CoV-2 coronavirus, mostly from its outer spike and nucleocapsid proteins. In the study, the researchers found that their test detected antibodies to several of these antigens in saliva samples from all 24 participants who had confirmed SARS-CoV-2 exposure and whose symptoms had begun more than two weeks prior to the test. The test also reliably yielded negative results for saliva samples that had been collected from people prior to the COVID-19 pandemic.

The study appears online in the *Journal of Clinical Microbiology*.

"If our saliva-based assay's accuracy is borne out in larger studies, this noninvasive approach could make it easier to identify, at a population level, who has already had a SARS-CoV-2 infection and where gaps in seropositivity remain heading into the winter and beyond," says study senior author Christopher D. Heaney, PhD, MS, an associate professor with appointments in the departments of Environmental Health and Engineering, Epidemiology, and International Health at the Bloomberg School. "This could inform targeted vaccination efforts and, after vaccines start to roll out, help figure out how long vaccine-induced antibodies last—all without repeated, invasive blood draws," Heaney says.

The pandemic spread of SARS-CoV-2 has officially caused over 40 million infections and more than 1 million deaths worldwide. Many epidemiologists suspect that the actual spread of the virus has been much more extensive, but that and many other questions about the pandemic's extent and dynamics have so far been difficult or impossible to answer specifically. A relatively quick, inexpensive, noninvasive, and highly accurate antibody test could make such research much easier, however.

Heaney and colleagues previously have invented accurate saliva-based antibody tests for other disease-causing viruses including the enteric pathogen norovirus and liver-infecting hepatitis E virus.

Early in the pandemic, the research team developed a saliva-based test for SARS-CoV-2 antibodies, using a panel of 12 known viral antigens that are already used for blood-based antibody tests. Saliva samples for the test are collected by rubbing a sponge between people's teeth and gums, where saliva is known to be particularly enriched with antibodies.

That the test detected antibodies to several SARS-CoV-2 antigens in saliva samples from all 24 people who had confirmed SARS-CoV-2 exposure and whose symptoms had arisen more than two weeks before the test showed that the test could be very sensitive—that is, capable of identifying positive results.

The experiments also showed that the test could be highly specific—that is, capable of identifying those without the antibodies with a low rate of "false positives." In a set of 134 saliva samples that had been collected from people long before the COVID-19 pandemic—and thus presumed to be free of SARS-CoV-2 antibodies—several antigens in the test gave negative results in all but a few cases. Antibodies to one viral antigen seemed particularly specific: The scientists found negative results for it in all 134 of the pre-COVID-19 samples.

Saliva-based testing for immunoglobulin G antibodies to SARS-CoV-2 appeared to be just as sensitive and specific as blood-based serological testing. After SARS-CoV-2 infection, IgG antibodies typically elevate around day 10 after symptom onset, and these antibodies spill over from the blood into saliva.

The experiments on the whole have suggested that people who become infected with SARS-CoV-2 develop detectable antibodies in saliva at roughly the same time as they do in blood, about 10 days after COVID-19 symptom onset. The researchers expect that with an optimal algorithm that integrates results for just a few especially sensitive and specific antigens, their saliva-based test may be able to reliably detect SARS-CoV-2 antibodies starting around that same 10-day mark, but not earlier.

Since submitting their paper several months ago, Heaney and colleagues have been refining the test with experiments on thousands more saliva samples. **They expect that their saliva-based test will be useful for future research applications, especially large-scale or longitudinal studies for which invasive and potentially painful blood-based tests could be problematic.** For example:



- Measuring levels of SARS-CoV-2 exposure and immunity in a given neighborhood, city, county, or state, or in a particular category of workers.
- Identifying populations that might particularly benefit from focused vaccination campaigns.
- Monitoring changes in antibody-positivity rates over time to help assess government or corporate risk-reduction campaigns.
- Determining how long antibody levels persist in large populations following infection or vaccination.

The researchers also believe that their test is sensitive and specific enough to have potential use in clinical settings, such as screening individuals for prior SARS-CoV-2 exposures before they receive a vaccine or undergo some other medical procedure.

For clinical applications, the test would need Food and Drug Administration approval--at least emergency-use authorization--and Heaney says that with this goal in mind he and his colleagues are initiating discussions with the agency.

Shutting Down COVID-19 virus' destructive proteins with aerosolized molecules



Georgetown University Medical Center

Source: <https://gumc.georgetown.edu/news-release/shutting-down-covid-19-virus-destructive-proteins-with-aerosolized-molecules/#>

Nov 13 – Researchers at Georgetown University Medical Center have **successfully used molecules comprised of small strands of RNA to shut down the production of destructive proteins generated by the COVID-19 virus.** Additionally, the researchers are working to aerosolize the RNA molecules so that they could be incorporated in an inhalable drug that would mitigate viral chaos. The finding appears online today in *Gene Therapy*.

A key to the Georgetown research efforts was the **use of either microRNA (miRNA) or silencing RNA (siRNA, also known as small interfering RNA), both of which are RNA molecules.** These molecules can guide the ultimate expression of how protein production occurs in a virus. And it is the proteins produced by SARS-CoV-2 (the virus that causes COVID-19) that wreak havoc in people.

SARS-CoV-2 bears biological similarities to other respiratory viruses, such as the seasonal flu. The use of Tamiflu® (oseltamivir) to treat and prevent infection from the flu has proved to be helpful in lessening flu symptoms and its lethality in some people.

"We believe that our approach suppresses viral protein production and **could be used against virtually any respiratory virus,"** says G. Ian Gallicano, PhD, associate professor in the Department Biochemistry and Molecular and Cellular Biology at Georgetown University Medical Center. "Because of our results, Georgetown University has filed a patent application on the siRNA sequences that were shown to have the best effect on viral protein suppression."

Another key to the researcher's effort was the fact that miRNAs and siRNAs can be made fat-soluble, making them more easily absorbed using sprays into nasal passages lined with mucous membranes. Non-soluble fat compounds have been found to irritate nasal passages if inhaled.

While Tamiflu is a pill that can help control the flu, the Georgetown researchers' proposed drug has a tougher disease to try to control and thus its mechanism of action would be different. An aerosolized RNA-targeting agent against SARS-CoV-2 would interfere with the production of the protein spikes associated with the infectivity of the virus and thereby reduce subsequent viral spreading.

The scientist's viral strategy is based on research Gallicano and his collaborators have been conducting to treat heart failure, which uses miRNA to target genes that can affect the heart's ability to function well. Modifying this cardiac approach, the researchers showed that miRNAs and siRNAs can target messenger RNA inside a virus. As SARS-CoV-2 uses messenger RNA to generate the proteins necessary for multiplication and infection, the ability to target viral machinery within cells via siRNA, in particular, could help shut the virus down, noted Gallicano.

The scientists tested their approach using two types of cells in the lab, including one type of cell from a human windpipe (trachea). Against tracheal and non-tracheal cells, the researchers used siRNAs and found that they could suppress protein function in a dose-dependent manner, which they subsequently found was due to messenger RNA degradation.

The researchers investigated if miRNAs and siRNAs would shut down production of proteins vital to a healthy cell. Through a series of experiments, they found that there were fewer 'off-target' effects using siRNA compared to miRNA; off-target effects can cause normal cells to go haywire.

"If our approach proves successful in future experiments, we are confident this technology can be quickly moved from bench to bedside," concludes Gallicano.



Evidence-Based Practices for Acute Respiratory Failure and Acute Respiratory Distress Syndrome

A Systematic Review of Reviews

Jennifer N. Ervin, PhD; Victor C. Rentes, MS; Emily R. Dibble, BA; Michael W. Sjoding, MD; Theodore J. Iwashyna, MD, PhD; Catherine L. Hough, MD; Michelle Ng Gong, MD; and Anne E. Sales, PhD

Source: <https://www.sciencedirect.com/science/article/pii/S0012369220319061>

Hugs Are Not COVID-Safe, But There Are Other Ways to Show Affection

By Lara Herrero and Elina Panahi

Source: <https://www.sciencealert.com/hugs-may-not-be-covid-safe-but-there-are-other-ways-to-show-affection>

Nov 14 – In the time of COVID, greetings are no longer by handshakes, hugs or kisses on the cheek. An "elbow bump" is the preferred [pandemic](#) greeting.

Although COVID transmission in Australia is now minimal and restrictions are easing, [keeping 1.5 metres apart](#) (5 feet) from people outside your household is still strongly encouraged — meaning hugging is therefore discouraged.

Some people who live alone may by now have gone months without touching or hugging another person.

While avoiding close contact with others is one of the key measures to prevent [virus](#) spread, the irony is we probably need a hug more in 2020 than ever before.

So how dangerous is a hug really in the time of COVID?

Human contact is important

Our first contact in life is essentially the hug; newborn babies are constantly cradled, nursed and cuddled.

We are principally social creatures, and this need for human contact continues into [childhood and adulthood](#).

Culturally, hugging plays an important role as an affectionate greeting [in many countries](#).

Its value is clearly demonstrated in European countries such as Italy, France and Spain, where hugging is common. It's little surprise many Europeans are finding the new way of living with COVID [hard to accept](#).

Australians, too, tend to hug members of their families and close social circle.

While the act of hugging may give us a feeling of happiness and security, there's actually science behind the benefits of hugging for our [mental health and well-being](#).

Research shows [skin-to-skin contact](#) from birth enables babies' early ability to develop feelings and social skills, and [reduces stress](#) for both mother and baby.

When we hug someone, a hormone called [oxytocin](#) is released. This "cuddle hormone" fosters bonding, [reduces stress](#), and can [lower blood pressure](#).



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Positive touch, such as hugging, also releases the "happy chemical" [serotonin](#). Low levels of serotonin, and of a related happy hormone called dopamine, [can be associated](#) with depression, anxiety, and poor mental health.

"[Touch deprivation](#)" has become a serious consequence from the pandemic and may have affected many people's mental health, particularly those living alone or in unstable relationships.

Not only are we missing out on the positive emotions a hug can provide, but we're not getting the biochemical and physiological benefits either.

Can you hug wisely?

[SARS-CoV-2](#), the [coronavirus](#) that causes [COVID-19](#), is primarily spread from person to person through [respiratory droplets](#) emitted when an infectious person coughs, sneezes, talks, or even breathes.

We know we can contract COVID [through close contact with an infected person](#), so the act itself is quite risky if you, or the person you're hugging, is infectious. But we can't always identify who has the virus, making the risk of SARS-CoV-2 transmission via a hug difficult to assess.

Given people who are [asymptomatic](#) and [presymptomatic](#) have been shown to be able to spread the virus, a simple hug may have serious consequences.

Ultimately, all experts agree: best practice is to avoid physical contact with people not in your own household.

If you absolutely must hug someone, there are some things you should keep in mind to [minimise the risk](#) of transmission.

6 tips to limit the risk

1. Don't hug anyone showing COVID symptoms, or if you have any symptoms.
2. Don't hug a [vulnerable person](#) (the elderly, immunocompromised and those with other medical conditions), as these people will be at higher risk if they contract COVID.
3. When hugging another healthy person, avoid pressing your cheeks together; instead, turn your face in the opposite direction.
4. Wear a mask.
5. Hold your breath if you can. That way you can avoid transmitting or inhaling infectious respiratory droplets during the hug.
6. Wash or sanitise your hands before and after the hug.

Other ways to get your warm and fuzzies

Contact with animals can provide similar [mental health benefits](#) to hugging, and also [increases oxytocin](#). These are among the reasons pet therapy is used for people who are elderly or sick.

Maintaining social interactions and connections in the absence of direct touch can help too. [Virtual gatherings](#) can have a positive effect on people's well-being during isolation, and now we're increasingly able to gather in person again.

The pandemic has made us all realise how important social and physical contact can be to our health and well-being. While we may now appreciate the humble hug more than we did before, for the time being, it's safer to seek emotional support in other ways.

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Unexpected detection of SARS-CoV-2 antibodies in the pre-pandemic period in Italy

By Giovanni Apolone, Emanuele Montomoli, Alessandro Manenti, et al.

First Published November 11, 2020

Source: <https://journals.sagepub.com/doi/10.1177/0300891620974755>

Abstract

There are no robust data on the real onset of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and spread in the pre-pandemic period worldwide. We investigated the presence of SARS-CoV-2 receptor-binding domain (RBD)-specific antibodies in blood samples of 959 asymptomatic individuals enrolled in a prospective lung cancer screening trial between September 2019 and March 2020 to track the date of onset, frequency, and



temporal and geographic variations across the Italian regions. SARS-CoV-2 RBD-specific antibodies were detected in 111 of 959 (11.6%) individuals, starting from September 2019 (14%), with a cluster of positive cases (>30%) in the second week of February 2020 and the highest number (53.2%) in Lombardy. This study shows an unexpected very early circulation of SARS-CoV-2 among asymptomatic individuals in Italy several months before the first patient was identified, and clarifies the onset and spread of the coronavirus disease 2019 (COVID-19) pandemic. **Finding SARS-CoV-2 antibodies in asymptomatic people before the COVID-19 outbreak in Italy may reshape the history of pandemic.**

Moderna COVID-19 Vaccine mRNA-1273 Reports 94.5% Efficacy in Early Data

Source: <https://www.contagionlive.com/view/moderna-covid-19-vaccine-mrna-1273-94-5-efficacy-early-data>

Nov 16 – Moderna's [coronavirus 2019 \(COVID-19\) vaccine](#) candidate mRNA-1273 is associated with 94.5% efficacy in preventing the virus, according to preliminary results from its ongoing phase 3 trial.

In a report from *The New York Times* Monday morning, the biotechnology company's recently-submitted data to an independent data safety monitoring board reported that of the 95 participants in its phase 3 COVE trial to contract COVID-19, just 5 were vaccinated with the two-dose candidate, and 90 had received placebo.

None of the infected patients to receive mRNA-1273 developed severe COVID-19, while 11 (12%) of the placebo arm did. The company now anticipates to submit the candidate to the US Food and Drug Administration (FDA) for Emergency Use Authorization (EUA) following the review of its currently available safety data.

The news of Moderna's preliminary, non-published phase 3 results come exactly 1 week following an [announcement from Pfizer](#) that its vaccine candidate BNT162, in collaboration with BioNTech, achieved 90% efficacy in COVID-19 prevention in its earliest preliminary data from its phase 3 trial.

Moderna Chief Executive Officer Stéphane Bancel, said in a statement that this is the first "clinical validation that our vaccine can prevent COVID-19 disease, including severe disease."

The phase 3 COVE trial, designed in collaboration with the FDA and NIAID parent organization the National Institutes of Health (NIH), included US persons at greatest risk of COVID-19 severity—including 7000-plus volunteers aged ≥65 years old and 5000-plus with high-risk chronic conditions.

According to Moderna, these high-risk groups represent 42% of the total study participants.

People who walk dogs face 78% higher risk of catching Covid-19 - and receiving grocery deliveries is potentially dangerous too, study finds

Source: <https://www.dailymail.co.uk/news/article-8954431/Do-dogs-spread-coronavirus-Spanish-study-finds-owners-78-higher-risk-catching-it.html>



Nov 16 – Walking your pet dog may raise your risk of catching [coronavirus](#) by 78 per cent, a study has claimed. Spanish researchers looked at how different behaviours change people's likelihood of catching the virus — and found getting supermarket deliveries and dog-walking were significant.

They suggested dogs could be catching the virus and spreading it, or transporting it by touching contaminated surfaces in public and then their owners.

How much animals actually spread the virus is still not well understood, although there have been confirmed cases in cats and dogs and the disease ultimately came from bats via another species. Animals do not appear to get sick, however.

The scientists who carried out the study claimed dog owners should be extra careful about hygiene during and after taking their pet outdoors.

The study was done by the University of Granada and the Andalusian School of Public Health in Spain.

Researchers did a survey of 2,086 people in Spain, some 41 per cent of whom were middle-aged between 40 and 54 years old.

People were asked what they had done during the pandemic and whether they had caught coronavirus, then the scientists compared the result to work out which activities were riskiest. They found 4.7 per cent of the group caught Covid at some point – approximately 98 people.



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Activities that were linked to an increased risk of testing positive included accepting supermarket deliveries at home, which raised the risk by 94 per cent and was found to be more dangerous than actually going to the shop.

Working at the office, instead of from home, caused the risk to rise by 76 per cent, the research found.

Having someone else in the household test positive for Covid-19 caused someone's own risk to shoot up by 60 times.

And living with a dog which they took for walks outside raised someone's risk by 78 per cent, the team said.

'The results of our research warn of increased contagion among dog-owners,' said Professor Cristina Sánchez González.

'The reason for this higher prevalence has yet to be elucidated. Taking into account the current scarcity of resources to carry out the diagnosis of SARS-CoV-2 in humans, the possibility of diagnosis in dogs is extremely unlikely.'

Professor Sánchez González said there was not enough information available to be able to tell whether dogs spread the virus like people or simply acted as a surface that people could pick the virus up from.

It may even be possible that the virus was spread in their faeces, she added.

The study said it didn't make sense that children's playgrounds should be shut out of fear of the virus spreading, when dog parks could remain open, given that they appeared to be driving the coronavirus transmission.

The study did not find that other aspects of people's lives, such as who they lived with, their jobs or other pets, had any effect on the extra risk brought by the dog.

Professor Sánchez González added: 'In the midst of a pandemic and in the absence of an effective treatment or vaccine, preventive hygiene measures are the only salvation, and these measures should also be applied to dogs, which, according to our study, appear to directly or indirectly increase the risk of contracting the virus.'



►► The study was published in the journal [Environmental Research](#).

CAN YOU CATCH COVID-19 FROM YOUR PET?

Can animals catch Covid-19?

The chance of your dog catching Covid-19 strain is very slim, according to the World Health Organization (WHO).

Professor James Wood, head of veterinary medicine at the University of Cambridge, said: 'Despite millions of people having had Covid-19, the numbers of pets found to be ill or infected is still tiny.'

'Put simply, our pet dogs and cats can catch Covid-19 from us, when they are living with us, but only do on very rare occasions.'

Scientists say pets don't appear to get very sick with Covid-19, and various pet organisations and charities say there is no need to be worried.

The first dog in the world to catch coronavirus died after it was declared disease-free and returned home to its owner in Hong Kong. The owner of the 17-year-old Pomeranian, whose also had Covid-19, did not allow the dog to be autopsied, so the exact cause of death remains unknown.

How do animals get infected?

Animals are likely to catch the virus the same way a human would — when respiratory droplets enter the pets' nose or mouth.

Professor Wood said: 'Cats may become infected by the high doses of virus transmitted by their infected owners in some settings.'

'The relative size of a cat versus a human means that there is far less exhaled breath from one cat in a house, compared to the exhaled breath volumes from a human patient.'

'Further, the grooming behaviour of cats means that they are more likely to catch infection from an owner than vice versa.'

When pets have been reported to have the virus, they have signs that indicate a respiratory illness.

Downing Street said the first cat infected in England had symptoms of a respiratory infection with a nasal discharge and some shortness of breath.

Scientists have shown that cats, ferrets and hamsters are susceptible to SARS-CoV-2. But ducks, chickens and pigs don't appear to be.

Professor William Weir, of the University of Glasgow's School of Veterinary Medicine, said 'the significance of SARS-CoV-2 as a feline or canine pathogen is unknown'.

He added that there have been no reports of cats passing the virus to dogs or vice versa.

Can humans catch Covid-19 from animals?

There is no evidence that a human could catch the coronavirus from an animal in the same way as it would from another human.



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Covid-19 is mainly spread through droplets produced when an infected person coughs, sneezes, or speaks.

Jonathan Ball, professor of molecular virology at Nottingham University, said pets produce 'very low levels of the virus' compared to humans.

Professor James Wood, head of department of veterinary medicine, University of Cambridge, added that pets would exhale far less breath — which may have virus droplets inside — than humans.

In any case where a pet has tested positive for the virus, the owner reportedly had it first.

The WHO says: 'While there has been one instance of a dog being infected in Hong Kong, to date, there is no evidence that a dog, cat or any pet can transmit Covid-19.'

Professor Weir said: 'At present, there is no evidence that cats, dogs or other domestic animals play any role in the epidemiology of human infections with SARS-CoV-2.'

An official report by the UK's top vet said household pets may carry the virus on their fur, which risks spreading the disease from person to person.

It said: 'Close contact such as cuddling, grooming, feeding and allowing animals to share food could all allow the transfer of virus.'

The document, prepared by the UK's Chief Veterinary Officer, was considered on April 30 at a meeting of the Government's Scientific Advisory Group for Emergencies (SAGE).

The report warned that the virus could survive on pet fur, meaning 'there is a plausible pathway that the animal may act as a fomite [infectious object] for at least a few hours and transfer virus to others in the household.'

It added that pet owners who have symptoms to prevent their dog or cat from coming into contact with 'susceptible humans'.

What precautions should I take when dealing with animals?

If you are sick with Covid-19, it is recommended you restrict contact with your dog and see if other people can look after them.

The Centre for Disease Control and Prevention says: 'It is still recommended that people sick with Covid-19 limit contact with animals until more information is known about the virus. This can help ensure both you and your animals stay healthy.'

How to you stay safe around your pet:

- Wash your hands after handling animals, their food, waste, or supplies
- Practise good pet hygiene and clean up after pets properly
- Take pets to the vet regularly and talk to them if you have questions about your pet's health

➡ Read more: [The spread of SARS-CoV-2 in Spain: Hygiene habits, sociodemographic profile, mobility patterns and comorbidities - ScienceDirect](#)

Rapid COVID-19 Antibody Test Is Not as Accurate as We Were Told, Scientists Warn

Source: <https://www.sciencealert.com/rapid-covid-19-test-is-not-as-accurate-as-we-were-told-scientists-warn>

Nov 16 – A rapid finger-prick test designed to show whether a person has previously been infected with [SARS-CoV-2](#) is significantly less accurate than earlier research suggested, scientists report in a new study.

The [AbC-19 Rapid Test](#), developed for use by healthcare professionals in the UK and EU, looks for [antibodies](#) against the [virus](#) in a small drop of blood from a finger-prick, and can show results in just 20 minutes, without needing specialised lab equipment.

The idea is that healthcare workers can quickly and easily run the test in public at points of care, and receive results on the spot to provide insight into how many people in the community have antibodies against SARS-CoV-2 – a strong selling point that led the UK government to order a million of the test devices for [£75 million](#) (almost US \$100 million).

That order was also guided by positive results of an ["extensive validation study"](#) funded by the UK-Rapid Test Consortium – a body that represents commercial companies, including Abingdon Health and Omega Diagnostics, which developed AbC-19.

[That study](#), led by researchers from Ulster University in Northern Ireland, is publicly available but is still awaiting [peer review](#).

It found, effectively, that the AbC-19 Rapid Test would give no false positive results, with a specificity of 100 percent. Specificity is the ability to correctly identify a true negative sample, rather than give a false negative.

The Ulster study also found that the test's sensitivity was 97.7 percent. Sensitivity is the ability to correctly identify a true *positive* sample.

Now, however, a [new independent study](#) of AbC-19 has found significantly different results in terms of the finger-prick test's accuracy.



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A team of scientists from the Universities of Bristol, Cambridge, and Warwick analysed blood samples from 2,847 key workers (healthcare workers and first responders) – 268 of which had previously delivered a positive PCR result for COVID, while 2,579 had an unknown previous infection status.



In addition, they tested samples from 1,995 pre-pandemic blood donors (known negatives from before the coronavirus pandemic).

The results of the new study suggest AbC-19's specificity is 97.9 percent (not 100 percent, as the Ulster study claimed), and its sensitivity is 92.5 percent (based on PCR confirmed cases) but can drop as low as 84.7 percent in cases where prior infection status is entirely unknown.

The differences between the two studies likely reflect differences in how the two groups tested the AbC-19 device, but it's being suggested that the Ulster research didn't provide as clear a picture as it might have of the test's accuracy.

"[The Ulster study] chose as known positives people who had already tested positive for antibodies to SARS-CoV-2 proteins in three other assays and chose as known negatives people who tested negative in the same three assays," two clinical experts, Dipender Gill and Mark J Ponsford, write in a [commentary article](#) on the new study's findings.

"Such a relatively extreme choice of reference standards likely overestimated the accuracy of the AbC assay, owing to a well known phenomenon called [spectrum bias](#)."

Extrapolating further, the independent study – led by first author Ranya Mulchandani from the UK Field Epidemiology Training Program – found one in five key workers testing positive with AbC-19 would be a false positive, in a scenario where 10 percent of the tested population had been infected with SARS-CoV-2.

While no test is ever perfect, the reported reduced accuracy of the AbC-19 test is something people should be aware of, researchers say.

"These new data are very useful at a public health level," [says infectious diseases researcher Eleanor Riley](#) from the University of Edinburgh, who wasn't involved with the studies.

"If we know how many cases the test is missing, and how many it is wrongly calling positive, we can adjust our population estimates of prior infection accordingly."

For its part, the UK Department for Health & Social Care (DHSC) insists the new findings aren't a problem for AbC-19's intended use – which is in monitoring prior infections in the community, from a healthcare level, and not diagnosing current [COVID-19](#) infections in members of the public.

"This report shows these tests are approved for use in surveillance studies, which is what they were purchased for," [a statement reads](#).

"They were never intended for, and have never been issued for widespread public use and it is misleading and unnecessarily inflammatory to purposefully ignore this fact in the report."

Nonetheless, the fallout from these new revelations may be considerable. There are allegations that the UK government [delayed the findings](#) of the new study, and already [legal proceedings have commenced](#) against the government in relation to the tests.

►► The findings are reported in [The BMJ](#).

EDITOR'S COMMENT: It is not wise to generalize the results of a given test as if they are applicable for all rapid tests available in the market. In example. The relative overall sensitivity of **ZEKMED/HZS IgG/IgM Rapid Test Cassette** is 97% compared with PCR results, and the relative overall specificity of the Test is 99.9 % compared with PCR results – results obtained



in less than 15 min. In addition, the product is FDA and Canada Health approved. Besides, the accuracy of PCR is approximately 70% but it is globally considered as the “gold standard”.

A 'safe hug' amid COVID-19 pandemic



How to Swab a Patient for COVID After a Tracheostomy

By Robert D. Glatter, MD and Nina L. Shapiro, MD

Source: <https://www.medscape.com/viewarticle/940508>

Hi. I'm Dr Robert Glatter, medical advisor for Medscape Emergency Medicine. I would like to welcome [Dr Nina Shapiro](#), a professor and director of pediatric otolaryngology at the David Geffen School of Medicine at UCLA.

Today, we will talk about [a recent case report in the British Medical Journal](#) that really is important for all medical providers and all surgeons. It involved a patient with a [tracheostomy](#) who had a complication after being swabbed through the tracheostomy site. It turned out that the end of the nasal swab broke off and bronchoscopy was required in order to retrieve the foreign body.

▶▶ [Read the full article at source's URL.](#)

'Breakthrough Finding' Reveals Why Certain COVID Patients Die

Source: <https://www.medscape.com/viewarticle/940968>

Nov 13 – Dr. Megan Ranney has learned a lot about COVID-19 since she began treating patients with the disease in the emergency department in February.

But there's one question she still can't answer: What makes some patients so much sicker than others?

Advancing age and underlying medical problems explain only part of the phenomenon, said Ranney, who has seen patients of similar age, background and health status follow wildly different trajectories.

"Why does one 40-year-old get really sick and another one not even need to be admitted?" asked Ranney, an associate professor of emergency medicine at Brown University.

In some cases, provocative new research shows, some people — men in particular — succumb because their immune systems are hit by friendly fire. Researchers hope the finding will help them develop targeted therapies for these patients.

In [an international study](#) in Science, 10% of nearly 1,000 COVID patients who developed life-threatening pneumonia had antibodies that disable key immune system proteins called interferons. These antibodies — known as autoantibodies because they attack the body itself — were not found at all in 663 people with mild or asymptomatic COVID infections. Only four of 1,227 healthy individuals had the autoantibodies. The study, published on Oct. 23, was led by the COVID Human Genetic Effort, which includes 200 research centers in 40 countries.

"This is one of the most important things we've learned about the immune system since the start of the pandemic," said Dr. Eric Topol, executive vice president for research at Scripps Research in San Diego, who was not involved in the new study. "This is a breakthrough finding." (Topol is also editor-in-chief of Medscape.)

In [a second Science study](#) by the same team, authors found that an additional 3.5% of critically ill patients had mutations in genes that control the interferons involved in fighting viruses. Given that the body has 500 to 600 of these genes, it's possible researchers will find more mutations, said Qian Zhang, lead author of the second study.

[Interferons](#) serve as the body's first line of defense against infection, sounding the alarm and activating an army of virus-fighting genes, said virologist Angela Rasmussen, an associate research scientist at the Center of Infection and Immunity at Columbia University's Mailman School of Public Health.

"Interferons are like a fire alarm and a sprinkler system all in one," said Rasmussen, who wasn't involved in the new studies.

[Lab studies](#) show interferons are suppressed in some people with COVID-19, perhaps by the virus itself.

Interferons are particularly important for protecting the body against new viruses, such as the coronavirus, which the body has never encountered, said Zhang, a researcher at Rockefeller University's St. Giles Laboratory of Human Genetics of Infectious Diseases.

When infected with the novel coronavirus, "your body should have alarms ringing everywhere," said Zhang. "If you don't get the alarm out, you could have viruses everywhere in large numbers."

Significantly, patients didn't make autoantibodies in response to the virus. Instead, they appeared to have had them before the pandemic even began, said Paul Bastard, the antibody study's lead author, also a researcher at Rockefeller University.

For reasons that researchers don't understand, the autoantibodies never caused a problem until patients were infected with COVID-19, Bastard said. Somehow, the novel coronavirus, or the immune response it triggered, appears to have set them in motion.

"Before COVID, their condition was silent," Bastard said. "Most of them hadn't gotten sick before."



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Bastard said he now wonders whether autoantibodies against interferon also increase the risk from other viruses, such as influenza. Among patients in his study, "some of them had gotten flu in the past, and we're looking to see if the autoantibodies could have had an effect on flu."

Scientists have long known that viruses and the immune system compete in a sort of arms race, with viruses evolving ways to evade the immune system and even suppress its response, said Sabra Klein, a professor of molecular microbiology and immunology at the Johns Hopkins Bloomberg School of Public Health.

Antibodies are usually the heroes of the immune system, defending the body against viruses and other threats. But sometimes, in a phenomenon known as autoimmune disease, the immune system appears confused and creates autoantibodies. This occurs in diseases such as [rheumatoid arthritis](#), when antibodies attack the joints, and [Type 1 diabetes](#), in which the immune system attacks insulin-producing cells in the pancreas.

Although doctors don't know the exact causes of autoimmune disease, they've observed that the conditions often occur after [a viral infection](#). Autoimmune diseases are more common as people age.

In yet another unexpected finding, 94% of patients in the study with these autoantibodies were men. About 12.5% of men with life-threatening COVID pneumonia had autoantibodies against interferon, compared with 2.6% of women.

That was unexpected, given that autoimmune disease is far [more common in women](#), Klein said.

"I've been studying sex differences in viral infections for 22 years, and I don't think anybody who studies autoantibodies thought this would be a risk factor for COVID-19," Klein said.

The study might help explain why men are more likely than women to become critically ill with COVID-19 and die, Klein said.

"You see significantly more men dying in their 30s, not just in their 80s," she said.

Akiko Iwasaki, a professor of immunobiology at the Yale School of Medicine, noted that several genes involved in the immune system's response to viruses are [on the X chromosome](#).

Women have two copies of this chromosome — along with two copies of each gene. That gives women a backup in case one copy of a gene becomes defective, Iwasaki said.

Men, however, have only one copy of the X chromosome. So if there is a defect or harmful gene on the X chromosome, they have no other copy of that gene to correct the problem, Iwasaki said.

Bastard noted that one woman in the study who developed autoantibodies has a rare genetic condition in which she has only one X chromosome.

Scientists have struggled to explain why men have a higher risk of hospitalization and death from COVID-19. When the disease first appeared in China, experts speculated that men suffered more from the virus because they are much more likely to smoke than Chinese women.

Researchers quickly noticed that men in Spain were also more likely to die of COVID-19, however, even though men and women there smoke at about the same rate, Klein said.

Experts have hypothesized that men might be put at higher risk by being less likely to wear masks in public than women and more likely to delay seeking medical care, Klein said.

But behavioral differences between men and women provide only part of the answer. Scientists say it's possible that the hormone estrogen may somehow protect women, while testosterone may put men at greater risk. Interestingly, recent studies have found that obesity poses a [much greater risk to men](#) with COVID-19 than to women, Klein said.

Yet women have their own form of suffering from COVID-19.

Studies show women are [four times](#) more likely to experience long-term COVID symptoms, lasting weeks or months, including fatigue, weakness and a kind of mental confusion known as "brain fog," Klein noted.

As women, "maybe we survive it and are less likely to die, but then we have all these long-term complications," she said.

After reading the studies, Klein said, she would like to learn whether patients who become severely ill from other viruses, such as influenza, also harbor genes or antibodies that disable interferon.

"There's no evidence for this in flu," Klein said. "But we haven't looked. Through COVID-19, we may have uncovered a very novel mechanism of disease, which we could find is present in a number of diseases."

To be sure, scientists say that the new study solves only part of the mystery of why patient outcomes can vary so greatly.

Researchers say it's possible that some patients are protected by past exposure to other coronaviruses. Patients who get very sick also may have inhaled higher doses of the virus, such as from repeated exposure to infected co-workers.

Although doctors have looked for links between disease outcomes and blood type, studies have produced [conflicting results](#).



Screening patients for autoantibodies against interferons could help predict which patients are more likely to become very sick, said Bastard, who is also affiliated with the Necker Hospital for Sick Children in Paris. Testing takes about two days. Hospitals in Paris can now screen patients on request from a doctor, he said.

Although only 10% of patients with life-threatening COVID-19 have autoantibodies, "I think we should give the test to everyone who is admitted," Bastard said. Otherwise, "we wouldn't know who is at risk for a severe form of the disease."

Bastard said he hopes his findings will lead to new therapies that save lives. He notes that the body manufactures many types of interferons. Giving these patients a different type of interferon — one not disabled by their genes or autoantibodies — might help them fight off the virus.

In fact, a pilot study of 98 patients published Thursday in [the Lancet Respiratory Medicine](#) journal found benefits from an inhaled form of interferon. In the industry-funded British study, hospitalized COVID patients randomly assigned to receive interferon beta-1a were more than twice as likely as others to recover enough to resume their regular activities.

Researchers need to confirm these findings in a much larger study, said Dr. Nathan Peiffer-Smadja, a researcher at Imperial College London who was not involved in the study but wrote an accompanying editorial. Future studies should test patients' blood for genetic mutations and autoantibodies against interferon, to see if they respond differently than others.

Peiffer-Smadja notes that inhaled interferon may work better than an injected form of the drug because it's delivered directly to the lungs. While injected versions of interferon have been used for years to treat other diseases, the inhaled version is still experimental and not commercially available.

And doctors should be cautious about interferon for now, because a study led by the [World Health Organization](#) found no benefit to an injected form of the drug in COVID patients, Peiffer-Smadja said. In fact, there was a trend toward higher mortality rates in patients given interferon, although this finding could have been due to chance. Giving interferon later in the course of disease could encourage a destructive immune overreaction called a cytokine storm, in which the immune system does more damage than the virus.

Around the world, scientists have launched more than 100 clinical trials of interferons, according to [clinicaltrials.gov](#), a database of research studies from the National Institutes of Health.

Until larger studies are completed, doctors say, Bastard's findings are unlikely to change how they treat COVID-19.

Dr. Lewis Kaplan, president of the Society of Critical Care Medicine, said he treats patients according to their symptoms, not their risk factors.

"If you are a little sick, you get treated with a little bit of care," Kaplan said. "You are really sick, you get a lot of care. But if a COVID patient comes in with hypertension, diabetes and obesity, we don't say, 'They have risk factors. Let's put them in the ICU.'"

How Long Should Docs and Nurses with COVID Stay Home?

By Alok S. Patel, MD

Source: <https://www.medscape.com/viewarticle/939579>

Nov 13 – Let's say you're exposed to the coronavirus. Maybe you test positive and have mild symptoms, or none at all. And let's say you're working in a short-staffed hospital. Do you stay home? It's actually complicated.

But when it comes to what others should do, it's not complicated. We tell people exactly what the guidelines are.

Think back to when members in the White House were exposed to coronavirus. Doctors blasted social media with CDC recommendations. Many [public health experts and doctors called for President Trump to isolate](#) after he tested positive. [The Infectious Diseases Society of America recommended that Mike Pence quarantine for 14 days](#) because of his exposure even though he tested negative. Now, they're not essential workers, per se; they are not on the front lines in a hospital or clinic, and this is a politically charged example.

But if we just push that tribal mentality aside, I still want to know if healthcare professionals stand by the same CDC guidelines when it comes to their own exposures or if they're around a close contact.

According to the CDC, a close contact is defined as being within 6 feet of someone who's tested positive for at least 15 minutes, starting 2 days prior to their illness onset. That has happened to so many of us, both in the hospital and out.

Let's say you have been exposed and you're scheduled to work shifts in the hospital. There don't seem to be clear guidelines on what you're supposed to do if you're exposed and you test negative. It kind of depends on who you ask.

I've heard of people saying that in this exact situation, they were told to quarantine for 10 days. Others said 72 hours. Others were told that they could go right back to work as long as they didn't have any symptoms. But what if you test positive?



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[According to the CDC](#), if you test positive and you're asymptomatic, you can come back to work if it's been 10 days since your test. If you test positive and you have symptoms, you can come back to work if it's been 10 days since your symptoms first appeared, 24 hours since your last fever, and if your symptoms have improved.

These recommendations kind of concern me because, based on how strained our healthcare system is, I don't know how closely they are adhered to.

[I read one story about a nurse who tested positive](#), was coughing and had GI symptoms, but because she was fever free, she was told to come back to work within 2 days. This sends a terrible message and it adds to the [reality of "presenteeism," where people go to work when they are sick](#), and they shouldn't be there because they can't fully, safely do their jobs.

Now, I don't think healthcare professionals are inherently irresponsible, but for many reasons, many of us do show up to work when we're sick, and there are surveys that demonstrate this. People in healthcare [cite a lot of different reasons why they feel pressured to do this](#). They're afraid of letting down their patients or colleagues, they're afraid of being criticized, or they're afraid they're going to lose continuity of care.

Also, not every hospital service has backup call or a jeopardy system. [Some people have seen pay cuts](#) or lost their PTO, or they [feel pressured by administration or their colleagues to go back to work](#) faster than they should. In the end, I really hope our colleagues feel supported enough to say, "Hey, you know what? I've been exposed. I may need to quarantine."

This is a loaded topic. I know. We're still in this pandemic and we're heading into cold and [flu](#) season. I want to hear from all of you. What do you think we healthcare professionals should actually be doing if we're exposed or if we test positive and still have mild or no symptoms? Also, what changes need to be made to ensure that our colleagues who are sick actually stay home? Comment below.

Alok S. Patel, MD, is a pediatric hospitalist, television producer, media contributor, and digital health enthusiast. He splits his time between New York City and San Francisco as he is on faculty at both Columbia University/Morgan Stanley Children's Hospital and the University of California San Francisco Benioff Children's Hospital.

Pfizer, BioNTech Report **95% Final Efficacy for COVID-19 Vaccine**

That 95% efficacy rate is based on nearly twice as many COVID-19 cases as the 94 cases reported in early data released last week from the 43,538-participant Phase III trial (NCT04368728). That data showed the vaccine to be more than 90% effective in preventing COVID-19 in participants without evidence of prior SARS-CoV-2 infection. [+ MORE](#)

SARS-CoV-2 and Smoking: How **Cigarette** Smoke Increases Infection Severity

Smoking is associated with an increased risk of severe COVID-19. UCLA researchers, using a model of airway tissue created from human stem cells, have pinpointed how smoking cigarettes may cause more severe infection by SARS-CoV-2 in the airways of the lungs. [+ MORE](#)

FDA Authorizes First COVID-19 Test for **Self-Testing at Home**

Source: <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-first-covid-19-test-self-testing-home>

Nov 17 – Today, the U.S. Food and Drug Administration issued an [emergency use authorization \(EUA\)](#) for the first COVID-19 diagnostic test for self-testing at home and that provides rapid results. The [Lucira COVID-19 All-In-One Test Kit](#) is a molecular (real-time loop mediated amplification reaction) single use test that is intended to detect the novel coronavirus SARS-CoV-2 that causes COVID-19.



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“The FDA continues to demonstrate its unprecedented speed in response to the pandemic. While COVID-19 diagnostic tests have been authorized for at-home collection, this is the first that can be fully self-administered and provide results at home. This new testing option is an important diagnostic advancement to address the pandemic and reduce the public burden of disease transmission,” said FDA Commissioner Stephen M. Hahn, M.D. “Today’s action underscores the FDA’s ongoing commitment to expand access to COVID-19 testing.”



The Lucira COVID-19 All-In-One Test Kit test has been authorized for home use with **self-collected nasal swab samples in individuals age 14 and older** who are suspected of COVID-19 by their health care provider. It is also authorized for use in point-of-care (POC) settings (e.g., doctor’s offices, hospitals, urgent care centers and emergency rooms) for all ages but samples must be collected by a healthcare provider when the test is used at the POC to test individuals younger than 14 years old. The test is currently authorized for prescription use only.



The test works by swirling the self-collected sample swab in a vial that is then placed in the test unit. In 30 minutes or less, the results can be read directly from the test unit’s light-up display that shows whether a person is positive or negative for the SARS-CoV-2 virus. Positive results indicate the presence of SARS-CoV-2. Individuals with positive results should self-isolate and seek additional care from their health care provider. Individuals who **test negative** and experience COVID-like symptoms should follow up with their health care provider as negative results do not preclude an individual from SARS-CoV-2 infection.

“Today’s authorization for a complete at-home test is a significant step toward FDA’s nationwide response to COVID-19. A test that can be fully administered entirely outside of a lab or healthcare setting has always been a major priority for the FDA to address the pandemic. Now, more Americans who may have COVID-19 will be able to take immediate action, based on their results, to protect themselves and those around them,” said Jeff Shuren, M.D., J.D., director of FDA’s Center for Devices and Radiological Health. “We look forward to proactively working with test developers to support the availability of more at-home test options.”

An important component to successful at-home testing is the ability to efficiently track and monitor results. As noted in this EUA, prescribing health care providers are required to report all test results they receive from individuals who use the test to their relevant public health authorities in accordance with local, state and federal requirements. Lucira Health, the test manufacturer, has also developed box labeling, quick reference instructions and health care provider instructions to assist with reporting.

Diagnostic testing remains one of the pillars of our nation’s response to COVID-19. The FDA continues its public health commitment to pursue new approaches that help make critical tests available to more Americans through EUA authority.

Has COVID-19 changed the aerospace industry forever?

Source: <https://newatlas.com/aircraft/aerospace-industry-covid-19-impact-future/>

Nov 17 – The COVID-19 pandemic has impacted society and ordinary citizens on a scale not seen since the Second World War. Whole continents have been paralyzed, economies have been shut down, and civil rights have been restricted in an effort to fight the virus. One aspect of this society-wide shock has been the deep impact the pandemic is having on industries such as aerospace. During a recent [profile interview](#), Dr. Carlos Cesnik, the director of the Airbus-University of Michigan Center for Aero-Servo-Elasticity of Very Flexible Aircraft, was asked a routine question about what he thought the aircraft of the future would look like. The result was rather surprising.

"If we are having this conversation in early March," said Cesnik, "I could give you an answer based on what we're doing. Today. I'm not sure if I can answer the question.

"Here's the big issue. First, the aviation industry has been riding on a five to six percent increase in passenger demand on a yearly basis. Basically, it rides with the world GDP and



the anticipation of the number of new aircraft and so forth. It drives a lot of development, a lot of sales, a large backlog of orders. On top of that, the aerospace industry has committed to seriously reduce aircraft emissions. For that, the things the Center is doing will play a significant role. Now, suddenly, all got disrupted in a very short period of time. It's scary, but it looks like we are living through a major rescaling of our air transportation system."

The effects the travel bans and quarantines have had a huge impact on the airline business as what seemed like a temporary measure stretched out to eight months and counting. But the extent of the impact on the aerospace industry as a whole, and how this will affect not only air travel but also the technology behind it, has gone largely unnoticed.

The initial shock of the COVID crisis was massive. Whole fleets of aircraft were grounded across the globe. In the early days of the pandemic, air travel dropped by 90 percent. Even by September, as restrictions began to be lifted, passenger travel was still down 68 percent compared to 2019, bookings are down 52 percent, planes are flying at about 60 percent capacity, and some major locations are still all but cut off from air travel or require stringent quarantine measures for arrivals.

Bear in mind that this fall in business is in an industry that runs on an assumption of constant growth and works on the kind of paper-thin profit margins that one normally associates with restaurants, though on a much larger scale – to the tune of a total market value of US\$8.5 trillion, down from US\$8.7 trillion before COVID-19.

The air travel industry depends on very high passenger volume with airliners filled to capacity. If airlines cannot get bums on seats, they very quickly start running at a loss, and this isn't helped by the tortuously complicated economics of national airlines, airport operations, gate allocations, ticket pricing, and fuel costs.

And it isn't just the airlines. Oil companies supplying fuel are hit because fewer passengers mean fewer, if any, flights, which means lower demand for fuel, leading to lower fuel prices, and lower, if any, return on investments. Similar impacts also apply to aircraft manufacturers, both in building and maintaining airliners, parts suppliers, ground transportation of aircraft-related goods, catering, and a thousand other knock-on effects that are often hard to quantify.

In simple economic terms, airlines are billions of dollars in debt, with at least 18 declaring bankruptcy and many more furloughing or laying off personnel. Even the most optimistic projections see recovery as years away.

The impact goes far beyond economics or ruined holiday plans. The pandemic is also altering air travel in ways that may make flying very different in a very short time.

Shocking events like pandemics can resonate through society in unexpected ways. Take a look back to the year 1347 when the Black Death arrived in Europe. Over the next fifty years it spread throughout the continent and killed half the population. It also resulted in a redistribution of land and inherited wealth trickling down to all levels of society, boosting standards of living and sparking a number of number technological innovations, including the development of devices to increase the production of various goods with less labor.

What we're seeing in our modern aerospace industry isn't quite so profound or far reaching, but the pandemic is already introducing the need for innovations as well as goosing along industry trends that were starting to roll before the virus turned up.

A case in point is the kinds of aircraft that are flying. Changes in the economics of flight were moving the industry away from jumbo jets serving large hub airports and the [Airbus A380](#) and the Boeing [747](#) lines were both already winding up production, but when COVID-19 arrived, it accelerated matters as British Airways announced the grounding of its entire 747 fleet in premature retirement. Many other airlines are making similar adjustments, with Delta and Lufthansa cutting their fleets by 100 aircraft each. In fact, one of the few corners of the aerospace industry where business is booming is in the boneyards where unwanted aircraft go to rust and be picked over for spare parts.

What this means is that we're going to see many fewer large aircraft for passengers, though it's likely that many will be converted to carry freight. Boeing sees the 32,700 new planes projected to be built in the next 20 years being dominated by single-aisle, two-engine aircraft like the [737 MAX](#) as people opt for regional or point-to-point flights.

Airports are also changing. Health concerns and social distancing requirements have made it clear that the standard giant, crowded airports are no longer fit to task so long as people and governments are worried about COVID. That will also have a knock-on effect, at least in the United States, where airlines spend heavily on airport improvements in exchange for favorable gate access.

The result of this, plus the development of more advanced [remote](#) and autonomous air traffic control systems, means that regional or even small municipal airports might take up some or even most of the passenger traffic, perhaps leaving the large airports for freight. This is also a trend that's been rolling forward for some years, but the pandemic might be the slope that causes it to pick up speed.

Other technical advances that might be seen are things like UV wands or UV robots to sanitize air cabins in between flights in a way that's much faster, more efficient, and safer than disinfectants. Germ-killing coatings could also be used and [lavatories](#) could be made self-disinfecting between visits.





Aircraft may use lavatories that sanitize themselves with UV lamps (Boeing)

Cesnik says that one possibility would be to use plastic partitions between seats, though this would have safety problems and would certainly cut down on capacity. An alternative might be to completely redesign the cabin, or even the entire aircraft, in a way that enforces social distancing or essentially isolates passengers from one another. But this is hardly be practical and certainly not cost-effective, nor is having people fly across the Atlantic in [business jets](#) and prop planes, with the average charter rate for a small aircraft running as much as US\$8,000 per hour.

On the other hand, there may be realistic potential for a shift towards the use of smaller aircraft for regional travel, which could in turn provide impetus for fledgling [electric aircraft technology](#) and even feed into the development of [air taxis](#) – though these are more about getting around densely built-up urban areas than any sort of replacement for conventional aircraft.

The changes being brought about by the COVID-19 will certainly stay with the aerospace industry in the medium- to long-term. While the freight, charter, space, and defense sectors already look to be doing much better, but the passenger sector is unlikely to return to any semblance of normal in the near future. Even after vaccines become available and international borders open up, reluctance to travel by air is likely to linger for some time.

What's **Not Being Said** About the Pfizer Coronavirus Vaccine. “Human Guinea Pigs”?

By F. William Engdahl

Source: <https://www.globalresearch.ca/what-not-said-pfizer-coronavirus-vaccine/5729461>

Nov 15 – *Bill Gates is actively financing and promoting new untested vaccines supposed to keep us at least somewhat safe from a ‘ghastly’ death from the novel coronavirus and supposedly allow us to resume somewhat “normal” lives. The Pharma giant Pfizer has now announced what they claim were spectacular results in initial human tests. They use an experimental technology known as gene editing, specifically mRNA gene-editing, something never before used in vaccines. Before we rush to get jabbed in hopes of some immunity, we should know more about the radical experimental technology and its lack of precision.*



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The financial world went ballistic on November 9 when the pharma giant Pfizer and its German partner, BioNTech, announced in a company press release that it had developed a vaccine for Covid19 that was “90%” effective. The controversial US head of NIAID, Tony Fauci rushed to greet the news and the EU announced it had purchased 300 million doses of the costly new vaccine. If you believe financial markets, the pandemic is all but past history.

▶▶ [Read the entire article at source’s URL.](#)

F. William Engdahl is strategic risk consultant and lecturer, he holds a degree in politics from Princeton University and is a best-selling author on oil and geopolitics, exclusively for the online magazine “[New Eastern Outlook](#)” where [this article](#) was originally published. He is a Research Associate of the Centre for Research on Globalization.

QATAR HEALTH 2021



➡ The Editor will be virtually there!

Abandoning Big Cities Beats Closing Borders When Fighting Pandemics, Simulation Shows

Source: <https://www.sciencealert.com/abandoning-large-cities-beats-closing-borders-when-fighting-pandemics>

Nov 18 – It’s been a year like no other for [studying pandemics](#). Now, new research offers an intriguing suggestion for slowing the spread of infections: by getting people to relocate away from large cities, rather than sealing off borders.

Applying commonly used SIR (susceptible, infected, and recovered) dynamics, researchers ran some 10,000 simulations looking at one-way migration from a densely populated area to a lightly populated area while a disease is spreading.

The overall infection rate was reduced if the populations mixed, the stats showed, although the infection rate in the lightly populated area did go up. If movement was forced away from the densely populated area, the overall infection rate dropped further.

"Instead of taking mobility, or the lack of mobility, for granted, we decided to explore how an altered mobility would affect the spreading," [says data scientist Massimiliano Zanin](#), from the Institute for Cross-Disciplinary Physics and Complex Systems (IFISC) in Spain.

Assuming 90 percent of people begin in a densely populated area like a city, and 10 percent begin in a lightly populated area such as a village, the study showed overall infection rates could be reduced from around 35 percent of the population to around 23 percent if people were allowed to move freely.

And while the percentage of infected people in our hypothetical village would go up as a result, the drop in the percentage of infected people in our hypothetical city would go down by a greater amount, the researchers found.



The negative impact on the smaller community can be mitigated by health checks at the border, by only allowing healthy people to relocate, and by limiting the movement of relocated people, the researchers say.

If people are allowed to move back and forth between their old and new homes the benefits are reduced, the study shows.

"People always assume that closing borders is good," [says Zanin](#). "We found that it is almost always bad."

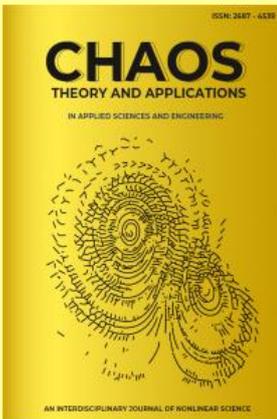
As Zanin is keen to [point out](#), this is just a model of movement, without the complexity and unpredictability of real life. A whole host of assumptions – including reinfection and immunity rates, behaviour patterns and so on – have been made to generate the numbers. With that in mind, modelling studies like this can't give definitive answers, but they can put forward some useful suggestions – and it would seem that keeping people confined in place could be worse for overall infection rates, even if it does allow some regions to stay relatively free from disease.

In the real world, allowing people to relocate from a main city home to a village holiday home might stop the spread of disease, the researchers say, as long as there was no going back until the [pandemic](#) was over.

Of course there are many other economic and social considerations to think about besides the infection rate – not least whether city dwellers would be keen to move out or whether village dwellers would be happy to have them – which highlights the difficult job that governments have in managing [the spread of coronavirus](#).

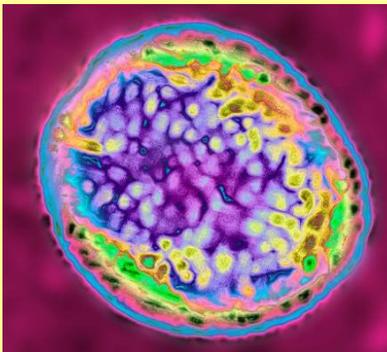
"Collaboration between different governments and administrations is an essential ingredient towards controlling a pandemic, and one should consider the possibility of small-scale sacrifices to reach a global benefit," [says Zanin](#).

▶▶ The research has been published in [Chaos](#).



China lab leak infects thousands with bacterial disease

Source: <https://www.thedailystar.net/world/news/report-china-lab-leak-infects-thousands-bacterial-disease-1963701>



Sep 19 – Thousands of people in northwest China have tested positive for a bacterial disease **after a leak from a state-owned biopharmaceutical plant making animal vaccines** last year. Health officials in Lanzhou city said 3,245 people had contracted **brucellosis**, a disease often caused by close contact with infected animals or animal products that can bring about fevers, joint pain and headaches. Another 1,401 people tested as an early positive for the disease, and health authorities said there was no evidence of person-to-person transmission so far.

▶▶ Read also: <https://edition.cnn.com/2020/09/17/asia/china-brucellosis-outbreak-intl-hnk/index.html>

False negatives and positives: how accurate are PCR tests for Covid-19?

Source: <https://www.thenationalnews.com/uae/science/false-negatives-and-positives-how-accurate-are-pcr-tests-for-covid-19-1.1113187>

Nov 18 – The growing prospect of a coronavirus vaccine may be raising hopes that life can return to normal, but testing individuals for infection continues to be important in preventing the pathogen's spread.

Researchers in the UAE are among many around the globe to have developed new, rapid tests that can, in the case of one created at Khalifa University, give results in less than an hour.

While rapid tests are being increasingly used in screening programmes, the test of choice until now has typically been a longer RT-PCR test, or reverse transcriptase polymerase chain reaction test, a name that refers to the lab procedures involved in analysing samples.

The hidden problems with false positives and negatives

As is typical for laboratory tests, RT-PCR tests are not 100 per cent accurate, with one risk being false positives, when people are told they have the virus when they do not, which may cause them to isolate unnecessarily.



False positives can happen because of the methods used, according to Prof Anthony Brookes, bioinformatics group leader at the University of Leicester in the UK.

Usually beginning with a nasal or throat swab and looking for viral RNA, the test involves repeated cycles in which the genetic material is multiplied.

As many as 35 or 40 cycles may be carried out, which Prof Brookes said is too many because it increases the chance of a positive result even without coronavirus RNA being present in the original sample.

“At this level you would find things just because of the chemistry,” he said.

Such problems may reduce the test’s specificity – the proportion of people without the disease who test negative.

Another concern is a person testing positive because their sample contains coronavirus RNA even though they are not actually infectious. They may have fought off an infection but still host remnants of viral genetic material.

The opposite problem is false negatives, where people with the virus are told they do not have it, potentially resulting in infectious individuals failing to self-isolate.

A report by American and British doctors published this year in the *British Medical Journal* reported false negative results of between 2 per cent and 29 per cent for RT-PCR tests.

The test’s sensitivity – the proportion of people with the disease who test positive – may depend on where a swab is taken.

Research on people in Abu Dhabi who had tested positive for the coronavirus found that individuals with symptoms were more likely than those without symptoms to test positive on later tests.

What is more effective – mass testing or targeted testing of high-risk populations?

A possible lack of accuracy is one reason why some researchers argue against mass testing, where the authorities test as many people as possible, symptomatic or not.

It was carried out in China, Slovakia and, more recently, the UK, where it is being rolled out after trials in Liverpool in the north-west of England.

On a smaller scale, it is used to screen people such as incoming travellers.

Dr Angela Raffle, an honorary senior lecturer in population health sciences at the University of Bristol in the UK, views mass testing as “a really bad use of resources” and said targeted testing of high-risk populations, coupled with effective contact tracing, is more effective.

“If you just say, ‘We’ve got 14 mass testing centres, come and have a test’, the chances of making any difference to transmission is vanishingly small,” she said.

Instead of mass testing, she suggested rigorous test, trace and isolate programmes centred on people who are symptomatic and their contacts.

Testing focused on people with a high likelihood of being infected will, she said, have greater predictive value and a more favourable ratio of true positives to false positives.

The Liverpool trials, part of a wider planned screening operation called Operation Moonshot, which will cost tens of billions of pounds, use a lateral flow test on a saliva sample instead of the RT-PCR test.

Looking for particular viral proteins or antigens, it gives results in just 30 minutes but may fail to identify some infected individuals because the sensitivity, while 76.8 per cent in ideal conditions, could be as low as 56 per cent in field settings, according to some doctors.

The British government said the lateral flow test identified more than 95 per cent of people who had high levels of the virus in their bodies and were most likely to infect others.

Tying in with this, research in Germany on seven other rapid antigen tests published this week found that five could detect 95 per cent of samples with high viral levels.

The programme in Liverpool is being assisted by the University of Liverpool, which is carrying out statistical analysis.

Prof Louise Kenny, executive pro-vice-chancellor of the university, said mass testing is most effective in places with relatively high coronavirus prevalence, such as Liverpool.

But for it to be effective, she said people should not abandon measures such as social distancing, hand washing and mask wearing. In countries like New Zealand, where there are very few cases, there would be “absolutely no point” in mass testing.

“I believe there’s a certain threshold where mass testing is of very little value because you’re searching for a needle in a haystack,” Prof Kenny said.

The lateral flow methods used in Liverpool create few false positives, she said, with hundreds of people identified in the city who were asymptomatic but positive in the lateral flow test – and therefore potentially infectious.



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Prof Kenny said mass testing can also be useful for particularly at-risk communities, such as frontline healthcare workers, people in care homes, or students.

In a closed institution, such as a university, it is easier to deliver what Dr Raffle describes as a “systematic approach” when testing. “You absolutely have to be certain of your test performance. You need to be clear it’s not a test for infectiousness,” she said.

Even in such circumstances, Dr Raffle said there were potential downsides to testing, because people with positive tests may isolate even though they are not infectious, perhaps because the test picked up the remnants of an old infection. There may also be a risk of infectious people testing negative.

At New York University Abu Dhabi, Dr Xin Xie, a research scientist, and his colleagues developed a test that is more sensitive than the standard RT-PCR test, so is better at identifying people with a low viral load.

“I believe our method can significantly reduce the rate of false negatives,” he said.

“About 18 per cent of negative samples have been detected positive with our method.

“In our community, most of the people are asymptomatic; they don’t show symptoms of any infection ... we need a very sensitive method because asymptomatic carriers can have very low viral load that could be missed by the regular methods.”

Looking for viral RNA, the test is more sensitive because of a preamplification step and by using it the university can, he said, continue to function through the pandemic.

The laboratory steps mean that false positives are not a problem with the method, which gives a result in five to six hours and is being used to test people at the university every two weeks.

“I think our screening programme, together with our method, helps the university a lot, especially during the summer time,” Dr Xie said.

“We can have a limited number of people coming to work because we have the facility to test them.”

COVID: Can a surgical mask be used more than once?

Source: <https://en.adioscorona.org/questions-reponses/2020-10-01-pollution-masque-chirurgical-plusieurs-fois-porter-utiliser-mer-ocean.html>

Yes, you can put on a surgical mask that has already been worn: just keep it for at least seven days before reusing it, preferably in a paper envelope. Reusing masks reduces waste and unnecessary expenses during the COVID-19 pandemic.

Oct 12 – During the outbreak of COVID, you can reuse your surgical masks for yourself: between two uses, you just need to **store your mask for a week in a paper envelope**, while the coronaviruses that may be present on the mask are practically all inactivated.

Why reuse surgical masks?

- **less pollution.** These masks are made of plastic nanofibers. This plastic is not biodegradable and takes several hundred years to degrade. In all countries of the world, these masks can be found in garbage cans, streets and gardens, rivers and oceans. These masks are very ugly, dangerous for the animals that ingest them, and end up in the form of microplastics, a huge pollution whose dangers for the environment are still poorly known. If every person in France uses a single-use mask every day for a year, this creates about 100,000 tons of non-recyclable plastic waste in one year.
- **less use of petroleum,** necessary for the production of the polypropylene for the masks.
- **less expenses:** a box of 50 masks is enough for 2-3 people for one year.
- **less out-of-country purchases:** the majority of masks come from Asia.
- **less risk of contamination** from used masks, which are often thrown out outside.

Why is this reuse not officially recommended?

These surgical masks were designed in the 1960s for single use in a hospital environment under conditions of strict asepsis.

Surgeons and nurses wear them to avoid contaminating the operating field, and not to infect the patient on the operating table with their saliva. The masks were sterile and were discarded after each operation.

It is with the COVID-19 pandemic (shortage of masks at the beginning, then massive consumption of surgical masks by the general public) that the issue of their recycling has become major. Nevertheless, governments and health authorities may fear the use of contaminated masks, and exchanges between users. In addition, manufacturers and retailers have an interest in selling as many masks as possible.



What is the evidence that this method is effective?

The method we propose is effective, but not absolutely: it does not clean dirty masks and does not sterilize them, and in case of massive contamination by coronavirus, some viruses may remain.

At room temperature, coronaviruses gradually lose their infecting power. On ordinary plastic this virus only survives for four days. On a mask experimentally contaminated with a high viral load, 99.9% to 99.99% of the coronaviruses SARS-CoV-2 are inactive after 7 days on the outside and 4 days on the inside. On the seventh day, between 0.01% and 0.1% of the starting viruses can still be extracted by washing the fibres.

We believe, however, that on a lightly contaminated mask there will be almost no virus left after 7 days, and that if any virus remains, it is strongly bound to the mask fibres by electrostatic attraction. Finally, the particles on the front of the mask cannot pass through it and therefore cannot be sucked in by the wearer of the mask. This reasoning is logical, and based on scientific data, but it does not guarantee the absolute effectiveness of the proposed method, which has never been rigorously tested with volunteers.

How do you do it in practice, concretely?

We are only talking here about the method with the paper envelopes, which is the simplest and most practical. Members of our team have been using it for several months. For the other methods (dry heat, steam, disinfectant), see the question [Can a mask be reused?](#)

- After use, simply store the mask in a paper envelope and wait a week before reusing it.
- Reuse only intact masks: no stains, holes nor tears, intact elastics, correct nose bridge.
- Wash your hands after storing the mask.
- Choose paper envelopes instead of glossy paper envelopes (brown or plain white envelopes).
- Write the date onto the envelope, so as not to take it back too quickly, and keep a record of how many times each mask has been used.
- The envelopes can be re-used: after wearing it, the mask is put back in the same envelope.
- Make a stack of envelopes by always placing the envelope of the last mask used under the stack, and using the decontaminated masks on top of the stack.
- Decontamination can be speeded up by exposing the envelopes and masks to temperatures above 25°C. The hotter it gets, the faster the virus is killed. On a radiator or in a black folder in the sun behind glass, if the temperature reaches 37°C, each day deactivates 99.9% of the virus. In an oven at 70°C, it will only take an hour.

Why storing masks in a paper envelope and not a plastic one?

- Paper decontaminates quickly. Within 30 minutes, 99% of the viruses have disappeared from the paper, and none remain after 3 hours. On plastic viruses persist for 4 days.
- The paper absorbs moisture and speeds up the drying of the mask.
- The rigidity of the envelope allows the mask to be smoothed out, preventing folds, fibre breakage and the appearance of small holes and tears.
- The paper is convenient for writing the date. Masks could also be hung on a hook or a coat hanger, but this would lose traceability and may result in a risk of contamination through contact.
- Storing the masks flat in a stack is convenient when running on more than seven masks. This is the case when using several masks per day.

How many times can you recycle your mask in this way?

The filtration power of surgical masks hardly changes after being worn (if they do not get wet), nor after being stored dry at room temperature, because filtration is based on the mesh of the fibres and its electrostatic properties. After 30 uses, the loss of filtration and fit to the face makes the surgical mask comparable to a new fabric mask. Therefore, if one is careful, and the mask is not splashed, one can keep the mask for a very long time, and recycle it at least 20 or 30 times, allowing more than six months of use. But you can choose to renew your masks more often.

Can you wash your surgical mask or disinfect it?

Washing the surgical mask or disinfecting it with alcohol greatly reduces its filtration capacity, cancelling out the electrostatic properties. Likewise, heating the mask too hard or too long degrades it, although it can withstand 70°C for one hour.



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Is this method as effective for FFP2/N95 masks?

Yes, the envelope method also works with FFP2 masks, especially the duck beaks that can be flattened into envelopes.

In conclusion, this efficient and economical method is simple enough to be used in practice for a long time. It is not risky, because the same person will always use the recycled masks, which cancels out the risk of transmitting germs other than coronaviruses. It is not ideal, since it does not guarantee total disinfection of the masks, but it is better than what many people do when they use their cloth masks as a cotton handkerchief: folded in the pocket, sometimes damp, taken out and put away many times without washing hands, and washed only when it is visibly too dirty to wear.

Warnings

- ❖ In cases where you think your mask may be heavily contaminated (intensive care unit, conversation with a patient or contact, large gatherings, visible soiling), it is best to discard the mask. Indeed, if the initial contamination is massive, the viral particles may not all be inactivated in 7 days.
- ❖ In cases where your mask has been wet, it should be dried carefully, either in open air or in a porous envelope (blotting paper), but not under the stack of envelopes. In theory, a wet mask can allow the development of germs that are dangerous for an immunocompromised wearer (e.g. Aspergillus). After drying, the mask will have lost some of its filtering power, but it will still be more effective than a cloth mask.
- ❖ If you are particularly fragile or immunosuppressed, it is prudent to continue to discard your masks and use a new one each time. The same advice applies to caregivers who come into contact with these people.
- ❖ Don't share your masks with others. Everyone keeps their own germs to avoid contamination between people!
- ❖ Do not store the mask in the cold: the coronavirus can survive for a long time at 4°C, and even longer at -18°C in the freezer.
- ❖ If you have any doubts, throw away your surgical mask.

Sources

A rigorous study shows that seven days after five hundred thousand viruses have been deposited on a mask, the virus is undetectable on the inner layer (mouth side). On the other hand, washing the outer layer of the mask reveals 0.1% of the viruses. On paper, no virus is detectable three hours after deposit of coronaviruses. This study also shows that the virus does not survive two days at 37°C and not 30 minutes at 56°C.

[Chin, A., Chu, J., Perera, M., Hui, K., Yen, H. L., Chan, M., ... & Poon, L. \(2020\). Stability of SARS-CoV-2 in different environmental conditions. *The Lancet Microbe*.](#)

Another scientific study that shows that 99.99% of the SARS-CoV-2 virus is deactivated after 7 days on a surgical mask.

[Liu, Y., Li, T., Deng, Y., Liu, S., Zhang, D., Li, H., ... & Zhou, Y. \(2020\). Stability of SARS-CoV-2 on environmental surfaces and in human excreta. *medRxiv*.](#)

This study shows that the virus SARS-CoV-2 only survives 4 days on plastic.

[van Doremalen, N., Bushmaker, T., Morris, D. H., Holbrook, M. G., Gamble, A., Williamson, B. N., ... & Lloyd-Smith, J. O. \(2020\). Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. *New England Journal of Medicine*.](#)

This study shows that the SARS-CoV-2 coronavirus does not survive five days when left to dry on a glass plate at 20-25°C. At 37°C the virus dried on glass doesn't even survive 24 hours.

[Chan, K. H., Sridhar, S., Zhang, R. R., Chu, H., Fung, A. F., Chan, G., ... & Yuen, K. Y. \(2020\). Factors affecting stability and infectivity of SARS-CoV-2. *Journal of Hospital Infection*, 106\(2\), 226-231.](#)

Ninety million masks per month are needed by health workers to control the epidemic of COVID-19, according to WHO estimates (March 2020). This estimate does not take into account the use of masks by the general population.

[World Health Organization. \(2020\). Shortage of personal protective equipment endangering health workers worldwide. *Newsroom*, March, 3, 2020.](#)

A University College London working group has estimated that the current demand for masks in the UK is 24.7 billion masks per year. If every person in the UK uses a single-use mask every day for one year, this will create 123,000 tonnes of non-recyclable plastic waste.

[Report of UCL Plastic Waste Innovation Hub. The environmental dangers of employing single-use face masks as part of a COVID-19 exit strategy.](#)

The release of a huge number of plastic surgical masks into the environment is leading to an unprecedented phenomenon of visual, biological and chemical pollution on a global scale, in all ecosystems. It is in marine environments that the impact of microplastics is likely to be most harmful.



[Aragaw, T. A. \(2020\). Surgical face masks as a potential source for microplastic pollution in the COVID-19 scenario. *Marine Pollution Bulletin*, 159, 111517.](#)

A well illustrated article showing the challenge posed by the release of billions of disposable masks into the environment. The consequences of these discharges are evoked, in particular the increase in microplastics content in the oceans. These microplastics are a threat to marine fauna, and a possible source of poisoning and infection for people.

[Fadare, O. O., & Okoffo, E. D. \(2020\). Covid-19 face masks: A potential source of microplastic fibers in the environment. *The Science of the total environment*, 737, 140279.](#)

This non-scientific article, among many others, denounces the ugliness and danger of masks spread in the environment. It talks about the many surgical masks found in the Mediterranean Sea and on the beaches of the Soko Islands in Hong Kong. Turtles and dolphins can mistake them for food, choke and die.

[Kassam, A. More masks than jellyfish': coronavirus waste ends up in ocean. 8 June 2020. Article in *The Guardian*.](#)

Dry heat at 80°C for one hour does not significantly reduce the filtration capacity, breathability, elasticity of the straps and the shape of FFR respirators, even after 20 cycles. All the more reason to believe that at room temperature the qualities of surgical masks, made of polypropylene like FFRs, do not diminish either.

[Viscusi, D. J., King, W. P., & Shaffer, R. E. \(2007\). Effect of Decontamination on the Filtration Efficiency of Two Filtering Facepiece Respirator Models. *Journal of the International Society for Respiratory Protection*, 2493.](#)

The filtering properties of N95 masks are not degraded by fifty 30-minute cycles at 85°. A fortiori, one can think that at room temperature the qualities of surgical masks, made of polypropylene like N95, do not diminish either.

[Liao, L., Xiao, W., Zhao, M., Yu, X., Wang, H., Wang, Q., Chu, S., & Cui, Y. \(2020\). Can N95 Respirators Be Reused after Disinfection? How Many Times?. *ACS nano*, aacs.nano.0c03597. Advance online publication.](#)

In times of mask shortage, the inventor of the N95 mask (equivalent to the FFP2 mask) advises doctors to use four masks in rotation over four days after marking them 1, 2, 3, and 4.

[Juang, P. S., & Tsai, P. \(2020\). N95 Respirator Cleaning and Reuse Methods Proposed by the Inventor of the N95 Mask Material. *Journal of Emergency Medicine*.](#)

This non-scientific article, among many others, suggests several ways to reuse a surgical mask. It quotes Michael Chang, an infectious disease specialist at the University Health Science Center in Houston, Texas. Chang suggests keeping the masks for four days in a permeable box before reusing them.

[Alix Couture, Reusing a surgical mask that's been lying around, is that a good idea? *Huffingtonpost SCIENCE* 9/24/2020](#)

This scientific review describes several methods of mask decontamination, and describes three interesting facts about the envelope mask method. - The use of a seven-day rotation system is proposed, with seven different masks that have time to dry and decontaminate. - The filtration efficiency and air permeability of N95 masks does not change after being worn for 8 consecutive hours by volunteers. - A surgical mask washed for 2 min with soap and water loses half of its filtering power, but is still more filtering than a cloth mask.

[Tsai, P. \(2020\). Performance of masks and discussion of the inactivation of SARS-CoV-2. *Engineered Science*, 10\(2\), 1-7.](#)

This study shows that the static charges of the polypropylene electret of a surgical mask are cancelled out by immersion in water at 56°C for 30 minutes, but are partially restored by air drying: the mask then regains 60% of the charges of a new mask, and probably 60% of the filtration efficiency.

[Wang, D., Sun, B. C., Wang, J. X., Zhou, Y. Y., Chen, Z. W., Fang, Y., ... & Chu, G. W. \(2020\). Can Masks Be Reused After Hot Water Decontamination During the COVID-19 Pandemic? *Engineering*.](#)

Reuse of the surgical mask has very little effect on its filtration rate. After 3 cycles of 4 hours, filtration is still >90% and well above the fabric mask. The variation in filtration seen in these data is a loss of about 0.3 points per use and 0.3 points per heat sterilization. After 30 uses or sterilizations, surgical masks should therefore lose 9 filtration points, remaining higher than new fabric masks.

[Song, W., Pan, B., Kan, H., Xu, Y., & Yi, Z. \(2020\). Heat inactivating and reusing of virus-contaminated disposable medical mask. *medRxiv*.](#)

A laboratory evaluation of the short-term use of N95 masks once a week over several months, simulating use with a spray containing a 5 mg salt solution and storage in office conditions.

[Moyer, E. S., & Bergman, M. S. \(2000\). Electrostatic N-95 respirator filter media efficiency degradation resulting from intermittent sodium chloride aerosol exposure. *Applied occupational and environmental hygiene*, 15\(8\), 600-608.](#)

Three models of surgical masks were put on for a few minutes and taken off 20 times, and the fit was tested each time. The median fit of the masks decreases linearly but remains



above 100, which is a good fit. It can be extrapolated that the median reaches 100 after 30 uses.

[Bergman, M. S., Viscusi, D. J., Zhuang, Z., Palmiero, A. J., Powell, J. B., & Shaffer, R. E. \(2012\). Impact of multiple consecutive donnings on filtering facepiece respirator fit. American journal of infection control, 40\(4\), 375-380.](#)

EDITOR'S COMMENT: Check the homepage of [Adios Corona](#) – especially the last sentence: a proof that this is a serious website!

DRAFT landscape of COVID-19 candidate vaccines

12 November 2020

Source: <https://www.who.int/publications/m/item/draft-landscape-of-covid-19-candidate-vaccines>

Extortion, bio-warfare and terrorism: Extremists are exploiting the pandemic

Source: <https://moderndiplomacy.eu/2020/11/21/extortion-bio-warfare-and-terrorism-extremists-are-exploiting-the-pandemic/>

Nov 21 – Criminals and violent extremists are exploiting the pandemic to build their support networks, undermine trust in government and even weaponize the virus, according to a research report published on Wednesday by the United Nations Interregional Crime and Justice Research Institute ([UNICRI](#)).

“Terrorist, violent extremist and organized criminal groups are trying to take advantage of the [Coronavirus](#) disease ([COVID-19](#)) pandemic to expand their activities and jeopardize the efficacy and credibility of response measures by governments”, UNICRI Director Antonia Marie De Meo wrote in the introduction to the report, entitled “Stop the virus of disinformation”.

Social media incitement

“It is also alarming that some terrorist and violent extremist groups have attempted to misuse social media to incite potential terrorists to intentionally spread COVID-19 and to use it as an improvised form of a biological weapon”, Ms. De Meo wrote.

Social media could be used to “inspire terrorism”, motivating self-radicalized terrorists to perpetrate real attacks, the researchers found.

“There are cases in which right-wing extremist groups... explicitly asked their followers to spread the virus by coughing on their local minority or by attending to specific places where religious or racial minorities gather. Other groups...advocate to spread the [coronavirus](#) disease in countries with large populations or high levels of pollution”, the report said.

‘Inspired terrorism’ case

A notable case of “inspired terrorism” was that of Timothy Wilson, who plotted to detonate a bomb in a hospital caring for coronavirus patients in Kansas City. He died during a firefight with the US Federal Bureau of Investigation in March.

He had been active in at least two neo-Nazi channels on the social media platform Telegram, and his last online comment was an antisemitic message regarding the origin of COVID-19, the report said.

The researchers examined three groups of non-State actors: right-wing extremists; groups associated with the ISIL or Da’esh terror group and Al-Qaida; and organized crime groups.

They described how extremists, especially right-wing groups, used social media to spread conspiracy theories and disinformation about the virus, expanding their networks by exploiting algorithms that identify potentially sympathetic people who have liked and forwarded particular memes.

Conspiracy theories

The conspiracy theories often melded different and contradictory stories, the report said, including “the identification of the 5G mobile phone signal as a vehicle to transmit the virus, or the false claim that the pandemic has been masterminded by Bill Gates to implant microchips into human beings, or the false idea that the virus is a hoax and does not exist”.

The economic crisis created by the pandemic was also giving criminal groups openings to take control of legitimate companies and shops that may be at risk of bankruptcy, citing the case of drug cartels trying to take over pharmacies in four Mexican states, and investigations into extortion in Italy.



Debunking tools

The UNICRI researchers identified several instruments to debunk disinformation and misinformation, including data science tools, fact-checking apps and artificial intelligence, but warned that technology countermeasures alone cannot stop abuse of social media. In a separate case of disinformation, the UN refugee agency ([UNHCR](#)), has warned about fake information circulating on social media concerning the refugee situation in Ethiopia, such as reports that UN staff had been arrested in the Tigray region and had their vehicles confiscated.

“These are false. All of our personnel and vehicles in Tigray are accounted for. We urge those using social media to share information responsibly and from corroborated sources only”, the UN agency said.

How mRNA vaccines from Pfizer and Moderna work, why they're a breakthrough and why they need to be kept so cold

Source: <https://theconversation.com/how-mrna-vaccines-from-pfizer-and-moderna-work-why-theyre-a-breakthrough-and-why-they-need-to-be-kept-so-cold-150238>

Nov 18 – As the weather cools, the number of infections of the *COVID-19 pandemic are rising sharply*. Hamstrung by pandemic fatigue, economic constraints and political discord, public health officials have struggled to control the surging pandemic. But now, a rush of interim analyses from pharmaceutical companies *Moderna* and *Pfizer/BioNTech* have spurred optimism that a novel type of vaccine made from messenger RNA, known as mRNA, can offer high levels of protection by preventing COVID-19 among people who are vaccinated.

Although unpublished, these preliminary reports have exceeded the expectations of many vaccine experts, including mine. Until early this year, I worked on developing vaccine candidates against Zika and dengue. Now I am coordinating *an international effort* to collect reports on adult patients with current or previous cancers who have also been diagnosed with COVID-19.

Promising preliminary results

Moderna reported that during the *phase 3 study* of its vaccine candidate *mRNA-1273*, which enrolled 30,000 adult U.S. participants, just five of the 95 COVID-19 cases occurred among the vaccinated, while 90 infections were identified in the placebo group. This corresponds to an efficacy of 94.5%. None of the infected patients who received the vaccine developed severe COVID-19, while 11 (12%) of those who received the placebo did.

Similarly, the Pfizer-BioNTech vaccine candidate, *BNT162b2*, was 90% effective in preventing infection during the phase 3 clinical trial, which enrolled 43,538 participants, with 30% in U.S. and 42% abroad

How does mRNA vaccine work?

Vaccines train the immune system to recognize the disease-causing part of a virus. Vaccines traditionally contain either weakened viruses or purified signature proteins of the virus.

But an mRNA vaccine is different, because rather than having the viral protein injected, a person receives genetic material – mRNA – that encodes the viral protein. When these genetic instructions are injected into the upper arm, the muscle cells translate them to make the viral protein directly in the body.

This approach mimics what the SARS-CoV-2 does in nature – but the vaccine mRNA codes only for the critical fragment of the viral protein. This gives the immune system a preview of what the real virus looks like without causing disease. This preview gives the immune system time to design powerful antibodies that can neutralize the real virus if the individual is ever infected.

While this synthetic mRNA is genetic material, it cannot be transmitted to the next generation. After an mRNA injection, this molecule *guides the protein production inside the muscle cells*, which reaches peak levels for 24 to 48 hours and can last for a few more days.

Why is making an mRNA vaccine so fast?

Traditional vaccine development, although well studied, is very time-consuming and cannot respond instantaneously against novel pandemics such as COVID-19.

For example, for seasonal flu, it takes *roughly six months* from identification of the circulating influenza virus strain to produce a vaccine. The candidate flu vaccine virus is grown for about three weeks to produce a hybrid virus, which is less dangerous and better able to grow in hens' eggs. The hybrid virus is then injected into a lot of fertilized eggs and incubated for



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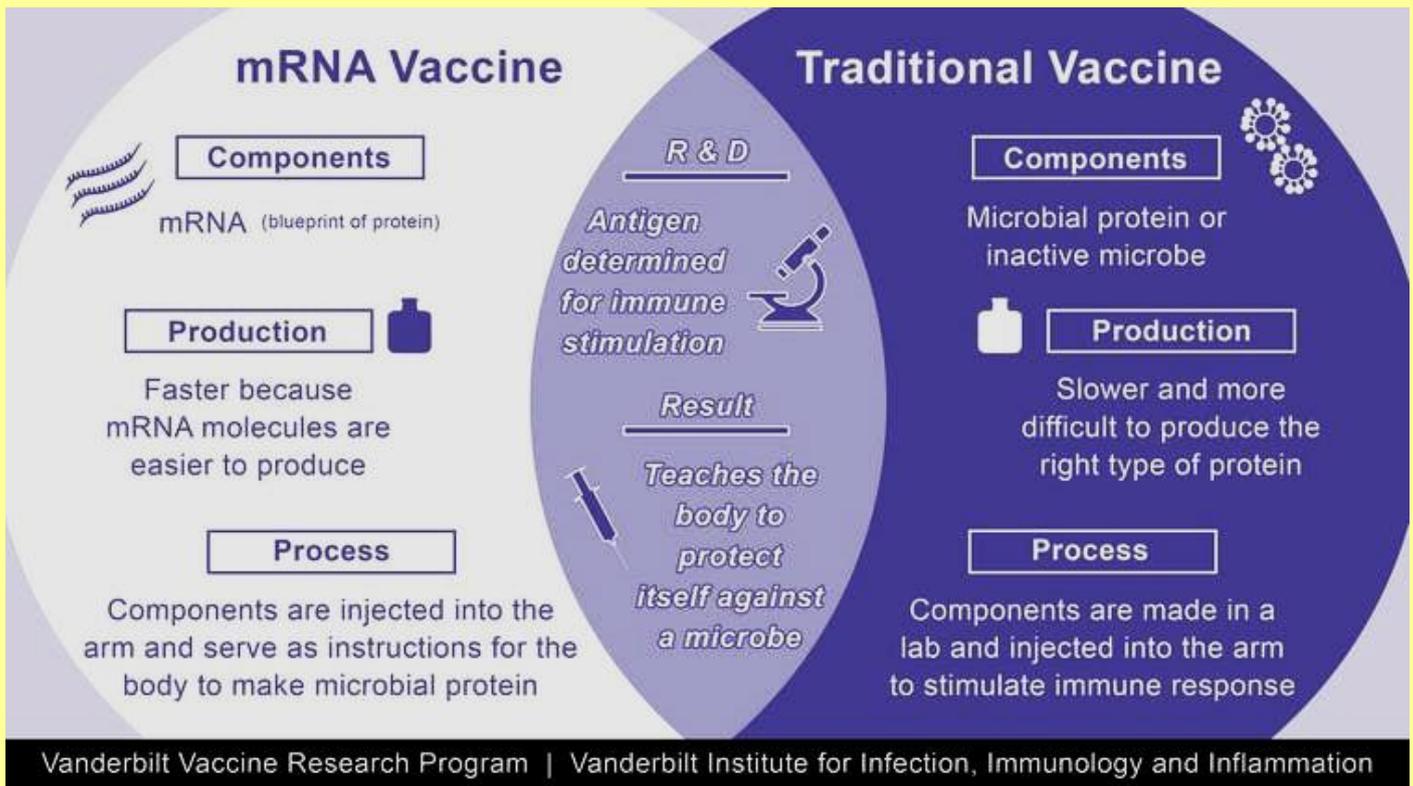
several days to make more copies. Then the fluid containing virus is harvested from eggs, the vaccine viruses are killed, and the viral proteins are purified over several days.

The mRNA vaccines can leapfrog the hurdles of developing traditional vaccines such as producing noninfectious viruses, or producing viral proteins at medically demanding levels of purity.

mRNA vaccines eliminate much of the manufacturing process because rather than having viral proteins injected, the human body uses the instructions to manufacture viral proteins itself.

Also, mRNA molecules are far simpler than proteins. For vaccines, mRNA is manufactured by chemical rather than biological synthesis, so it is much quicker than conventional vaccines to be redesigned, scaled up and mass-produced.

In fact, within days of the genetic code of the SARS-CoV-2 virus becoming available, the *mRNA code* for a candidate vaccine testing was ready. What's most attractive is that once the mRNA vaccine tools become viable, mRNA can be quickly tailored for other future pandemics.



A comparison of traditional with the new mRNA vaccines. CC BY-SA

What are problems with mRNA?

mRNA technology isn't new. It was *shown a while back* that when synthetic mRNA is injected into an animal, the cells can produce a desired protein. But the progress remained slow. That's because mRNA is not only notoriously unstable and easy to degrade into smaller components, it is also easily destroyed by the human body's immune defenses, which make delivering it to the target very inefficient.

But beginning in 2005, researchers figured out how to stabilize mRNA and package it into small particles to deliver it as a vaccine. The mRNA COVID-19 vaccines are expected to be the first using this technology to be approved by the FDA.

After a decade of work, the mRNA vaccines are now ready for evaluation. Physicians will be watching for *unintended immune reactions*, which can be both *helpful* and *detrimental*.

Why keep mRNA supercold?

The most important challenge for development of a mRNA vaccine remains its inherent instability, because it is more likely to break apart above freezing temperatures.



Modification of the mRNA building blocks and development of the particles that can cocoon it relatively safely have helped the mRNA vaccine candidates. But this new class of vaccine still requires unprecedented freezer conditions for distribution and administration.

What are the refrigeration requirements?

The Pfizer-BioNTech mRNA vaccine will need to be optimally stored at minus 94 degrees Fahrenheit and will degrade in around *five days* at normal refrigeration temperatures of slightly above freezing.

[Get facts about coronavirus and the latest research. *Sign up for The Conversation's newsletter.*]

In contrast, Moderna *claims* its vaccine can be maintained at most home or medical freezer temperatures for up to six months for shipping and longer-term storage. Moderna also claims its vaccine can remain stable at standard refrigerated conditions, of 36 to 46 degrees Fahrenheit, for up to 30 days after thawing, within the six-month shelf life.

Not surprisingly, *Pfizer is also developing shipping containers* using dry ice to address shipping constraints.

Radical Testing Plan Could 'Drive Epidemic Toward Extinction' in Weeks, Study Claims

Source: <https://www.sciencealert.com/rapid-testing-75-of-a-city-every-3-could-help-stop-covid-19-in-weeks-says-model>



Nov 23 – Mass rapid-testing for [COVID-19](#) - especially of those people showing no signs of infection - could bring an end to the [pandemic](#) within six weeks, claims a new study by researchers at the Harvard TH Chan School of Public Health and the University of Colorado Boulder.

Published November 20 in the peer-reviewed journal *Science Advances*, [the study](#) suggests that rapid tests, although less reliable, could allow public health authorities to rely on more targeted interventions, rather than economy-wide lockdowns, if deployed on a massive scale.

Rapid tests are low cost and can return results in a matter of minutes, rather than the days associated with the lab variety. If half the US population were tested weekly, with those who test positive isolating from the rest, the impact would be enormous, researchers said.

"Our big picture finding is that, when it comes to public health, it's better to have a less sensitive test with results today than a more sensitive test with results tomorrow," Daniel Larremore, a computer science professor at CU Boulder and lead author of the study, said Friday.

"Rather than telling everyone to stay home so you can be sure that one person who is sick doesn't spread it, we could give only the contagious people stay-at-home orders so everyone else can go about their lives."

According to the study, based on mathematical modelling, rapid-testing three-quarters of a city's population every three days slashed the number of those ultimately infected by 88 percent, "sufficient to drive the [epidemic](#) toward extinction within six weeks."



"These rapid tests are contagiousness tests," Michael Mina, a professor of epidemiology at Harvard and co-author of the study, said in a news release.

"They are extremely effective in detecting COVID-19 when people are contagious."

Increasing the availability of "cheap, rapid tests" is one of the key strategies under consideration by President-elect Joe Biden, [Politico reported Friday](#).

Greece: Problems identified but not solved

By the Editor-in-Chief

Greece was globally praised for the way it confronted the first wave of the pandemic. It is true that compared with other European and non-European nations, Greece had a fraction of both confirmed cases and deaths. Now we are experiencing a second wave of the pandemic. Even if the numbers are again better than those of others, the difference is shocking both in cases and deaths recorded. There was a time-frame between the two waves that many things could have been done to be better prepared. Below are the gaps identified but no solutions applied and as a result, the Greek healthcare system is under tremendous pressure:

Personal protective equipment (PPE): In order to avoid repetition of what happened worldwide during the first wave it would be important to have a number of factories able to cover national needs in white suits and masks (surgical; N95 FFP2/3 no valve). We do have two factories – one in central Greece and one in northeast Greece (I am not aware of their monthly production capabilities). PPEs caused many problems because they caused severe face contact dermatitis (ICU and ED personnel). In addition, both healthcare personnel and patients were not able to see who is who and they had to write their names on the suits. Psychologically, this was not good for hospitalized patients that could see only a set of eyes. A solution was already available with PPE with 180° visors and Powered air purifying respirator (PAPR) – an ensemble that provides both comfort and protection and can be worn longer (photo – right). This solution was preferred in some countries (e.g., S. Korea, Singapore) but was totally absent in Greece. We had the time to order but we did not.



PPE training: Training in protective equipment is something that CBRN people know very well because their lives depend on this. Doctors and nurses were unfamiliar with PPEs and very often one can see 10 providers in an ICU room with 10 different dressing styles and quite often some uncovered flesh. There was enough time to create a national training curriculum and distribute it to all hospitals and clinical in the healthcare sector. Learning in praxis was the model followed and a number of casualties among the healthcare personnel might be attributed to wrong donning and doffing process. They did not that on time; they continue to teach each other and each ICU is allowed to have protocol variations. They do not follow the "buddy system" and this is so obvious in photos and videos. I understand that ICU people are not in the military, police or fire service but when in war you have to adapt SOPs coming from the battle field.

Critical ICU equipment: This is a problem that was very prominent during the first wave and it was dealt with certain on-site improvisations especially regarding respirators. 3-D printing was quite effective. We could have a small 3-D printing lab in all major hospitals able to cover all needs the moment they appear. We did not materialize this possibility (with rare exceptions from certain civilian volunteers and one private hospital).

Covid hospital beds: Existing infrastructure was sufficient for the first wave but none believed that the second wave would be the real tsunami and that, on daily basis, there would be agony for more beds (both ICU and mild cases beds). Hospitals follow the surge capacity plan as if the pandemic was an emergency to last a few days or weeks. Some countries transferred Covid cases to hospitals in neighboring countries (e.g., France to Germany). Others preferred to deploy big field hospitals (e.g., Qatar; UAE; China) and they did that in less than 10 days. I am not talking about tents but real hospitals with all amenities. We could have favored this solution and deploy two such hospitals each with 4,000 beds – one in Athens inside the perimeter of Sotiria Chest Hospital and the other inside the Aristotelian University campus in Thessaloniki in close proximity with the AHEPA university hospital). This would be a huge breath to public hospitals if they could evacuate ordinary patients and mild Covid cases there. We did not and even now nobody has said something relevant in public.

Oxygen: Very important for the management of respiratory problems but very often a problem itself if not available even within a hospital during the second wave. A first priority that was not taken seriously in the first place.



Tests: Personally, this is the most bizarre question that keeps spinning in my brain almost from the very beginning of the pandemic. I CANNOT understand how colleagues of relevant medical specialties and academia cannot tell the differences between RT-PCR, antigen testing, and IgM/IgG antibody rapid testing. Why they do not officially explain what each detection technique does and how it will help in the diagnostic/follow-up process. These methods are complementary with their own limitations and burdens. When thinking of this there is a nasty suspicion floods my mind – perhaps antibody tests are too cheap to deal with compared with the much more expensive molecular and antigen tests that require specialized equipment and personnel. Antibody tests do have a solid place in the overall process, they are equally accurate with the other two methods and might provide useful information as screening tools and means to follow the emergence of a Covid-19 case in a single individual with negative PCR/antigen tests or if the individual has IgG antibodies elicited following contact with virus.

ICU personnel: The number of specialized ICU personnel is not endless and they are only humans that need to rest and sleep. There was enough time to train some extra personnel and volunteers and medical students and dentists on basic things related to the management of Covid patients. They did not. And only now in November that the second wave overwhelmed hospitals nationwide they asked for volunteers from distant hospitals. Not a word for retired specialized physicians and nurses as well.

Patients' feelings: It became the norm that the moment an individual is diagnoses positive for the virus and need hospitalization, total isolation is applied all the way until death or recovery happens. People are intubated without having the time to say goodbye to their beloved because there is no time to do that and there are no procedures to do that. From time to time, a mobile phone is available and a last goodbye takes place. Modern technology (i.e., robotics) can easily solve this problem that for those in the last moments of their presence on Earth, a video call equals a vaccine for the living ones. Just another problem not addressed at all because there are more pressing problems in the catalog. Besides, we all hope that we will meet our beloved ones again in another life; aren't we?

Face masks: Although face masks are important tools in the management arsenal there is something wrong with the info provided to the people. During the first wave and due to the lack of sufficient quantities of surgical masks the directive allowed cloth masks to be worn. Now that this problem is not the first priority, people continue to wear cloth masks mainly because they are looking better than surgical ones. Single-layer masks (the biggest percentage) are good enough for pollution particles but not for the virus compared to surgical masks. End of story – but how can people be persuaded to change when the Prime Minister, ministers, public protection, and other high officials use them? Bad policy in exchange of a few euros' saving.

Social distancing: Complete failure even from the first wave. Greeks were not willing to change habits and lifestyle no matter what, Only the fines managed to somehow control the problem but they were not high enough to keep people at home. Even during the second wave, people continue to surprise society with foolish actions. Partying proved more important than life – especially for younger people. Yes, the same people that have the right to vote and decide about the future of a nation but could not comply with simple logic – the virus is airborne and so is stupidity.

Dead management: In all my CBRN-related lectures I was speaking about refrigerating lorries and ice-skating rings and the audience was kind of laughing about this. We came to an era that freezing rooms at hospitals and funeral homes in Greece have no more space for Covid corps and patients are packed in their special bag in ordinary rooms with airconditioning. We are lucky that this did not happen during summertime. Nobody is laughing anymore and the public is so surprised to react or get angry.

Hand hygiene: The very simple thing of hand hygiene is a good example to show how important official guidelines are. It is not handwashing OR hand disinfection! It is hand washing (to remove pathogens) AND hand disinfection (to kill pathogens remained). What people understand is that they have the right to choose one of them but not both.

Experts: One of the most important rules in crisis management is that information provided to the people should be given by a single official mouth to avoid confusion and misinterpretation of information available. You cannot imagine how many "experts" of all kinds appear on daily basis in Greek TV channels. You cannot imagine the questions asked by TV journalists trying to get numbers or dates about future facts that cannot be guessed in advance. On top of that, if one adds the misinformation available on the Internet and the fact that a stupid or dangerous opinion has the same gravity as the opinion of a medical professor easily disorients people and generates confusion and negative thoughts. We have seen that with schools open/close; tourism open/close; bar and restaurants open/close; religious ceremonies in churches open/close – just to name a few. Stupid measures were proposed like the 1.5-2m distances or close of shops after midnight as if the coronavirus walks after 00:00 or drops down if crossing the 2m invisible barrier between people. People have access to the same info as experts do but it is a matter of interpretation that matters.

Distant/teleworking: There was enough time to implement this measure and to solve any problems related to necessary equipment, networks, etc. Not much dealt with and as a result tele-education faced huge problems during the second wave. There was also an odd perception of heads of organizations that they felt happy to see all their employees in



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place instead of keeping just a 5-10% that will open the lights and take the daily mail. There is nothing that cannot be done by distance requiring physical presence.

Tourism: Pandemic proved that tourism is not the heavy industry of Greece – an expression we use at home in order to cover our inability to produce almost everything from tires to bullets and from cucumbers to warships. “Heavy” means tourism all year round and not for just 4 months expecting to have a good life without doing anything for the remaining 8 months of the year. Of course, I do not like to generalize things because bright exceptions are always there to verify the rule. This is something that we have to urgently change in the years after the pandemic. It is offensive to have all these Greek scientists flourishing everywhere in the world but not be able to work and produce in their own homeland. This is proof of bad governance through time and the fact that corks always float in Greece. Speaking about floating: forget summer/winter cruises; not until 2022 and if the pandemic is under control.

Truth: Wise people say that the biggest the problem is, the biggest truth should be released in public by those handling the crisis. There is no place for lies or for announcements that make people happy because this is what they are expecting to hear. In order to be serious: forget Christmas; forget Easter and most probably Summer 2021. Vaccination will be effective if more than 70% of population would be vaccinated. For the time being a recent poll showed that only 53% are willing to do so. And this is a vivid indication that a return to normal might be possible during the first quarter of 2022. Perhaps this truth might make people think twice about their personal contribution to the management of the pandemic mainly because in Greece we say that *“together with Goddess Athena move your own hands!”* – something similar to the quota of John F. Kennedy during his inaugural address to the American people. Speaking about truth it would be nice to inform the Greek people that approximately half of the hospitalized Covid patients are not natives – this is not a surprise since most hot spots in Athens are those hosting illegal immigrants or asylum seekers that usually refuse to comply with national guidelines for population protection (without penalties or fines of course).

Vaccines: They say that we will purchase the highly expected vaccines from 6 different companies (AstraZeneca; Johnson and Johnson; Sanofi-GSK; Pfizer; CureVac, and Moderna). Excellent! The big question is not if they are effective because they are (provided the data submitted are true). It is which one should I choose? But will I have the right to choose? And should I think that the healthcare sector is using the Moderna vaccine and I was given the one from Pfizer. What if the gov Cabinet was vaccinated with AstraZeneca and me was given the one from Sanofi-GSK? Quite reasonable isn't it? I know how to make a comparison table with the pros and cons and decide. But what about lay people that will think “they give the good staff to the gov and the not so good to the people!” Plus, the anti-vaxxers that will use this vaccine diversity to start propagating about discriminations, public rights, and other things that fuel chaotic situations they love to ignite. Of course, one might argue using a quote from late leader Deng Xiaoping in the 1960s – *“Black cat or white cat, if it can catch mice, it's a good cat”* but logic and pandemic do not always travel together especially in countries with a temperament more vivid and reactive than others. Speaking about cats: is the Sputnik V cat a bad cat because she was not born in the “good” West? In Greece, this name is kind of forbidden – I mean for a cat!

In conclusion

There are many gaps identified and no solutions were scheduled or given. The biggest problem is that those in high places cannot think “big” and they are not able to rapidly incorporate new knowledge and experience to current management. Being over-optimistic is not always good; exploring worst-case scenarios is not pleasant but it minimizes the chance for unpleasant surprises. Planners always forget, ignore, or are unaware of the fact that plans should be based on what people will actually do during an emergency or a crisis and not on what people are expected to do. The latter is a 100% guarantee for failure. Unfortunately, the second wave of the pandemic is already here so the only hope is that gaps identified will become lessons learned soon after the pandemic will be over. Because the “unexpected always happens” or the “unexpected can always be repeated!” ■





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