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*Dedicated to Global  
First Responders*

# DIARY



**HZS C<sup>2</sup>BRNE DIARY– 2020<sup>®</sup>**

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**Website:** [www.cbrne-terrorism-newsletter.com](http://www.cbrne-terrorism-newsletter.com)
**Editor-in-Chief**
**BrigGEN (ret.) Ioannis Galatas MD, MSc, MC (Army)**

PhD cand

Consultant in Allergy & Clinical Immunology  
 Medical/Hospital CBRNE Planner & Instructor  
 Senior Asymmetric Threats Analyst  
 Manager, CBRN Knowledge Center @ International CBRNE Institute (BE)  
 Senior CBRN Consultant @ HotZone Solutions Group (NL)  
 Athens, Greece

**Contact e-mail:** [igalatas@yahoo.com](mailto:igalatas@yahoo.com)
**Editorial Team**

- **Bellanca Giada, MD, MSc (Italy)**
- **Hopmeier Michael, BSc/MSc MechEngin (USA)**
- **Kiourktsoglou George, BSc, Dipl, MSc, MBA, PhD (UK)**
- **Photiou Steve, MD, MSc EmDisaster (Italy)**
- **Tarlow Peter, PhD Sociol (USA)**

**A publication of**
**HotZone Solutions Group**

 Prinsessegracht 6, 2514 AN, The Hague,  
 The Netherlands

T: +31 70 262 97 04,

F: +31 (0) 87 784 68 26

**E-mail:** [info@hotzonesolutions.org](mailto:info@hotzonesolutions.org)


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# EDITOR'S CORNER




**Editorial**

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

*Editor-in-Chief*  
HZS C<sup>2</sup>BRNE Diary



*Dear Colleagues,*

**QUARANTINE!**

An experience that our generation will remember forever! The word *quarantine* comes from *quarantena*, meaning "forty days", used in the 14th-15th-century Venetian language and designating the period that all ships were required to be isolated before passengers and crew could go ashore during the Black Death plague epidemic; it followed the *trentino*, or thirty-day isolation period, first imposed in 1377 in the Republic of Ragusa, Dalmatia (modern Dubrovnik in Croatia).

Quarantine – a time to reconsider things and values and to reshape our lives and targets!

**What are April's highlights?**

Too much of everything could be hazardous for our health and mind! "Ουκ εν τω πολλώ το ευ!" ancient Greeks used to point out (= less is often more). Lot's of information over the Internet; countless hours of television analysis with special focus on the millions of people affected by the coronavirus; new rules over existing rules and penalties to stay home; racism against the elderly as if they are responsible about the decline of human defenses coming with age; and the most important of all the global problem that everybody in this planet can equally express an opinion about everything because we have democracy – remember?

We declared heroes all those involved in healthcare front-line but we award the same gold medal to those who deliver pizzas and take away food or those working in supermarkets or those involved in traffic control or guarding the quarantine. Do not take me wrong – I sincerely pay tribute to all those people who do not stay at home serving all of us staying in our castles but there are also silver and copper medals not to mention that in Olympic Games all those succeeded in the first ten places are called "Olympians".

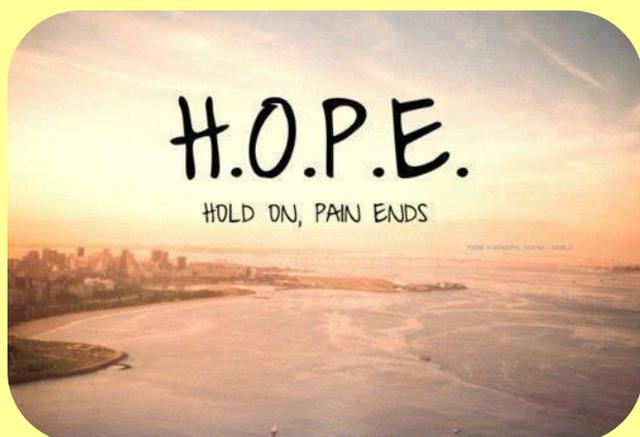
At the end of this volume, there are some quotes I copied from the Internet addressing the ten things we become aware of during the last few weeks – very interesting and so true!

The big question hovering over the planet is this: "What is the reason behind the global scientific mobilization in order to counter the ongoing pandemic? How come this wonderful scientific boom was not done before when the planet was facing similar and in some cases more deadly threats – HIV; H1N1, SARS, MERS, Zika and even cancer? Is there something special with Covid-19 that all of us are not aware of? Do not connect this with circulating conspiracies and infodemics. For CBRN people it is obvious that a pandemic (both natural or man-made) is the essence behind "B"! This is how a B-attack will progress – perhaps even faster or deadlier – but this is how it will happen in the future especially now that modern biotechnologies are capable of creating almost everything (both good and extremely lethal). In my lectures in front of medical audiences I used to say "of course medical people are more familiar with the "B" of "CBRN" – I was so wrong! We do not know shit (excuse my language). We thought that a few negative pressure wards would contain everything – not they do not offer anything in a pandemic. We forget that simple consumables like masks and protective equipment would make the difference; we did not train hospital personnel on how to use them even under normal conditions. We let one or two countries to be the main manufactures of simple things as if these items were not worthy to invest on. And many more! Hope we will learn and fill the gaps after the pandemic – though I am not so sure about this ...



And then, there is the day after – back to normality, we call it. Some envision “immunity passports”; others propose the electronic surveillance of the population marking citizens with red, yellow and green tags – via their smartphones of course! There is a huge debate on how to prove immunity in order to restart the broken economy and make money again. Rapid tests are in the front-line of this debate. A negative rapid test could be dangerous for the people and communities because it might provide a false feeling that people can do whatever they were doing before the pandemic with no limitations. How can we speak about immunity against a pathogen just four months old? How can we demand a 100% accurate test the moment the gold diagnostic standard – the PCR – is way out of this desired 100%. And then there is a parallel race of profit with a big number of companies producing these rapid tests (mainly Asian) that in many instances provided very poor results. The important thing that everybody forgets (?) to mention is that we are not talking about a SINGLE test (positive or negative)! The very cheap price per test allows frequent repetition of these tests over a period of time in order to establish a relatively safe immunity profile ALWAYS in correlation with the clinical status of the individual. A protocol describing when to do the test and when to repeat the test is highly required. The bottom line is that in a war, you fight with what you have at hand and not with what you would like to have. And for the time being, rapid tests are what we have at hand – prefer/trust European products from companies that have a long list of similar diagnostics and back experience in this field.

In Greece, we did well – compared to the hecatombes in the rest of the world. The only “problem” is the nice climate we have here and this might urge people to overpass the social distancing rules in place towards summer time. The financial consequences in a country with a single heavy industry – tourism – could be devastating and difficult to predict. But as if the pandemic was not enough, Greece is confronted with thousands of illegal immigrants that are gathering again in the coastal Turkey opposite our islands in the Aegean Sea. After their unsuccessful attempt to invade Greece from its land borders in Evros earlier this year, a second- round is expected now from the sea – not to mention the additional fear that many of them might be coronavirus infected due to the high toll of Covid-19 cases in the neighboring country. Unfortunately, nobody in Europe (I do not use the term European Union anymore) is proposing a valid applicable solution because every country cares only about itself – a solid proof is Italy that is fighting the coronavirus alone with some support from non-European nations (Russia; China; Cuba; Qatar). Our only hope stems from our own history indicating that Greeks excell in difficult times!



Finally, you might have noticed that the *C<sup>2</sup>BRNE Diary* is now a HotZone Solutions Group publication. After some time of informal collaboration, we decided to join forces in order to serve better our reading audience, This issue and few to follow will be a transition period to a total restructure of the journal delayed for the time being due to the extraordinary conditions caused by the pandemic. So, stay tuned!

Take care First Responders! Be safe! Keep on the excellent work! Calm seas always follow the rage of Poseidon! Hope for the best; prepare for the worst!

*The Editor-in-Chief*



## Highlights - The situation at the Union's external borders in Greece, 2 April 2020 - Committee on Civil Liberties, Justice and Home Affairs

30-03-2020 06:54 PM CEST

LIBE Members will exchange views on the situation in Greece with Margaritis Schinas, Commission Vice-President for Promoting the European way of life and Ylva Johansson, Commissioner for Home Affairs, Notis Mitarachi, Minister of Migration and Asylum and Michalis Chrisochoidis, Minister of Citizen protection (Greece) and with Terezija Gras, State Secretary for EU and International Affairs (Croatia - CLS Presidency), Fabrice Leggeri, Executive Director Frontex and Michael O'Flaherty, Director FRA

[Fundamental rights of refugees and migrants at European borders](#)

[Fundamental rights implications: COVID-19 pandemic](#)

[FRA Report on "Children in migration in 2019"](#)

[FRA Practical suggestions on relocation of unaccompanied children from Greece](#)

[Council of Europe's Anti-torture Committee visit to Greece to examine treatment of migrants](#)



**EDITOR'S COMMENT:** I did not open the links provided because I did not see any link about the rights of the Greeks defending their national borders against the invasion of the illegal immigrants' tsunami along with the Turkish offensive.

## **When olive trees (some 3.000 years old) die ...**

Lesvos Island and illegal immigrants



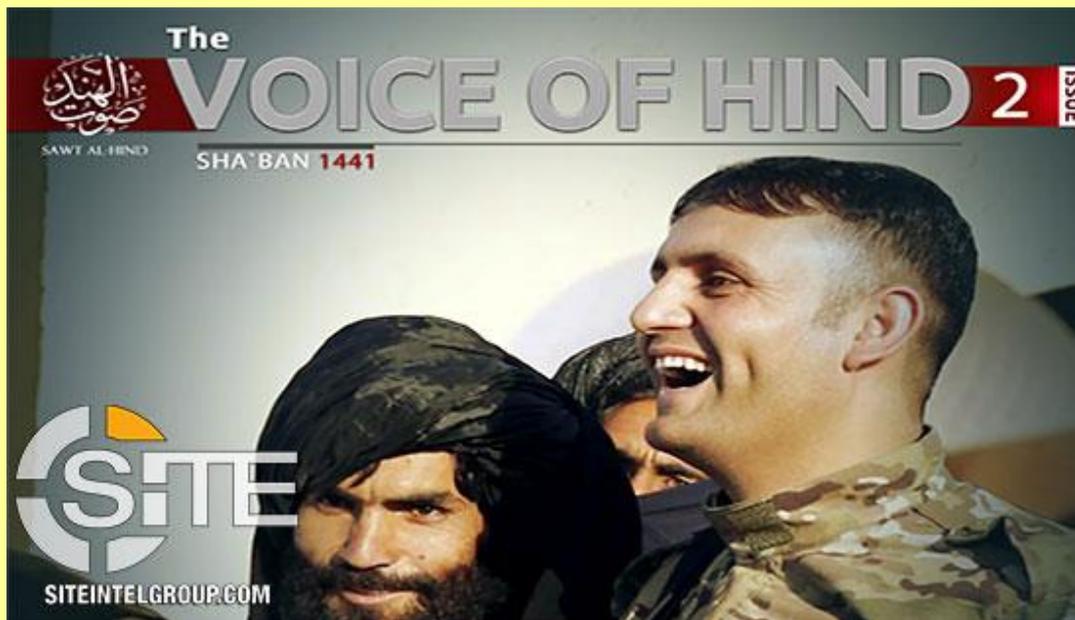
## ISIS Magazine Calls for Attacks on ‘Easy Target’ Military, Police During Coronavirus Chaos

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/isis-magazine-calls-for-attacks-on-easy-target-military-police-during-coronavirus-chaos/>

Apr 07 – A magazine published by ISIS supporters encouraged attacks using simple weapons and tactics specifically targeting military and police officers during the chaos of the coronavirus pandemic.

In an article in the second issue of “The Voice of Hind,” a magazine published and distributed online by ISIS supporters in India, the ISIS supporters declare that COVID-19 “is a punishment sent by Allah on whom he wished, and Allah made it mercy for the believers.”



The magazine tells jihadists to “prepare with whatever you have and Rise up! and make it worse for the Kuffar [disbelievers]” during the pandemic, and “nonetheless show mercy towards the believers and support them during these times.”

“Undoubtedly, Allah has made this disease a source of chaos amongst the nations of disbelief, and their militaries and police have been deployed in their streets and alleys, thus making them an easy target,” the article continues. “So, use this opportunity to

strike them with a sword or a knife or even a rope is enough to stop their breath, fill the streets with their blood. Indeed, this is the punishment and wrath of Allah up on the disbelievers, so make it worse for them. Allah aids those who aid His religion and Allah is pre dominant over His affairs but most of the people do not know.”

Another page in the magazine lists some ways to “annihilate the disbelievers,” including vehicle attacks, knife and ax attacks, arson, and poisoning food and drink.

The first issue of “The Voice of Hind” was released in late February to coincide with President Trump’s visit to India. The latest issue was released in late March.

The encouragement of terrorism linked to the coronavirus joins other ISIS propaganda including a graphic circulated by ISIS supporters declaring the virus to be a “soldier of Allah.”

ISIS stressed in a late March [editorial](#) on the coronavirus pandemic that countries’ security distraction in trying to control and respond to the spread of the virus leaves an opening for jihadists to exploit.

While countries have been “striving to reduce the likelihood of the mujahideen launching attacks,” said the full-page article on page 3 in the latest issue of ISIS’ *al-Naba* newsletter, the coronavirus represents “additional pressure and burden” on governments including price hikes, product shortages and “a great retreat in the economy and incomes” that reduces the ability of governments to coordinate counterterrorism operations with one another and brings “fears that their other enemies will exploit this critical situation they are all going through in order to make gains at their expense.”

“The last thing they want,” ISIS continued, is for jihadists to be currently preparing new attacks “similar to the strikes of Paris, London, Brussels and other places.”

ISIS added that not only is security strained but hospitals in affected countries are overburdened and “what they fear above all is that the mujahideen should greet them in the morning” like on the days of attacks past. Militaries, they said, have been driven by the virus



into “a state of paralysis because of the restriction of their movements,” and also face crippling budget pressure.

The group has followed the outbreak [from the beginning](#) of this year, regularly including updates in the news briefs section of the newsletter. “A new virus spreads death and terror in China,” *al-Naba* reported in January, adding that “communist China is panicking after a new virus has spread” and noting how Chinese officials discussed the discovery of person-to-person transmission as well as the lockdown of Wuhan. *Al-Naba* highlighted “growing concern about the spread of the infectious virus,” adding that “this could push the World Health Organization into an emergency.”

Around the same time, ISIS-supporting Quraysh Media, which has been active in its production of online propaganda posters, seized on the outbreak to produce and disseminate a poster with a grainy image of a person in a hazmat suit and respirator. “China: coronavirus,” the poster stated, adding, “A promise is a debt we must not forget.”

As the outbreak spread, perhaps mindful that the global reach of the new coronavirus could also pose a threat to their members or supporters, the Islamic State [turned to criticizing](#) the Chinese government for hiding the scope of coronavirus outbreak.

*Bridget Johnson is the Managing Editor for Homeland Security Today. A veteran journalist whose news articles and analyses have run in dozens of news outlets across the globe, Bridget first came to Washington to be online editor and a foreign policy writer at The Hill. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera and SiriusXM.*

## Lessons from Chernobyl, Terrorism on Dealing with Mental Health Challenges of COVID-19

By Anne Speckhard

Source: <https://www.hstoday.us/subject-matter-areas/emergency-preparedness/lessons-from-chernobyl-terrorism-on-dealing-with-mental-health-challenges-of-covid-19/>

Apr 07 – With COVID-19 we are dealing with an invisible stressor and the potentially traumatic threat of death to ourselves and our loved ones. Both of these are creating widespread feelings of anxiety and depression, and may in the long run, if we get the hundreds of thousands of deaths as potentially predicted, cause a new kind of post-traumatic stress in some, and complicated grieving in others. I’ve been involved in two similar-type traumatic stressors: one, the Chernobyl power plant explosion, [a technological disaster](#) spewing radioactive particles over a vast area of land, and the other involving nonstate terrorist actors killing some, while threatening to kill all, that may have lessons to teach us about how to psychologically cope better on an individual and national level with COVID-19. What can we learn from other similar stressors to brace and get through this one?

### Terrorists – We Can Kill You Anywhere, at Any Time

The global COVID-19 threat is completely different, yet not totally unlike, than terrorists who, after successfully carrying out one spectacular attack or a campaign of attacks that are widely nationally or internationally broadcast, spread fear and anxiety throughout entire societies. It’s not rational, really; terrorists who in reality only killed dozens somehow manage to convince entire populations that they can be killed at anytime, anywhere, and thus make us all fear.

What we learned with the terrorist threat is that the news media, particularly during and right after an attack, is deeply important – that it’s crucial to have broadcasters who don’t sensationalize and whip up the fear any more than is necessary to take wise precautions and [leaders and spokespersons who instill trust and calm](#) throughout the nation. We need to be able to turn to credible leaders to pass true and trustworthy information so that the population follows their instructions and doesn’t begin to doubt and look for their own, often misguided, sources of information. We already have seen this with the [couple who recently ingested a substance that President Trump touted as a potential cure for COVID-19](#), yet the form they took killed one of them.

Likewise, it’s important for parents to realize that [children are also viewing the news as well and are too young to make sense of it and are frightened by it](#). For instance, after 9/11, even children in Italy were reporting nightmares of planes crashing into their apartment buildings after viewing the planes of 9/11 hitting the twin towers in New York too many times, with too many heightened emotions. Similarly, I recently heard about one 3-year-old child who, after



hearing too much scary COVID-19 news, began to ask his mother, “Are there viruses here in our home too?” Sometimes it’s good to shut off the news when small children are around. These days, with Twitter also giving adults endless and frightening news, adults too may need to exercise self-discipline and not overload their emotional capacities.



### **Chernobyl: The Invisible Stressor of Radiation Poisoning**

The Chernobyl disaster also gives us lessons about facing an invisible stressor, much like the COVID-19 virus that can’t be seen by the naked eye, but can be lethal nonetheless. While many are frustrated by the lack of COVID-19 testing, all of us are inundated with the news of its highly contagious nature leading many to speculate about what may be in their futures if they too become infected. For instance, a mother in Europe told me her son had bronchitis and due to the restrictions had to have the doctor come to them. She relayed how the healthcare workers arrived fully suited to test her young toddler. While he tested negative, she could only imagine what might have happened if he tested positive. Would they have separated him from his mother and taken him to the hospital alone?

How many deaths will occur with family members unable to be at their loved ones’ bedsides, unable to say goodbye? It haunts all of us when a loved one begins to cough or complain of any symptoms resembling those of COVID-19.

This is not unlike our experiences in 1997, when my husband was posted as U.S. Ambassador in Belarus, the former Soviet Union country hit hardest by the Chernobyl disaster, with most of the radioactive fallout landing on Belarusian territory. We had three young children with us and were naturally concerned about their being exposed. I wasn’t the only one worried. It was 11 years after the disaster but the “Chernobyl necklaces” – scars crossing the throats of children who had developed thyroid cancer – were sobering reminders of the dangers that may still lurk in the food, soil and air. [Mothers were terrified](#) when their children sneezed or fell ill, fearing the worst – that they had been radiated and now had cancer. It’s not unlike COVID-19 today with everyone wondering what they might touch, walk upon, or breathe that could bring the toxic death virus inside their bodies and homes. It’s not irrational to have fears as we watch the fatality numbers growing and the predictions that hundreds of thousands may die.

In Belarus, the Chernobyl liquidators, brave men and women who had gone to shut down the nuclear reactor, some even working on the rooftop to build a giant sarcophagus to contain it, asked me to study their post-traumatic responses years after having been exposed to radiation, as some of their comrades had died of radiation poisoning afterwards. They all feared early deaths, cancers and some even had partners who didn’t want to risk having children for fear of potential birth defects due to radiation mutations.

Studying their responses, I and others learned that the Chernobyl liquidators had all the classic symptoms of post-traumatic stress disorder [PTSD]. They had faced an event that threatened all of their lives, had learned of others dying horrific deaths in wards shuttered from public visits, and they as a result suffered extreme fear, anxiety and depression, and a sense of heightened arousal in their bodies. They suffered nightmares and found it difficult



to sleep. They tried hard to avoid thinking or talking about the disaster, but often felt they could not and then resorted to drinking and other maladaptive methods of trying to calm themselves.

But the [one thing they didn't suffer were flashbacks](#) of the event. That was because they had faced an invisible stressor, something unlike other traumas, where the threat to life involves a painfully and overwhelmingly visible traumatic stressor, which is remembered over and over again after the event. Many PTSD survivors refer to these post-traumatic flashbacks, which repeatedly intrude into their everyday thoughts, as being like full-sensory films, in which they painfully relive the traumatic event with the sights, smells, sounds, tastes and sensations of the traumatic event still all intact – to be relived again in every gory detail.

There were no such traumatic flashbacks for the Chernobyl liquidators because their [trauma was informational, and the stressor was invisible](#). Most had only learned later of the grave dangers they had undergone while being exposed to this invisible stressor of radiation. It is the same now for COVID-19 exposure. While as a collective society we are all exposed to the COVID-19 crisis, none of us know as individuals, until we fall ill, if we have been exposed and may die of it. But that doesn't stop our minds from conjuring up ill-fated futures with which to torture us. In the case of the Chernobyl liquidators, they experienced what I began to refer to as [flash-forwards](#) – traumatic images that played in their minds of falling ill with cancer, of dying early, or of being rejected by others, and these robbed them of their joy and caused them the same deep distress often seen in PTSD. In fact, I believe they had PTSD from the Chernobyl event, but with this one feature specifically different – the horror playing in their minds was not of a past event, but of a poisoned future.

So how can we as a collective society, and individually, deal with the stress and anxiety and potential trauma of COVID-19? First is to realize the stress and traumas may raise cortisol levels in our bodies and that we can do things to antagonize that. One is engaging in attachment behaviors that release oxytocin in our brains and bodies, a hormone that naturally antagonizes cortisol and lowers it. That's why you see toddlers who are exploring their worlds, when frightened, turning back to their parents for a reassuring gaze or vocalization, or even running back for a hug, to let them know the fear is not overwhelming and that they can carry on. It's a natural stress inhibitor to engage in attachment behaviors. Okay, so we can't hug and touch anymore, except in our immediate families, but a phone call, reaching out to others and knowing you are not facing this alone, and some laughter can be very strong medicine to keep stress levels in check, as can diverting your attention from the stressor by absorbing yourself in things that bring joy or take your thoughts elsewhere. Likewise, exercise is good.

While we don't want to dwell on the negative, we also need to face that some of us will lose loved ones, which is why we all must take social distancing seriously and try to minimize the number of losses. For those who do suffer losses, we can expect to see complicated grieving. We may not be able to be at the bedside or even enter the hospitals where our loved ones are treated, or be able to hold funerals and burials for some. This will inhibit grieving and we will have to find other ways to hold delayed memorials and to grieve with rituals that differ from those relied upon in the past.

But we also need to put our fears into perspective. When 9/11 happened, I was in Brussels and held [stress debriefings for expats](#) who feared for family members back home, about flights and about the next attack, which al-Qaeda had announced would be at NATO headquarters in Brussels in October. Government officials suddenly went to militarized workplaces, passing armed guards and tanks on their way into their offices and heard about real and fake anthrax arriving into many of the U.S. embassies around the world. They became terrified and started ruminating about their fears.

I told them to put it into perspective and asked how many had driven to the meeting we were holding? How many had partaken of the snacks served? Who dared to sit under the chandelier that might fall down and kill them if it dislodged from its hook in the ceiling? There are many ways to die and we generally block them all out. COVID-19 is making us acutely aware in these uncertain times of our own, and our loved ones', mortality. Aside from giving us a terrifying glimpse of our potential grim futures, it might also be a good thing.

Realizing that those around you, those you work with, those you interact with on a daily basis, your family members and even the strangers you pass never to see again are all mortal has the potential to instill deep terror inside. It also has the potential to make you a better human being, one filled with compassion and love for your fellow human traveler. We are all here only for a short time and this can be a time when we take the extra steps to be kind to one another and show love for all. COVID-19 is a pandemic of epic proportions but if we all refuse to give into fear and choose to respond with love and care it can also be a blessing in disguise.

*Anne Speckhard, Ph.D., is Director of the International Center for the Study of Violent Extremism (ICSVE) and serves as an Adjunct Associate Professor of Psychiatry at Georgetown University School of Medicine. She has interviewed over 700 terrorists, their family members and supporters in various parts of the world including in Western Europe, the Balkans, Central Asia, the Former Soviet Union and the Middle East.*



## Lessons from Italy's Response to Coronavirus

By Gary P. Pisano, Raffaella Sadun and Michele Zanini

Source: <https://hbr.org/2020/03/lessons-from-italys-response-to-coronavirus>

Mar 27 – As policymakers around the world struggle to combat the rapidly escalating Covid-19 pandemic, they find themselves in uncharted territory. Much has been written about the practices and policies used in countries such as China, South Korea, Singapore, and Taiwan to stifle the pandemic. Unfortunately, throughout much of Europe and the United States, it is already too late to contain Covid-19 in its infancy, and policymakers are struggling to keep up with the spreading pandemic. In doing so, however, they are repeating many of the errors made early on in Italy, where the pandemic has turned into a disaster. The purpose of this article is to help U.S. and European policymakers at all levels learn from Italy's mistakes so they can recognize and address the unprecedented challenges presented by the rapidly expanding crisis.

In a matter of weeks (from February 21 to March 22), Italy went from the discovery of the first official Covid-19 case to a government decree that essentially prohibited all movements of people within the whole territory, and the closure of all non-essential business activities. Within this very short time period, the country has been hit by nothing short of a tsunami of unprecedented force, punctuated by an incessant stream of deaths. It is unquestionably Italy's biggest crisis since World War II.

Some aspects of this crisis — starting with its timing — can undoubtedly be attributed to plain and simple *sfortuna* ("bad luck" in Italian) that were clearly not under the full control of policymakers. Other aspects, however, are emblematic of the profound obstacles that leaders in Italy faced in recognizing the magnitude of the threat posed by Covid-19, organizing a systematic response to it, and learning from early implementation successes — and, most importantly, failures.

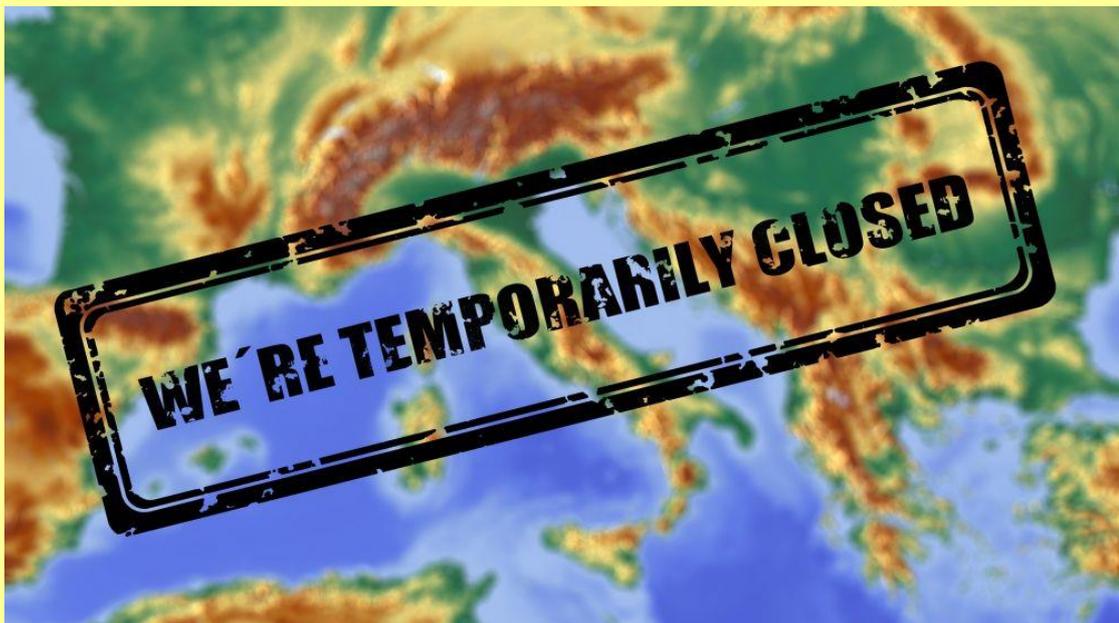
It is worth emphasizing that these obstacles emerged even after Covid-19 had already fully impacted in China and some alternative models for the containment of the virus (in China and elsewhere) had already been successfully implemented. What this suggests is a systematic failure to absorb and act upon existing information rapidly and effectively rather than a complete lack of knowledge of what ought to be done.

Here are explanations for that failure — which relate to the difficulties of making decisions in real time, when a crisis is unfolding — and ways to overcome them.

### Recognize your cognitive biases

In its early stages, the Covid-19 crisis in Italy looked nothing like a crisis. The initial state-of-emergency declarations were met by skepticism by both the public and many in policy circles — even though several scientists had been [warning](#) of the potential for a catastrophe for weeks. Indeed, in late February some notable Italian politicians [engaged](#) in public handshaking in Milan to make the point that the economy should not panic and stop because of the virus. (A week later, one of these politicians was diagnosed with Covid-19.)

Similar reactions were repeated across many other countries besides Italy and exemplify what behavioral scientists call *confirmation bias* — a tendency to seize upon information that confirms our preferred position or initial hypothesis. Threats such as pandemics that evolve in a nonlinear fashion (i.e., they start small but exponentially intensify) are especially tricky to confront because of the challenges of rapidly interpreting what is happening in real time. The most



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effective time to take strong action is extremely early, when the threat appears to be small — or even before there are any cases. But if the intervention actually works, it will appear in retrospect as if the strong actions were an overreaction. This is a game many politicians' don't want to play.

The systematic inability to listen to experts highlights the trouble that leaders — and people in general — have figuring out how to act in dire, highly complex situations where there's no easy solution. The desire to act causes leaders to rely on their gut feeling or the opinions of their inner circle. But in a time of uncertainty, it is essential to resist that temptation, and instead take the time to discover, organize, and absorb the partial knowledge that is dispersed across different pockets of expertise.

### Avoid partial solutions

A second lesson that can be drawn from the Italian experience is the importance of systematic approaches and the perils of partial solutions. The Italian government dealt with the Covid-19 pandemic by issuing a series of decrees that gradually increased restrictions within lockdown areas ("red zones"), which were then expanded until they ultimately applied to the entire country.

In normal times, this approach would probably be considered prudent and perhaps even wise. In this situation, it backfired for two reasons. First, it was inconsistent with the rapid exponential spread of the virus. The "facts on the ground" at any point in time were simply not predictive of what the situation would be just a few days later. As a result, Italy *followed* the spread of the virus rather than *prevented* it. Second, the selective approach might have inadvertently facilitated the spread of the virus. Consider the decision to initially lock down some regions but not others. When the decree announcing the closing of northern Italy became public, it touched off a massive exodus to southern Italy, undoubtedly spreading the virus to regions where it had not been present.

This illustrates what is now [clear](#) to many observers: An effective response to the virus needs to be orchestrated as a coherent system of actions taken simultaneously. The results of the approaches taken in [China](#) and [South Korea](#) underscore this point. While the public discussion of the policies followed in these countries often focuses on single elements of their models (such as extensive testing), what truly characterizes their effective responses is the multitude of actions that were taken at once. Testing is effective when it's combined with rigorously contact tracing, and tracing is effective as long as it is combined with an effective communication system that collects and disseminates information on the movements of potentially infected people, and so forth.

These rules also apply to the organization of the health care system itself. Wholesale reorganizations are needed *within* hospitals (for example, the [creation](#) of Covid-19 and non Covid-19 streams of care). In addition, a [shift](#) is urgently needed from patient-centered models of care to a community-system approach that offers pandemic solutions for the entire population (with a specific emphasis on home care). The need for coordinated actions is especially acute right now in the United States.

### Learning is critical

Finding the right implementation approach requires the ability to quickly learn from both successes and failures and the willingness to change actions accordingly. Certainly, there are valuable lessons to be learned from the approaches of China, South Korea, Taiwan, and Singapore, which were able to contain the contagion fairly early. But sometimes the best practices can be found just next door. Because the Italian health care system is highly decentralized, different regions tried different policy responses. The most notable example is the [contrast](#) between the approaches taken by Lombardy and Veneto, two neighboring regions with similar socioeconomic profiles.

Lombardy, one Europe's wealthiest and most productive areas, has been disproportionately hit by Covid-19. As of March 26, it held the grim record of nearly 35,000 novel coronavirus cases and 5,000 deaths in a population of 10 million. Veneto, by contrast, fared significantly better, with 7,000 cases and 287 deaths in a population of 5 million, despite experiencing sustained community spread early on.

The trajectories of these two regions have been shaped by a multitude of factors outside the control of policymakers, including Lombardy's greater population density and higher number of cases when the crisis erupted. But it's becoming increasingly apparent that different public health choices made early in the cycle of the pandemic also had an impact.

Specifically, while Lombardy and Veneto applied similar approaches to social distancing and retail closures, Veneto took a much more proactive tack towards the containment of the virus. Veneto's strategy was multi-pronged:

- Extensive testing of symptomatic and asymptomatic cases early on.
- Proactive tracing of potential positives. If someone tested positive, everyone in that patient's home as well as their neighbors were tested. If testing kits were unavailable, they were self-quarantined.
- A strong emphasis on home diagnosis and care. Whenever possible, samples were collected directly from a patient's home and then processed in regional and local university labs.



- Specific efforts to monitor and protect health care and other essential workers. They included medical professionals, those in contact with at-risk populations (e.g., caregivers in nursing homes), and workers exposed to the public (e.g., supermarket cashiers, pharmacists, and protective services staff).

Following the guidance from public health authorities in the central government, Lombardy opted instead for a more conservative approach to testing. On a per capita basis, it has so far conducted half of the tests conducted in Veneto and had a much stronger focus only on symptomatic cases — and has so far made limited investments in proactive tracing, home care and monitoring, and protection of health care workers.

The set of policies enacted in Veneto are thought to have considerably reduced the burden on hospitals and minimized the risk of Covid-19 spreading in medical facilities, a problem that has greatly impacted [hospitals in Lombardy](#). The fact that different policies resulted in different outcomes across otherwise similar regions should have been recognized as a powerful learning opportunity from the start. The findings emerging from Veneto could have been used to revisit regional and central policies early on. Yet, it is only in recent days, a full month after the outbreak in Italy, that Lombardy and other regions are taking steps to emulate some of the aspects of the “Veneto approach,” which include pressuring the central government to help them boost their diagnostic capacity.

The difficulty in diffusing newly acquired knowledge is a well-known phenomenon in both private- and the public-sector organizations. But, in our view, accelerating the diffusion of knowledge that is emerging from different policy choices (in Italy and elsewhere) should be considered a top priority at a time when “every country is reinventing the wheel,” as several scientists told us. For that to happen, especially at this time of heightened uncertainty, it is essential to consider different policies as if they were “experiments,” rather than personal or political battles, and to adopt a mindset (as well as systems and processes) that facilitates learning from past and current experiences in dealing with Covid-19 as effectively and rapidly as possible.

It is especially important to understand what does *not* work. While successes easily surface thanks to leaders eager to publicize progress, problems often are hidden due to fear of retribution, or, when they do emerge, they are interpreted as individual — rather than systemic — failures. For example, it emerged that at the very early onset of the pandemic in Italy (February 25), the contagion in a specific area in Lombardy could have been accelerated through a local hospital, where a Covid-19 patient was not been properly diagnosed and isolated. In [talking](#) to the media, the Italian prime minister referred to this incident as evidence of managerial inadequacy at the specific hospital. However, a month later it became [clearer](#) that the episode might have been emblematic of a much deeper issue: that hospitals traditionally organized to deliver patient-centric care are ill-equipped to deliver the type of community-focused care needed during a pandemic.

### Collecting and disseminating data is important

Italy seems to have suffered from two data-related problems. In the early onset of the pandemic, the problem was data *paucity*. More specifically, it has been [suggested](#) that the widespread and unnoticed diffusion of the virus in the early months of 2020 may have been facilitated by the lack of epidemiological capabilities and the inability to systematically record anomalous infection peaks in some hospitals.

More recently, the problem appears to be one of data *precision*. In particular, in spite of the remarkable effort that the Italian government has shown in regularly updating statistics relative to the pandemic on a publicly available website, some [commentators](#) have advanced the hypothesis that the striking discrepancy in [mortality](#) rates between Italy and other countries and within Italian regions may (at least in part) be driven by different testing approaches. These discrepancies complicate the management of the pandemic in significant ways, because in absence of truly comparable data (within and across countries) it is harder to allocate resources and understand what’s working where (for example, what’s inhibiting the effective [tracing](#) of the population).

In an ideal scenario, data documenting the spread and effects of the virus should be as standardized as possible across regions and countries and follow the progression of the virus and its containment at both a macro (state) and micro (hospital) level. The need for micro-level data cannot be underestimated. While the discussion of health care quality is often made in terms of macro entities (countries or states), it is well [known](#) that health care facilities vary dramatically in terms of the quality and quantity of the services they provide and their [managerial capabilities](#), even within the same states and regions. Rather than hiding these underlying differences, we should be fully aware of them and plan the allocation of our limited resources accordingly. Only by having good data at the right level of analysis can policymakers and health care practitioners draw proper inferences about which approaches are working and which are not.

### A Different Decision-Making Approach

There is still tremendous uncertainty on what exactly needs to be done to stop the virus. Several key aspects of the virus are still unknown and hotly debated, and are likely to remain so for a considerable amount of time. Furthermore, significant lags occur between the time



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of action (or, in many cases, inaction) and outcomes (both infections and mortality). We need to accept that an unequivocal understanding of what solutions work is likely to take several months, if not years.

However, two aspects of this crisis appear to be clear from the Italian experience. First, there is no time to waste, given the exponential progression of the virus. As the head of the Italian Protezione Civile (the Italian equivalent of FEMA) [put it](#), “The virus is faster than our bureaucracy.” Second, an effective approach towards Covid-19 will [require](#) a war-like mobilization — both in terms of the entity of human and economic resources that will need to be deployed as well as the extreme coordination that will be required across different parts of the health care system (testing facilities, hospitals, primary care physicians, etc.), between different entities in both the public and the private sector, and society at large.

Together, the need for immediate action and for massive mobilization imply that an effective response to this crisis will require a decision-making approach that is far from business as usual. If policymakers want to win the war against Covid-19, it is essential to adopt one that is systemic, prioritizes learning, and is able to quickly scale successful experiments and identify and shut down the ineffective ones. Yes, this a tall order — especially in the midst of such an enormous crisis. But given the stakes, it has to be done

*Gary P. Pisano is the Harry E. Figgie Jr. Professor of Business Administration and the senior associate dean of faculty development at Harvard Business School. He is the author of [Creative Construction: The DNA of Sustained Innovation](#).*

*Raffaella Sadun is a professor of business administration at Harvard Business School. Her research focuses on the economics of productivity, management and organizational change in the private and public sectors. She is a faculty research fellow at the National Bureau of Economic Research and a research associate in the Ariadne Labs Program at Harvard T.H. Chan School of Public Health.*

*Michele Zanini is the managing director of the Management Lab. He is a co-author of [Humanocracy: Creating Organizations as Amazing as the People Inside Them](#) (Harvard Business Review Press, forthcoming).*

## Most Mass Shootings Occur Closest to Non-Trauma Hospitals

Source: <http://www.homelandsecuritynewswire.com/dr20200330-most-mass-shootings-occur-closest-to-nontrauma-hospitals>

Mar 30 – In an analysis of 2019 mass shootings and hospital locations, researchers at [Children’s Hospital of Philadelphia](#) (CHOP) found that the closest hospital to more than 70 percent of mass shootings was a non-trauma center, where sudden, high casualty

loads were more likely to overwhelm capacity and trauma-specific care options may have been limited. They also found that in more than half of mass shooting events, the nearest pediatric trauma center was more than 10 miles away.

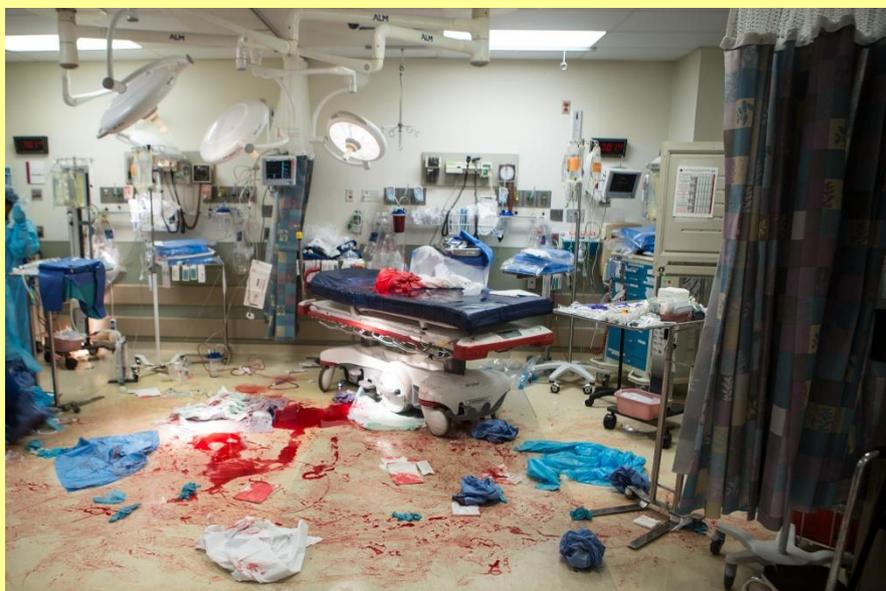
The findings were published today in a research letter in *JAMA Surgery*.

“The large number of serious injuries caused by mass shootings requires coordinated, high-level initial care, which is most commonly found in a trauma center,” said [Sage R. Myers](#), MD, MSCE, an attending physician in the [Emergency Department](#) at CHOP, Director of Trauma and Resuscitation for the Emergency Department, and co-author of the letter.

“Yet in the vast majority of events we studied, a non-trauma center was the closest hospital and thus was likely the primary patient-transport destination. Given that mass shootings are unfortunately commonplace,

all hospitals – regardless of trauma center status – should expect and prepare for the eventuality of a mass casualty event involving both adults and children.”

CHOP [says](#) that the researchers used the [Gun Violence Archive](#) to analyze all 2019 mass shootings, defined as five or more injuries or deaths by firearm, and found a total of 187 mass shooting events. Those events led to 1,250 injuries, 23.8 percent of which resulted in death – more than double the 10% mortality rate of wounds sustained in military combat.



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They then used Google Maps to calculate the driving distance from the address of the event to the nearest hospital, noting whether the facility was a non-trauma center, an adult level 1 or 2 trauma center, or a pediatric level 1 or 2 trauma center. Their analysis revealed that for 133 of the 187 events (71.1 percent), a non-trauma hospital was the nearest hospital.

Of the 187 mass shooting events in 2019, nearly 30 percent involved children. Yet 50.8 percent of all events occurred more than 10 miles from a pediatric trauma center, creating a challenge in caring for children injured in mass shootings.

“Children with injuries place a great stress on the system because many non-pediatric centers have limited child-specific resources, such as appropriately sized tracheal tubes and IVs, personnel trained in pediatric care, and pediatric-focused triage and transport policies,” said [Michael L. Nance](#), MD, Director of CHOP’s [Pediatric Trauma Program](#) and a Fellow with CHOP’s [Violence Prevention Initiative](#). “Until we are able to reduce the frequency of mass shooting events, all hospitals must be ready to function similarly to a military field unit, with resources to treat trauma injuries in patients of all ages.”

**EDITOR’S COMMENT:** A side conclusion from this article: It seems that offenders/terrorists are not the naïve, stupid, psychotic individuals presented by mass media (as usual). They do know that in order to maximize the bloodshed caused they have to do it away from hospitals (trauma or not). Also, do not forget that hospitals are *per se* targets!

## How the Islamic State Feeds on Coronavirus

Source: <https://www.politico.com/news/magazine/2020/04/08/how-the-islamic-state-feeds-on-coronavirus-175192>

Apr 08 – The world is shut down, counting its dead and its mounting economic losses, but in the far reaches of Iraq, the terrorists of the Islamic State are enjoying new life.

Even before Covid-19 hit Iraq, attacks by Iran-backed militias had forced the U.S.-led coalition into a defensive posture, sending fewer advisers out to assist the Iraqi security forces in their pursuit of hidden IS cells. The March 11 killing of two U.S. soldiers and one Briton in a militia rocket attack further disrupted coalition support to the fight against IS.

Then came the novel coronavirus.

On March 19, citing the virus, coalition and NATO training missions both suspended operations for two months. By March 29, Australia, Spain, France, the United Kingdom, New Zealand, Portugal and the Netherlands had withdrawn almost all of their trainers. In parallel, the U.S. withdrew from its frontline operating bases at Mosul, Al-Qaim, Qayyarah, Kirkuk and Taqaddum in the last week of March. Most U.S. forces were redistributed inside fewer, better-protected Iraqi bases such as Al-Asad and Erbil airport, both of which are now protected by newly installed U.S. missile defenses, to prevent a recurrence of the Jan. 8 Iranian missile attacks that left more than 100 U.S. troops with mild traumatic brain injuries.

The Iraqi military are meanwhile distracted by disaster relief, enforcing a nationwide curfew, and looking after their own health and that of their families. (Officially, the virus had sickened over 1,100 and killed 65 Iraqis as of Tuesday, but lack of testing means the real number is likely significantly higher.) Rural clearance operations have almost ceased and the pace of special forces raids has slackened, in part because of the severe disruption to intelligence, planning and air support provided by the U.S.-led coalition.

For the Islamic State, this is all a godsend. In its view, the pandemic is a literal act of divine intervention as it reached its lowest ebb. Terrorism expert Aymenn Jawad al-Tamimi [noted that](#) IS’ newsletter, Al-Naba, called coronavirus “God’s torment” upon the “Crusader nations,” and urged fighters to take advantage of the distraction and disruption caused by the virus.

In many ways the Islamic State is quite well adapted for operations during a pandemic. Its cells are isolated, avoiding the risk of contamination by performing extreme social distancing long before the rest of us. Its leadership issued [early instructions](#) to its cadres to limit their exposure to the virus—from the CDC-approved recommendations (washing hands and “covering up” coughs and sneezes) to Koranic verses involving lions and leprosy.

IS are somewhat self-contained, living in remote hideouts and underground shelters, drawing on independent food and water caches, and powering electronic devices with solar battery chargers. In every sense of the phrase, the thousands of members of this millenarian terrorist cult are the ultimate doomsday preppers.

**On the ground, there have been small signs of Islamic State recovery at the tactical level, probably due to the cessation of counterinsurgency operations targeting them.**

The four Iraqi military “clearance” operations undertaken in March were half as many as in April, and they lacked the coalition intelligence and air support that can focus such operations more effectively, instead falling into the less efficient category of unearthing arms caches but not catching enemy fighters.



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Whereas U.S. and Iraqi special operations forces did a minisurge of joint raids in February—dropping in by U.S. helicopters or tilt-rotor Osprey aircraft to raid caves and stop vehicles driven by IS members—there were no such raids in March.

Left to operate without being pressured and chased from hideout to hideout, Islamic State has been getting more ambitious at local level. In Khanaqin District, close to the Iran-Iraq border, IS quadrupled its average number of mortar and rocket attacks in March and combined the bombardments with sustained machine-gun fire and ground assaults on security force outposts.

Over a five-day period beginning March 17, insurgents fired 15 mortar rounds into heavily populated neighborhoods of cities such as Tuz Khurmatu and Amerli, a type of attack that has not been seen for more than two years.

Islamic State's next steps are easy to guess. It will increase rural assassination raids on local village leaders—so-called mukhtars—and use intimidation to increase its ability to raise funds. Disruption to security force clearance operations will increase IS' ability to make advanced roadside bombs in its hideouts and use these weapons, and other harassment tactics, to keep the security forces buttoned down in their bases.

If left unchecked, this kind of aggressive patrolling allows insurgents to gain psychological dominance over the local military garrisons and civilian populations. Before long, the insurgents will become the local power brokers, and it will no longer be possible to claim that IS' days of territorial control are over. This is how the caliphate knits itself back together, one village at a time. This is exactly how it happened in 2012-14, after the previous U.S. withdrawal.

**The only way to stop an IS resurgence, still in its infancy but now facing an improved outlook, is to reinvigorate an effective counterterrorism raiding campaign.** This requires ongoing partnership between U.S. and Iraqi special forces, and between Iraq's commandos and the local Sunni populations in IS strongholds. Unlike 2011, the U.S. should not leave Iraq entirely, but should rather lower its visibility.

In all likelihood, non-U.S. military forces will never return to Iraq in the numbers that were recently withdrawn, with the virus providing a way to justify withdrawal even though Iraqi security forces are arguably not prepared to restrain an Islamic State resurgence. U.S. forces may also dwindle in terms of raw numbers in Iraq, where Iran-backed factions are promising long-term armed resistance to the open presence of U.S. advisers.

This does not have to be the end of an effective counterterrorism fight, however.

In places as diverse as Yemen, Somalia, Mali and Syria, the U.S. Special Operations Command has employed quiet partnerships with local special forces and paramilitary proxies to take on terrorist cells in a more targeted and effective manner than the large-scale train-and-equip program that appears to be eroding in Iraq. The coalition mission in Iraq—due to turn 6 years old in September—might expire, but the effort to prevent another IS comeback cannot afford to take a break, whether as a result of coronavirus, Iran-backed militias or a devilish combination of the two. The answer may be to take the war underground and back into the shadows.

## Coronavirus Social Distancing Presents Special Challenges to Spies

Source: <http://www.homelandsecuritynewswire.com/dr20200409-coronavirus-social-distancing-presents-special-challenges-to-spies>



Apr 09 – While the COVID-19 public health crisis grabs the headlines and [kills tens of thousands](#), state-actors and transnational terrorist groups continue to purloin data, spread disinformation and plan terrorist attacks. Jason M. Blazakis writes in [The Hill](#) that as the United States grapples with the virus's spread, Russia and China [have spread disinformation](#) with the hope of destabilizing the U.S. political system while it is off balance. Both Chinese and [Russian](#) government officials and outlets have pushed conspiracy theories that the U.S. Army created COVID-19.

He adds:

At the same time, terrorist groups such as ISIS have claimed they will leverage the situation to carry out attacks like those in Paris and Brussels five years ago. A February 2020 Department of Homeland Security Federal Protective Service Bulletin, disseminated to state and local law enforcement, [warned that white supremacists](#) were exchanging messages about weaponizing COVID-19 to carry out attacks against U.S. government targets and minorities.

Amid all of this, the U.S. national security community's ability to detect threats may be less than optimal. If nothing else, U.S. policymakers who respond to intelligence assessments and daily briefings lack bandwidth to evaluate non-COVID-19 challenges. While there is little that can be done about the latter, one wonders what can be done about the former.

Human intelligence (HUMINT) collection — a key tool to combat terrorism — is impaired during COVID-19. Spotting, assessing, recruiting and developing sources of information to combat terrorism and state-borne threats is extremely difficult when [half of humanity](#) is



on lockdown. Blending into crowds while trying to clandestinely meet a source when there are no crowds becomes unviable and introduces a higher level of exposure.



## U.S. Intelligence Warned in November that Coronavirus Spreading in China Could Be “Cataclysmic Event”: Report

Source: <http://www.homelandsecuritynewswire.com/dr20200409-u-s-intelligence-warned-in-november-that-coronavirus-spreading-in-china-could-be-cataclysmic-event-report>

Apr 09 – President Donald Trump has repeatedly claimed that his administration could not have prepared for the pandemic because no government agency could have known that such an out-of-the-blue outbreak would happen. Justin Coleman writes that the president’s claims are false. The **U.S. intelligence community began to warn about a global epidemic in November, saying that the outbreak in China could develop into a “cataclysmic event,”** and policymakers, decisionmakers, and the National Security Council at the White House were repeatedly briefed on the issue. The coronavirus first appeared in the President’s Daily Brief (PDB) of intelligence matters — placed on the president’s desk every morning — in early January.

**EDITOR’S COMMENT:** Those who worked on presidential briefings in Republican and Democratic administrations said the initial concerns would have gone through weeks of vetting and analysis before appearing in the daily brief. **Houston, we have a problem!**

## The Four Crime Areas Criminals are Already Exploiting During the COVID-19 Pandemic

Source: <https://www.hstoday.us/channels/global/the-four-crime-areas-criminals-are-already-exploiting-during-the-covid-19-pandemic/>

Mar 28 - A new report by Europol shows criminals have been quick to seize opportunities to exploit the COVID-19 crisis by adapting their *modi operandi* or engaging in new criminal activities. Profits from these criminal enterprises are often poured into organized crime activities or terrorist groups.

Building upon information provided by EU Member States and in-house expertise, Europol’s situational report analyzes the current developments which fall into four main crime areas:

### Cyber crime

The number of cyberattacks against organizations and individuals is significant and is expected to increase. Criminals have used the COVID-19 crisis to carry out social engineering attacks themed around the pandemic to distribute various malware packages.

Cybercriminals are also likely to seek to exploit an increasing number of attack vectors as a greater number of employers’ institute telework and allow connections to their organizations’ systems.

Example: The Czech Republic reported a cyberattack on Brno University Hospital which forced the hospital to shut down its entire IT network, postpone urgent surgical interventions and re-route new acute patients to a nearby hospital.

### Fraud

Fraudsters have been very quick to adapt well-known fraud schemes to capitalize on the anxieties and fears of victims throughout the crisis. These include various types of adapted versions of telephone fraud schemes, supply scams and decontamination scams. A large number of new or adapted fraud schemes can be expected to emerge over the coming weeks.

Example: An investigation supported by Europol focuses on the transfer of €6.6 million by a company in Singapore in order to purchase alcohol gels and FFP3/2 masks. The goods were never received.

### Counterfeit and substandard goods

The sale of counterfeit healthcare and sanitary products as well as personal protective equipment and counterfeit pharmaceutical products has increased manifold since the



outbreak of the crisis. There is a risk that counterfeiters will use shortages in the supply of some goods to increasingly provide counterfeit alternatives both on- and offline.

Example: Between March 3-10 2020, over 34,000 counterfeit surgical masks were seized by law enforcement authorities worldwide as part of Operation PANGAEA supported by Europol.

### Organized property crime

Various types of schemes involving thefts have been adapted by criminals to exploit the current situation. This includes the well-known scams involving the impersonation of representatives of public authorities. Commercial premises and medical facilities are expected to be increasingly targeted for organized burglaries.

Despite the introduction of further quarantine measures throughout Europe, the crime threat remains dynamic and new or adapted types of criminal activities will continue to emerge during the crisis and in its aftermath.

Example: Multiple EU Member States have reported on a similar modus operandi for theft. The perpetrators gain access to private homes by impersonating medical staff providing information material or hygiene products or conducting a “Corona test”.

Europol also warns that migrant smuggling has been a key security and humanitarian challenge to the EU over the last five years and remains so during the COVID-19 pandemic crisis. There is likely to be increased demand for services of migrant smuggling networks to enter the EU or to make secondary movements to circumvent the enhanced border control measures currently in place throughout the EU.

▶▶ [Read more at Europol](#)

## U.K. Considers Virus-Tracing App to Ease Lockdown

Source: <http://www.homelandsecuritynewswire.com/dr20200401-u-k-considers-virus-tracing-app-to-ease-lockdown>

Apr 01 – A coronavirus app which alerts people if they have recently been in contact with someone testing positive for the virus “could play a critical role” in limiting lockdowns, scientists advising the government have said.

The location-tracking tech would enable a week’s worth of manual detective work to be done in an instant, they say. The academics say no-one should be forced to enroll - at least initially.

U.K. health chiefs have confirmed they are exploring the idea.

The study by the team at the University of Oxford’s [Big Data Institute](#) and Nuffield Department of Medicine was published in the journal [Science](#).

Leo Kelion writes for the [BBC](#) that the study proposes that an app **would record people’s GPS location data as they move about their daily lives. This would be supplemented by users scanning QR (quick response) codes posted to public amenities in places where a GPS signal is inadequate, as well as Bluetooth signals.**

If a person starts feeling ill, it is suggested they use the app to request a home test. And if it comes back positive for Covid-19, then an instant signal would be sent to everyone they had been in close contact with over recent days.

## Bellerophon Starts INOpulse Treatment in Coronavirus Patients

Source: <http://www.homelandsecuritynewswire.com/dr20200401-bellerophon-starts-inopulse-treatment-in-coronavirus-patients>

Apr 01 – [Bellerophon Therapeutics](#) has treated the first Covid-19 patient with its INOpulse at the University of Miami School of Medicine in the US.

This comes after the company received emergency expanded access from the U.S. Food and Drug Administration (FDA) for the inhaled nitric oxide system (iNO).

[Clinical Trials Arena](#) reports that NO is a naturally produced molecule that plays a key role in the immune response against pathogens and infections.

In-vitro studies found that NO blocks the replication of severe acute respiratory syndrome-related coronavirus (SARS-CoV) and improves the survival of infected cells.



## Pluristem Begins Dosing with Covid-19 Therapy in Israel

Source: <http://www.homelandsecuritynewswire.com/dr20200401-pluristem-begins-dosing-with-covid19-therapy-in-israel>

Apr 01 – [Pluristem Therapeutics](#) has started dosing Covid-19 patients in Israel with PLX cells under a compassionate use programme approved by the country's health ministry.

Dosing was performed in three patients at two hospitals. Pluristem intends to recruit more coronavirus patients in the coming days. [Clinical Trials](#) reports that PLX cells are off-the-shelf allogeneic mesenchymal-like cells with immunomodulatory properties that could trigger the immune system's natural regulatory T-cells and M2 macrophages.

**This mechanism is expected to block the overactivation of the immune system**, which leads to complications. It is hoped that the approach will potentially decrease the incidence and/or severity of pneumonia and pneumonitis associated with Covid-19 infection.

## The Nightmare After the Wuhan Wakeup

By Andrew R. Arthur

Source: <https://cis.org/Arthur/Nightmare-After-Wuhan-Wakeup>

Mar 31 – You do not hear much about terrorism these days, with the attention of the public focused intensively on the Wuhan virus — following the president's near-daily [press briefings](#) (or in the case of [many in the press](#), not), caring for school-aged children [who are not in school](#), or worrying about their retirement accounts in a [tumultuous stock market](#). The virus should be a wake-up, however, about a very real terrorist threat: bioterrorism, particularly transnational bioterrorism.

In my last [post](#), I mentioned the [case of a Pakistani-national physician](#), present in the United States on a temporary work visa, who was arrested a few days ago by the FBI on terrorism charges. According to prosecutors, he had pledged his allegiance to ISIS and "expressed [a] desire to conduct 'lone wolf' terrorist attacks in the United States." It is understandable if you are not familiar with the case — as noted, the focus right now is on the disease, the response to it, and its effect on the economy.

The Wuhan virus has revealed some glaring deficiencies in our public-health sector, however, to say the least. A [lack of information](#) (ironically enough), an [insufficient number of hospital beds compared to other countries](#), even a lack of [personal protection equipment](#) like masks and gowns ("PPEs", for the few who have not heard the phrase on a daily basis for weeks). There is plenty of blame to go around, I guess, but I am nowhere near qualified to even broach the subject.

And it has revealed how illnesses can tank the entire economy and [throw millions out of work](#).

You know who learns how to exploit these issues? Terrorists.

As a 2011 [article](#) in the Atlantic explained:

A key facet of [late al Qaeda leader Osama] bin Laden's anti-American warfare has always been economic. It's a lesson he drew from the Afghan-Soviet war, in which he first served as a financier of mujahidin efforts and then as a fighter. He watched the Soviet Union withdraw from Afghanistan in defeat and then dissolve altogether in 1991. Bin Laden asserted on multiple occasions that the mujahidin were responsible for destroying the Soviet empire. Whether or not he's right, he clearly believed that the high costs imposed by the Afghan-Soviet war prevented the Soviet Union from adapting to other challenges, such as grain shortages and a collapse in world oil prices.

After declaring war on America, bin Laden compared the U.S. to the Soviet Union on multiple occasions, arguing that al-Qaeda would undermine America in the same way the mujahidin undermined the Soviet economy. His strategy of economic warfare went through several iterations over time, as al-Qaeda responded to external events, seized upon opportunities provided to it, and incorporated lessons learned by the group over time.

My last job at the former INS was to respond to and address individual foreign terrorist threats, which meant understanding the motivations and goals of terrorists, and the strategies they used to achieve their ends. [President George W. Bush](#) was correct (if somewhat simplistic) when he stated that al Qaeda "hate[s] our freedoms: our freedom of religion, our freedom of speech, our freedom to vote and assemble and disagree with each other." That is the motivation. The goal was weakening if not destroying the United States, and the strategy to achieve that goal, as the excerpt from the Atlantic demonstrates, was economic devastation.

Part of that [economic devastation](#) was direct:

In a video he released in October 2004, [bin Laden] emphasized the cost effectiveness of the attacks. "Al-Qaeda spent \$500,000 on the event," he said, "while America, in the incident and its aftermath, lost — according to the lowest estimate — more than \$500 billion, meaning that every dollar of al-Qaeda defeated a million dollars."



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That article explains, however:

A second identifiable phase in this economic warfare strategy, which al-Qaeda pursued even as it continued to attack economic targets directly, might be called its "bleed-until-bankruptcy" plan. Bin Laden first used this phrase in October 2004, in a video he released on the eve of the U.S. presidential election. He made clear that al-Qaeda sought to embroil the U.S. and its allies in draining wars in the Muslim world.

Not to give the devil his due, but in retrospect, it was an inventive, and somewhat effective, strategy — not even counting the devastating human toll in fallen troops and displaced persons.

Now assume, for just a moment, that what remains of al Qaeda and its fellow terrorist organizations (by my count, there are 69 [foreign terrorist organizations](#) (FTOs) designated by the Department of State under [section 219 of the Immigration and Nationality Act \(INA\)](#), including various iterations of [ISIS](#), [al-Shabaab](#), and [Boko Haram](#)) or governments that are openly hostile to the United States (Iran's powerful [Islamic Revolutionary Guard Corps \(IRGC\)](#) is a designated FTO), wanted to achieve those same goals in 2020. How would they do it?

Weaponizing commercial airliners would be a dodgy proposition, given the number of protections that the U.S. government has put into place to prevent another September 11th. Bollards and security measures have reduced the likelihood that truck bombs, [which have been successful in the past](#) (and [again](#), and [again](#), and [again](#)), would produce the same level of carnage today (although they are still a concern).

Even concerted conventional weapons assaults (like the [November 15, 2015, Paris attacks](#)), which kill tens to hundreds of people, elicit little more than temporary societal disruptions and the isolated security crackdowns.

If you wanted to cause a human and economic calamity like September 11, 2001, (or worse) in 2020, the answer is right on the front page of every newspaper in America today: You would spread a disease, like the Wuhan virus, as far and wide as you could. That is the definition of bioterrorism.

You don't have to take my word for it. Here is how the [U.S. National Library of Medicine](#) at NIH puts it:

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs to cause illness or death. These germs are often found in nature. But they can sometimes be made more harmful by increasing their ability to cause disease, spread, or resist medical treatment.

Biological agents spread through the air, water, or in food. Some can also spread from person to person. They can be very hard to detect. They don't cause illness for several hours or days. Scientists worry that anthrax, botulism, Ebola and other hemorrhagic fever viruses, plague, or smallpox could be used as biological agents.

Understand — I am not saying that the Wuhan virus is a bioterrorism attack. There is no reason to believe that it is, and every reason to believe that it is not. But the spread of that virus, the response to it, and its effects are a blueprint for any would-be modern-day Osama bin Laden who hates our way of life and wants to therefore attack the country and drain our economy dry.

[Anthrax](#)? The [CDC](#) states that: "Bacillus anthracis, the bacteria that causes anthrax, is one of the most likely agents to be used in a biological attack." Why? [It explains](#):

Anthrax spores are easily found in nature, can be produced in a lab, and can last for a long time in the environment.

Anthrax makes a good weapon because it can be released quietly and without anyone knowing. The microscopic spores could be put into powders, sprays, food, and water. Because they are so small, you may not be able to see, smell, or taste them.

Anthrax has been used as a weapon before.

I personally worked through the [2001 attacks](#), at its epicenter. For those who have forgotten, [CDC](#) notes: "In 2001, powdered anthrax spores were deliberately put into letters that were mailed through the U.S. postal system. Twenty-two people, including 12 mail handlers, got anthrax, and five of these 22 people died."

It continues:

An anthrax attack could take many forms. For example, it could be placed in letters and mailed, as was done in 2001, or it could be put into food or water. Anthrax also could be released into the air from a truck, building, or plane. This type of attack would mean the anthrax spores could easily be blown around by the wind or carried on people's clothes, shoes, and other objects. **It only takes a small amount of anthrax to infect a large number of people.**

If anthrax spores were released into the air, people could breathe them in and get sick with anthrax. Inhalation anthrax is the most serious form and can kill quickly if not treated immediately. **If the attack were not detected by one of the monitoring systems in place in the United States, it might go unnoticed until doctors begin to see unusual patterns of illness among sick people showing up at emergency rooms.** [Emphasis added.]

Ebola? Read a 1992 article from the New Yorker, ["Crisis in the Hot Zone"](#), which discussed a very real, albeit accidental, Ebola scare in Reston, Va., a DC suburb. I read it 27 years



ago, and can still remember the effect it had on me (sample excerpt: "In the pre-agonal stage of [Ebola] (the endgame), the patient leaks blood containing huge quantities of virus from the nose, mouth, anus, and eyes, and from rips in the skin."). Or read the non-fiction bestseller based on it, [The Hot Zone](#). Or watch the Dustin Hoffman film inspired by it, [Outbreak](#).

The Wuhan virus can be deadly (as [Harvard Medical School](#) puts it, "According to the most recent estimates, about 1% of infected persons will succumb to the disease."). But according to the [World Health Organization](#) (WHO) the average death rate from Ebola virus disease is 50 percent, with fatality rates up to 90 percent in certain outbreaks. [WHO](#) notes that "human to human transmission ... occurs when blood or other bodily fluids or secretions (stool, urine, saliva, semen) of infected people enters a healthy person's body through broken skin or mucous membranes."

Ebola is so deadly it would be difficult to weaponize, but not impossible. [Scientific American](#) reported in 2014 that it could be done in three ways: "by taking large quantities of it and inserting them into a small 'bomblet' that, once detonated, would spray the virus perhaps 30 feet — potentially infecting people" (which Dr. Anthony Fauci stated "would be like a hundred people simultaneously touching an Ebola-infected person"), "recruit[ing] individuals for Ebola suicide missions" (the simplest way, but "the plot would need to overcome substantial technical challenges including the extreme weakness that arises from Ebola"), or "genetically modifying the virus to enable it to spread more readily, perhaps through the air" (which "would be a major research undertaking").

The magazine concluded that:

With [a then-] Ebola outbreak that ha[d] already killed more than 2,800 in west Africa and laid siege to the health care systems of Guinea, Liberia and Sierra Leone, it is clear that already Ebola is terrorizing thousands. Nevertheless, the possibility of rogue organizations sowing this terror on a similar scale seems largely out of reach.

A "similar scale" hardly seems necessary — all that is needed is the *fear* of an outbreak of the disease in the United States.

There have been so many suicide bombers in the recent past that [RAND](#) has an entire page dedicated to the phenomenon, so it may not be difficult for a terrorist organization to find a willing victim. Plus, given the public reaction to Ebola in 2014 (the [first diagnosis](#) of the disease in this country caused a 1-percent stock market drop), again, even the threat of a spread could have devastating effects on American life and the economy.

Botulism? Way back in February 2001, Dr. Thomas Inglesby of the [Johns Hopkins Working Group on Civilian Biodefense](#) stated: "Botulinum toxin [the [source of botulism](#)] is a serious threat as a weapon, because it is extremely lethal and easy to produce. Only a very low quantity of toxin is needed to cause a life-threatening or fatal illness."

[Botulism](#) isn't contagious, but the [Johns Hopkins Working Group](#) has concluded that "intentional contamination of the food supply or aerosol dissemination of the toxin is the greatest terrorism concern." You can stop taking [Tylenol](#) for a while, but you can't stop eating for long. And the [working group](#) noted: "Botulism is so rare that it is often misdiagnosed."

Thus, by the time we realized that the attack was underway, it could be over, but, as the [1982 Tylenol poisonings](#) showed, the economic effects would linger: "Before the 1982 crisis, Tylenol controlled more than 35 percent of the over-the-counter pain reliever market; only a few weeks after the murders, that number plummeted to less than 8 percent."

[Smallpox](#)? It is a virus that "is spread by coughing, sneezing or talking. Contact with an infected person must be fairly close (within about 6 feet) in order for spread to occur." Sound familiar?

It has a 30 percent mortality rate, but I likely won't catch it — like most people my age and older, I have a scar on my shoulder from when I was vaccinated as an infant. But "vaccination of the general population was stopped in the U.S. in 1971." Worse: "Administration to healthcare workers was discontinued in 1976 and administration to international travelers was discontinued in 1982."

WHO notes that "smallpox has been considered a potential weapon in a bioterrorism attack," however: "If a bioterrorist attack were to occur, vaccine recommendations would likely be considered for the public as well." In a world where toilet paper is impossible to find, how difficult would it be to inoculate every American younger than 48? [Bloomberg](#) reported in 2018 that there were then more than 173 million Americans in their 40s or younger.

The CDC notes that: "No bioterrorist attack using smallpox has happened in modern times." [American colonists](#) allegedly attempted to use the tactic during a siege by Delaware, Shawnee, and Mingo warriors at Fort Pitt in present-day Pittsburgh in 1763, however, so there is precedent.

Somewhat optimistically, [CDC](#) asserts:

Most likely, if smallpox is released into the United States as a bioterrorist attack, public health authorities will find out once the first person sick with the disease goes to a hospital for treatment of an unknown illness. Doctors will examine the person and use tools developed by CDC to figure out if the person's signs and symptoms are similar to those of smallpox. If doctors suspect the person has smallpox, they will care for the person and isolate them in the hospital so that others do not come in



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contact with the smallpox virus. The medical staff at the hospital will contact local public health authorities to let them know they have a patient who might have smallpox.

Local public health authorities would then alert public health officials at the state and federal level, such as CDC, to help diagnose the disease. If experts confirm the illness is smallpox, then CDC, along with state and local public health authorities, will put into place their plans to respond to a bioterrorist attack with smallpox.

Well, "asserted". That webpage was last reviewed on December 19, 2016. CDC may want to think about updating it. Respectfully, it sounds like an ideal description of what is happening now, or how your grandchildren will be taught about the 2020 Wuhan virus outbreak in 2059.

I've not even mentioned the bubonic plague yet. [Medical News Today](#) states:

Once a human is infected [with *Yersinia pestis*], the resulting disease can either develop into bubonic plague, which is difficult to transmit among humans and fairly easy to treat with antibiotics, or — if the infection spreads to the lungs — it becomes pneumonic plague, which develops rapidly and does not respond well to antibiotics.

A paper written on the plague and its potential for use in biological terrorism says:

Given the presence and availability of plague around the world, the capacity for mass production and aerosol dissemination, the high fatality rate of pneumonic plague, and the potential for rapid secondary spread, the potential use of plague as a biological weapon is of great concern.

And the [U.S. National Library of Medicine](#) reports that:

During World War II, the Japanese army, Unit 731, is reported to have experimented on plague and to have dropped plague-infected fleas over populated areas in China and Manchuria. ... In the years following World War II, several countries, including the USA and the former Soviet Union, among many others, performed research on plague as a potential biological weapon. The former Soviet Union focused on the possibility of releasing plague in aerosolized form, thereby eliminating the dependence on the flea vector.

...

While the USA did not succeed in making quantities of plague bacilli sufficient to use as an effective weapon, Soviet scientists were able to produce large quantities of plague organisms suitable for placing into weapons. [Hardly comforting] ... There is little published information indicating actions of autonomous groups or individuals seeking to develop plague as a biological weapon. However, in Ohio in 1995, a microbiologist with doubtful motives was arrested after deceitfully acquiring *Y. pestis* by mail.

These are just a few. CDC lists, by my count, 45 different [bioterrorism agents/diseases](#).

Lest you think any of the foregoing is purely theoretical, think again. Prior to its March 1995 [Sarin gas attack](#) on the Tokyo subway (which killed 13 and injured thousands), the Japanese cult [Aum Shinrikyo](#) (itself a designated [FTO](#)) launched 16 other chemical and biological warfare attacks. Seven of those attempted attacks were carried out with biological agents, three of them with botulinum toxin (one near two U.S. naval bases) and four with anthrax, although fortunately, the strains involved were apparently nonvirulent. It is also believed that members of the group traveled to then-Zaire in October 1992 to collect samples of Ebola.

In other words, bioterrorism is a threat — a real one — and as recent events have shown, one single outbreak of disease can bring the American economy to a halt, and the American people to their knees. This is not alarmism — it is experience that has been earned the hardest way: through trial and error. It would be foolhardy to think that foreign terrorist organizations could see America's response to the Wuhan virus and not recognize an opportunity.

Plainly there are home-grown terrorist threats that confront the American people, and we must be vigilant against those as well. Until recently, however, we had an overwhelmed force of Border Patrol agents on the Southwest border, as well as a corps of U.S. Customs and Border Protection (CBP) officers at the ports of entry whose resources were strained in assisting with the disaster that was unfolding at the border. Only administrative action slowed the flood of migrants, and enabled CBP to gain some semblance of control over the border.

CBP's [mission statement](#) explains why the agency exists: "To safeguard America's borders thereby protecting the public from dangerous people and materials while enhancing the Nation's global economic competitiveness by enabling legitimate trade and travel." It is "charged with keeping terrorists and their weapons out of the U.S." In the second decade of the 21st Century, those weapons include "[b]iological agents spread through the air, water, or in food".

Simply put: Borders matter, now more than ever.

*Andrew "Art" Arthur serves as Resident Fellow in Law and Policy for the Center for Immigration Studies, a Washington, DC-based research institute that examines the impact of immigration on American society. He is a graduate of the University of Virginia (BA 1988), and of the George Washington University School of Law (JD 1992).*



## FBI warned of concerns over 'biosecurity risk' from Chinese scientists' research in the US after intercepting SARS virus and flu samples illicitly carried in their luggage a year before coronavirus outbreak

Source: <https://www.dailymail.co.uk/news/article-8172321/FBI-warned-concerns-biosecurity-risk-Chinese-scientists-research-US.html>

Mar 31 – The FBI warned of concerns over a 'biosecurity risk' from Chinese scientists' research in the US after they intercepted virus samples carried in luggage a year before the [coronavirus](#) outbreak.

In November 2018 - just over a year before the first coronavirus case was recorded in Wuhan - US customs at Detroit Metro Airport stopped a Chinese biologist with three samples labeled 'Antibodies' in his luggage.

He told border control that someone he worked with in [China](#) had asked him to deliver the vials to a researcher at a US institute. After examining the writing on the vials, customs agents concluded that they believed the materials inside may have been MERS or SARS materials.

An unclassified FBI report obtained by [Yahoo News](#) said: 'Inspection of the writing on the vials and the stated recipient led inspection personnel to believe the materials contained within the vials may be viable Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) materials.'

The report - written by the Chemical and Biological Intelligence Unit of the FBI's Weapons of Mass Destruction Directorate - does not give the name of the Chinese scientist carrying the suspected samples, or the intended recipient in the US.

The WMPP assesses foreign scientific researchers who transport 'undeclared and undocumented' biological materials into the US that 'almost certainly present a biosecurity risk'.

Concerns about China's flouting of biosafety rules is nothing new, but the coronavirus pandemic has exacerbated tensions between Beijing and Washington. Donald Trump has used the phrase 'Chinese virus' in recent weeks

The FBI concluded that the incident, along with two other cases mentioned in the report, were part of an alarming pattern.

It appears to be part of a larger FBI concern about China's involvement with scientific research in the US.

One professor of global biosecurity has said that the FBI appears to be concerned with research that would be used for bioterrorism.

## The SPARS Pandemic 2025-2028: A Futuristic Scenario to Facilitate Medical Countermeasure Communication

Brunson, E. K., Chandler, H., Gronvall, G. K., Ravi, S., Sell, T. K., Shearer, M. P., & Schoch-Spana, M. (2020). *The SPARS pandemic 2025–2028: A futuristic scenario to facilitate medical countermeasure communication*. *Journal of International Crisis and Risk Communication Research*, 3(1), 71–102. <https://doi.org/10.30658/jicrcr.3.1.4>

Source: <https://stars.library.ucf.edu/cgi/viewcontent.cgi?article=1029&context=jicrcr>

Effective communication about medical countermeasures—including drugs, devices and biologics—is often critical in emergency situations. Such communication, however, does not just happen. It must be planned and prepared for. One mechanism to develop communication strategies is through the use of prospective scenarios, which allow readers the opportunity to rehearse responses while also weighing the implications of their actions. This article describes the development of such a scenario: The SPARS Pandemic 2025-2028. Steps in this process included deciding on a timeframe, identifying likely critical uncertainties, and then using this framework to construct a storyline covering both the response and recovery phases of a fictional emergency event. Lessons learned from the scenario development and how the scenario can be used to improve communication are also discussed.

The project team named this fictional pathogen the St. Paul Acute Respiratory Syndrome Coronavirus, or SPARS for short, because in the scenario it is first identified in St. Paul, Minnesota.

Two features of this disease are important to note because they impact how the storyline of the scenario plays out, as well as some of the communication dilemmas that occur. First, the project team decided to make SPARS have an extended incubation period (7 to 10 days) but a short latent period (4 to 5 days). This complicates the scenario because infected persons in the story are capable of spreading the virus for up to 6 days before showing symptoms of the disease themselves.

This feature of SPARS makes isolation procedures in the scenario, like urging people to stay home if they think they might be sick, less effective than what is typically expected for airborne pathogens and thus introduces novel dilemmas in the storyline. Second, the project team decided to make the morbidity and mortality from SPARS both significantly higher in



children than adults, and among pregnant women and those with chronic respiratory conditions. This parallel disease characteristics associated with past disease outbreaks, including the H1N1 pandemic, and allowed for some communication dilemmas from the past to be revisited under different future circumstances. In all, the SPARS scenario provides 19 specific storylines, and an associated 23 communication dilemmas for readers to consider.

## **Howard Fairman: Illusions of immortality and invulnerability**

Source: <https://vtdigger.org/2020/04/03/howard-fairman-illusions-of-immortality-and-invulnerability/>

*Editor's note: This commentary is by Howard Fairman, of Putney.*

Apr 03 – We elders now at greatest risk from Covid-19 remember life before there were any vaccines against dangerous childhood diseases, when we all took our chances while awaiting our fates. Some of us also remember life before there were any antibiotics. And we remember how our parents tried to protect us and encourage us to protect ourselves, then nursed us through inevitables, praying that there would be no complications and that it wasn't polio, when we could swamp hospitals and suffer lifelong consequences.

Déjà vu nowadays, when we elders are most at risk and most experienced.

Ivan Illich wrote in "Medical Nemesis: The Expropriation of Health" (1975) that modern medicine creates the illusion of immortality. Modern medicine also creates the illusion of invulnerability, now shattered by a pop-up pandemic that is natural in our globalized world, while demonstrating what bioterrorism could as easily do.

We elders never had illusions of immortality and invulnerability during our formative years. Current precautions against contagion are second nature. Contagion itself is no surprise. Nor is grave risk.

During a public Big Data in the Life Sciences Symposium presented by Dartmouth College Geisel School of Medicine and Dartmouth-Hitchcock Medical Center (May 2, 2019), we were told that international epidemiologists have no standard means of online scientific communication and collaboration worldwide.

We elders remember life when annual epidemics were expected, planned for, and controlled long before there were any modern technologies that humans now take for granted, but do not take seriously as preventives.

These international epidemiologists, on whom every human relies, did not expect and plan to efficiently communicate and collaborate internationally to control an emergent and growing pandemic. Nor did their employers, funders and overseers.

I suggested Microsoft Office (Excel spreadsheets, PowerPoint presentations, SharePoint and Teams online collaboration, Word documents, etc.) and Azure (cloud computing), which was said to be too costly. I then had no reason to pursue the matter, but assumed that Microsoft could and would do good in the event. Microsoft?

There have been other pandemics in human history, each presumed to have been unique, past, and forgettable, except as history, and as living elders' vivid memories.

The novel coronavirus is new to humans, all of whom lack acquired immunity, some of whom are at grave risk absent any antiviral medication nor vaccine. This vulnerability is not new: Covid-19 simply has demonstrated it.

Covid-19 also has demonstrated that a pop-up pandemic was, is, and will remain possible in our globalized world, whether patient zero was infected by nature or by bioterrorism.

No nation, international organization nor international epidemiologist can now presume that, because it hasn't happened here, it can't happen here.

We elders remember when this was life where we lived — and now is déjà vu.

So, must we all.

## **Don't Believe the COVID-19 Models: That's Not What They're for.**

Source: <http://www.homelandsecuritynewswire.com/bull20200403-don-t-believe-the-covid19-models-that-s-not-what-they-re-for>

Apr 03 – Since the onset of the coronavirus crisis, governments, analysts, and health organizations have released different statistical models addressing the disease – and its numerical manifestations: the number of people likely to be infected; hospitalized; treated in the ICUs; or die.

Different models offer different numbers and different trajectories. Which one of them is right? Zeynep Tufekci writes in [The Atlantic](#) that "The answer is both difficult and simple. Here's the difficult part: There is no right answer. But here's the simple part: Right answers are not what epidemiological models are for."



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He says that a good example of how non-statisticians misunderstand – and misrepresent — the function and purpose of statistical models is the case of a model developed by Professor Neil Ferguson, who led an Imperial College London team to study the spread of COVID-19.

Ferguson's model changed the U.K. government's policy on COVID. Tufekci notes that a few weeks ago, the U.K. had almost no social-isolation measures in place, and according to some reports, the government planned to [let the virus run its course](#) through the population, with the exception of the elderly, who were to be kept indoors. The idea was to let enough people get sick and recover from the mild version of the disease, to create "herd immunity."

Tufekci writes:

Things changed swiftly after an epidemiological model from Imperial College London [projected](#) that without drastic interventions, more than half a million Britons would die from COVID-19. The report also projected more than 2 million deaths in the United States, again barring interventions. The stark numbers prompted British Prime Minister Boris Johnson, who himself has tested positive for COVID-19, to [change course](#), shutting down public life and ordering the population to stay at home.

Here's the tricky part: When an epidemiological model is believed and acted on, it can look like it was false. These models are not snapshots of the future. They always describe a range of possibilities—and those possibilities are highly sensitive to our actions. A few days after the U.K. changed its policies, Neil Ferguson, the scientist who led the Imperial College team, [testified before Parliament](#) that he expected deaths in the U.K. to top out at about 20,000. The drastically lower number caused shock waves: One former *New York Times* reporter described it as "[a remarkable turn](#)," and the British tabloid the *Daily Mail* [ran a story](#) about how the scientist had a "patchy" record in modeling. The conservative site *The Federalist* even [declared](#), "The Scientist Whose Domsday Pandemic Model Predicted Armageddon Just Walked Back the Apocalyptic Predictions."

But there was no turn, no walking back, not even a revision in the model. If you read [the original paper](#), the model lays out a range of predictions—from tens of thousands to 500,000 dead—which all depend on how people react. That variety of potential outcomes coming from a single epidemiological model may seem extreme and even counterintuitive. But that's an intrinsic part of how they operate, because epidemics are especially sensitive to initial inputs and timing, and because epidemics grow [exponentially](#).

Tufekci notes that modeling an exponential process necessarily produces a wide range of outcomes. In the case of COVID-19, for example, this is because the spread of the disease depends on exactly when you stop cases from doubling. Even a few days can make an enormous difference.

Tufekci writes that the most important function of epidemiological models is as a simulation, a way to see our potential futures ahead of time, and how that interacts with the choices we make today. Thus, epidemiological models do not give us certainty – they give us something much more important: "agency to identify and calibrate our actions with the goal of shaping our future."

If we study models and then take decisive action to prevent the most catastrophic eventualities which they describe as possible, some may charge that we have overreacted. "A near miss can make a model look false. But that's not always what happened. It just means we won. And that's why we model," Tufekci writes.

## Kissinger's Coronavirus World

Source: <https://thedayaftergr.blogspot.com/2020/04/kissingers-coronavirus-world.html>



*Enghliting* to humanity as in all his life, Dr Kissinger intervened in this World War against the Coronavirus by [presenting](#) his valuable thoughts in a Washington Post's article recently. While identifying our times as similar with the end of WWII in 1944, he stressed the need to **avoid any disagreement about the past** and work for the **near future** which is expected to be **totally different** from what we were used until now in regard of **people's governance**.

The ultimate test will be to **limit and overcome the virus attack** scientifically while US citizens **retain their trust to US President**. With a new Marshall Plan and the Manhattan Project needed globally, he identified three areas where US leadership should focus on. A **global**



resistance in the Coronavirus, the healment of this new global economic crisis and the retainment of the principles that underlie a liberal global order.

Conclusively, in his opinion the contradiction of the tendency for **fortified states against the need for global trade and freedom of movement for people** the day after Corona World War will define our future. Democracies around World should defend enlighting values while **the collusion between power and legality should be retained until the pandemia is over**. To the contrary, leaders around the World should handle this crisis while building up a future with the threat of their failure to **flare up our old World**.

Dr. Henry Kissinger had always deep thoughts that not too many could reach in the Old World. Though old enough he sends strong messages to the leaders of the present World and US President for the need **to disregard who brought us to this point, set aside for the future the right mixture of power and legality for people's governance and avoid the clash between fortified states, free trade and movement of people**. Otherwise, **World War III may occur with troops making this World a hell**.

**Kissinger's last thoughts resemble more with a loser's plea for peace and a threatening request for a fair share of power in the future and the post of World War III order**. In other words, the past wants to be present in the future no matter its sins. It is true that "Old World" has still dedicated troops, regimes of elites who govern nations. If his plea for existence the day after Coronavirus will not be satisfied someone could discern in Kissinger's words a suicide tendency of "Old World".

In War, the winner set the rules and the looser signs his obeysance hoping his punishment to be lenient. In our post-modern era, **5G will give tremendous capabilities to humanity and the looser still does not accept his defeat**. This is very sad like the useless continuity of War by Hitler in 1945 when it only created more catastrophe to humanity and Germany.

"The Old", the looser should set aside, wave its white flag and let the winner define our future. If this future contains fortified states or a strong network of states with common values this will be seen soon. There are communities like Russia or China that cannot exist with other than authoritarian regimes. The fact that are called democracies or communism sometimes is indifferent. These nations can choose if they will go on isolated as they did for centuries before Cold War was ended or will join the bright future of humanity. What is for certain it is that the **free illicit movement of goods and people under the supervision of transnational organized crime cannot go on as it did the last two centuries**.

In other words, **either the looser should withdraw and surrender or the winner should conquer its land, destroy its network and reveal its crime**. This is the eternal way War has been given and now it cannot be changed distinguee Dr. Henry Kissinger.

As Greek ancient mothers were telling to their Spartan sons before going to war: "**H TAN H ENI TAS**" meaning to come back from the War "**Either winner or dead**". Sorry Sir, this time you cannot lose and win in the same time. Business is not as usual. The Coronavirus will not leave until the end of this duel when only one will be alive. The freedom of mind.

## Sharp Drop in Airport Security Screenings

Source: <https://i-hls.com/archives/100392>



Apr 09 – Not too long ago, the major challenge of airport security screenings was thwarting terrorist attempts. Now, as the coronavirus spreads throughout the world and citizens are ordered to stay at home, significantly fewer passengers are flying, and screening now includes also measures to prevent the spread of the pandemic.

**Passenger security screenings at U.S. airports are down by more than half for March 2020** compared to the same time last year, according to data published by the US Transportation Security Administration.

Since passengers must be screened, the TSA data indicates how many people are flying. Through March 30, fewer than 35 million passengers went through security screenings for the month. During that period in 2019, more than 70 million passengers were screened by the TSA.

On March 30, the TSA screened 154,000 passengers, its fewest number of screenings in 10 years, according to Lisa Farbstein, TSA Public Affairs spokesperson, cited by [wfaa.com](http://wfaa.com).

The World Health Organization declared coronavirus a pandemic on March 11. On that day, 1.7 million passengers went through security screenings, according to the TSA. One week later, fewer than 800,000 passengers were screened.

## World's militaries face a new enemy in virus outbreak

Source: <https://abcnews.go.com/International/wireStory/worlds-militaries-face-enemy-virus-outbreak-70106636>

Apr 12 – The [coronavirus](https://www.cdc.gov/coronavirus/2019-nCoV/) pandemic has forced militaries and militias to adapt to an invisible enemy, even as traditional conflicts grind on.



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Armies have had to enforce social distancing rules among troops while helping with national outbreak containment and postponing maneuvers.

On Thursday, Saudi Arabia declared a temporary halt to fighting in Yemen because of the pandemic, while in Libya and Afghanistan conflicts are intensifying despite U.N. appeals for a global cease-fire. An outbreak in poor or war-scarred nations would be particularly devastating.

Here is a look at how the outbreak affects some militaries and conflicts:

### DEFENDING BORDERS

Before the pandemic, Israel's military kept tabs on the Iran-backed Hezbollah militia in Lebanon, carried out occasional airstrikes against Iran's military presence in Syria and retaliated for sporadic rocket fire from the Gaza Strip.

Now troops are being mobilized to help police enforce quarantines, assist the elderly or provide child care for [health](#) workers.

To prevent infections, the army canceled some weekend leave and isolated certain groups of soldiers.

Most training exercises have been canceled or delayed, though the air force conducted a drill with U.S. forces — with each pilot isolated in his own fighter jet.

The army chief had to self-quarantine after coming in contact with a virus carrier, though he eventually tested negative.

The conflicts on Israel's frontiers persist. In late March, Syrian air defenses opened fire on missiles allegedly launched from Israeli warplanes.

The Israeli military said border defense remains its top priority.

"Our enemies are still at our borders and our civilians are still within sniper or anti-tank missile range," said Lt. Col. Jonathan Conricus, a military spokesman.

**EDITOR'S COMMENT:** There is another parameter on "defending borders" – this is the case of Greece: According to leaked info, Turkey is gathering thousands of illegal immigrants including people infected by coronavirus in areas opposite to Greek islands "advising" them to cross sea borders and invade Greece with final destination Europe ignoring the fact that EU borders are closed. One can easily imagine the consequences on local population and armed forces serving in the front not to mention the financial impact on tourism that is the "heavy industry" of Greece. It would be of interest to watch if this scenario will be materialized in the very near future and how "peaceful and according to international laws" strategies will manage to counter the threat along with the eternal sleep of EU in the midst of a pandemic. Not to mention the expected naval offensive activities expected in SE Mediterranean due to the overt intention of Turkey to drill inside territorial waters of neighboring countries (Greece and Cyprus).

### BRIDGING DIVIDES?

The virus has spread to the Israeli-occupied West Bank and to Gaza, which has been blockaded by Israel and Egypt since the militant Hamas group seized control in 2007.

The long-simmering Israeli-Palestinian conflict now exists side-by-side with efforts to contain the outbreak.

Troops have carried out home demolitions in the West Bank, soldiers killed two Palestinians in clashes and a trickle of rockets has been fired from Gaza.

But the virus is also opening doors to limited cooperation. Israel has helped deliver test kits and other supplies to both the West Bank and Gaza. An Israeli-Palestinian committee is coordinating the movement of Palestinian workers and security forces in the West Bank.

### TO WAGE WAR OR FIGHT THE VIRUS

Spurred by concern over the pandemic, the Saudi-led coalition fighting the Iran-backed Houthi rebels in Yemen declared a temporary cease-fire after five years of war. The Houthis have dismissed the offer as a ploy and clashes continue, casting doubt over a future peace agreement.

The U.N. had called for an end to escalating fighting so authorities can confront the coronavirus. Yemen confirmed its first case this week, while foreign backers Iran and Saudi Arabia have struggled to stem massive outbreaks. An outbreak in Yemen, where the conflict has devastated the [health](#) care system, could be catastrophic.

The past month has brought more human suffering across the country. Ground fighting in the north caused 270 deaths in 10 days. The Houthis fired missiles at the Saudi capital, Riyadh, triggering retaliatory strikes on Yemen's capital, Sanaa. A rebel attack on the city of



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Taiz, in western Yemen, killed at least six female prisoners and wounded two dozen women and children.

Even modest hopes for peace talks in Yemen stand in contrast to Libya, where rival forces have ignored humanitarian pleas for a cease-fire, seeking to exploit the diplomatic void left by the pandemic.

Eastern-based forces under the command of Khalifa Hifter are escalating a year-long siege of the capital, Tripoli, which they want to wrest from the U.N.-backed government.

Artillery shells crashed through living rooms, cars, a sea port and three hospitals over the last month, killing at least 16 civilians and wounding over 30. Grad rockets struck one of the country's few coronavirus facilities, sending shrapnel into a doctor's leg during surgery and forcing seriously ill patients to evacuate as the bombs fell. Militias allied with the Tripoli government have expanded their use of Turkish drones, at one point attacking an aircraft allegedly carrying medical supplies and protective gear.

### BALANCING THREATS

In South Korea, which has managed to slow the outbreak, the military is key to containment. More than 450 military medical staff and 2,700 troops have been deployed to help with treatment at hospitals, screening travelers, enforcing quarantine, producing face masks and helping trace the contacts of virus carriers, according to the Defense Ministry.

South Korea has postponed its annual military exercises with the United States and prohibited most enlisted soldiers from leaving their bases.

While the country is under constant threat from its nuclear-armed rival North Korea, experts say the cutback in training is inevitable. An outbreak among troops would be devastating for combat readiness.

### WAGING WAR GAMES

For the 30 member nations of the NATO military alliance, which isn't fighting any wars, the virus poses a challenge to its routine training exercises.

Last month, the U.S. Army announced that it was cutting down the number of troops taking part in massive war games, the Defender-Europe 2020 exercises, that have been planned across Europe over the next six months.

The NATO chief, Jens Stoltenberg, said the alliance remains ready to act.

### 'UNSEEN DISASTER'

India has ordered its 1.3 billion people into lockdown, but tensions remain on its militarized frontier with Pakistan. In March, soldiers exchanged gunfire and mortar shells along the frontier at least two dozen times, according to the Indian army.

The military has stopped recruitment and halted movement across military stations except for essential services. It canceled training exercises, like the Indian Navy's 41-nation drill, which was set to begin March 18.

Lt. Gen. Vinod Bhatia, who heads India's Defense Ministry-run think tank the Center for Joint Warfare Studies, said that "all militaries build scenarios, but there hasn't been a scenario around this kind of disaster."

## Dilemma of Targeting: Dual-Use Objects in Military Operations

(paper assignment as a partial fulfilment of the requirements of the module on the Law of Armed Conflict)

Angelina Harutyunyan

Cranfield Defence and Security

Defence Academy of the United Kingdom

Source: [https://www.academia.edu/4232033/Dilemma\\_of\\_Targeting\\_Dual-Use\\_Objects\\_in\\_Military\\_Operations](https://www.academia.edu/4232033/Dilemma_of_Targeting_Dual-Use_Objects_in_Military_Operations)



## Islamists in Northern Mozambique Announce Plans for a Caliphate

Source: <http://www.homelandsecuritynewswire.com/dr20200413-islamists-in-northern-mozambique-announce-plans-for-a-caliphate>

Apr 13 – In the past two weeks, the jihadists who have been spreading terror in the far north of Mozambique have carried out a series of spectacular attacks – but also, finally, made public their objective: to establish a caliphate in northeast Mozambique, and impose strict Islamic law within it.

## 'Stressors Caused by the Pandemic' Could Influence Potential Attacks, Houses of Worship Warned

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/infrastructure-security/stressors-caused-by-the-pandemic-could-influence-potential-attacks-houses-of-worship-warned/>

Apr 11 – Houses of worship already hampered by social distancing rules as the coronavirus pandemic hits during the Passover, Easter and upcoming Ramadan seasons have been warned by the Department of Homeland Security to also be alert for potential physical attacks against members or institutions.

In a letter this week to the faith-based community, Cybersecurity and Infrastructure Security Agency (CISA) Assistant Director for Infrastructure Security Brian Harrell noted that, as mass gatherings have been curtailed by the virus, "although many people undoubtedly continue to practice their faith, including through remote services and prayer, most are inevitably eager to return to normalcy and join their fellow congregants in practicing their faiths."

"When you begin efforts to reconstitute services and welcome congregants back into your houses of worship, please also review your security plans and ensure procedures are in place to protect your facilities and visitors. Although there are no imminent or credible threats at this time, there has been an increase in online hate speech intended to encourage violence or use the ongoing situation as an excuse to spread hatred," Harrell wrote.

"Additionally, stressors caused by the pandemic may contribute to an individual's decision to commit an attack or influence their target of choice," he added. "Again, we have no information to suggest such attacks are imminent or even likely, instead we are looking to provide you with useful information for planning for restoration of normal operations, whenever that may be."

On March 31, the Faith-Based Information Sharing and Analysis Organization (ISAO) [raised](#) its physical threat level from severe to critical, citing not only the pandemic threat but the religious holidays, "continued extremist interest in conducting various attacks and hostile actions against people and places of faith (to include specific anti-Semitic rhetoric relating to exploiting COVID-19)," and "the anniversary of complex coordinated terrorist attacks in Sri Lanka last Easter, and other incidents that may serve to inspire extremists." Harrell reminded faith-based organizations that [CISA's Hometown Security program](#) offers resources include training, tools, exercises, and other materials focused on a wide range of threats (e.g., bombing, active shooter, vehicle ramming, etc.) and other resources relating to behavioral indicator detection.

"Thank you again for everything you do to champion the American people's Constitutional First Amendment rights, as well as your leadership in keeping our houses of worship safe and secure," he said. "You have a committed partner in DHS who is steadfast in ensuring you have the resources to enhance your security programs."

## How Terrorists Are Trying to Make Coronavirus More Friend Than Foe

By Bridget Johnson

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/how-terrorists-are-trying-to-make-coronavirus-more-friend-than-foe/>

Apr 14 – As we all know, the coronavirus pandemic has cast its gloomy, painful shadow over the entire world," al-Qaeda declared in a recent communique from leadership titled "The Way Forward," adding "there appears to be no light at the end of the dark tunnel the world finds itself in."

"People are stuck in their homes, shops and businesses are being forced to shut down. The global economy is paralyzed and the world utterly perplexed by this predicament," the terror group continued. "Everything that was once taken for granted lies now in grave jeopardy."



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Economies of major nations lie in ruin as they find their entire state apparatus, including army and security, pinned down by an invisible enemy. Norms of social behavior, lifestyles, everything is being redefined.”

Al-Qaeda declared COVID-19 to be “a powerful tsunami” striking the American economy and way of life, and their glee in the virus’ impact – even though their own cells and lone operatives are not immune to contracting the disease – and “way forward” thinking about how to capitalize on the chaos are circulating among extremists from isolated ISIS provinces to white supremacists in the heart of viral hotspots.

Not ones to miss the chance to exploit a crisis, terrorists are looking at ways to take advantage of instability, increase recruitment and sympathizers among the vulnerable and terrified, encourage conventional and biological attacks and, in the words of al-Qaeda, “turn this calamity into a cause for uniting our ranks.”

### Spinning Their Own Vulnerability

While rejoicing in the misery of countries hit hard by COVID-19, terror groups have shown some concern about their members taking proper measures to inhibit spread of the virus. ISIS has followed the coronavirus since the outbreak began in China, highlighting in a January issue of their weekly *Al-Naba* newsletter “growing concern about the spread of the infectious virus,” adding that “this could push the World Health Organization into an emergency.” The next month, ISIS warned that “the world is interconnected” and transportation “would facilitate the transfer of diseases and epidemics.” In an [infographic](#), the terror group warned that “the healthy should not enter the land of the epidemic and the afflicted should not exit from it,” and followers should “cover the mouth when yawning and sneezing” and wash their hands.

While continuing to wage attacks with bombers and gunmen not practicing social distancing, the Taliban have made a show of their COVID-19 [awareness campaign](#) events, distributing masks, soap and informational pamphlets in areas under their control. They’ve also warned people against price gouging or hoarding during the crisis.

While acknowledging their vulnerability to the virus (though some followers [may believe](#) that they will be divinely protected from COVID-19), terror groups can also be expected to put a martyrdom-style spin on casualties within their ranks. If their operatives contract the virus and die in custody, they will pin narrative blame on their captors and encourage violent retribution. If they survive the outbreak, they’ll tout this as proof that the almighty was in their corner.

### Boosting Core Messaging

At the core of extremism is the “our might is right” messaging, underpinned by claims that a divine mission justifies their violent actions. While acknowledging that the virus crosses borders freely and endangers those they see as friends as well as foes, extremists are using the coronavirus to tell followers – and potential recruits – that a pandemic act of God isn’t a call for them to repent from their brutal ways but a golden opportunity to double down on the belief that their cruelty is sanctioned by a higher power. Al-Qaeda said that the coronavirus striking the Muslim world was “a consequence of our own sins and our distance from the divine methodology,” blaming “obscenity and moral corruption” that was “widespread” and the imprisonment of jihadists in Muslim-majority countries before the pandemic. The terror group compared the current crisis to Jonah being swallowed by the whale, and declared that “now is the time to spread the correct Aqeedah [creed], call people to jihad in the Way of Allah, and revolt against oppression and oppressors.”

Al-Qaeda added a call for westerners to “reflect on the wisdom hidden in the havoc wrecked by a weak intruder” and embrace Islam because “if someone sneezes in China, those in New York suffer from its consequences.” They added that “Islam is a hygiene-oriented religion” that “lays great stress on principles of prevention so as to protect one from all forms of disease.” Their Taliban allies have declared the virus to be “a decree of Allah” that has to be dealt with “in accordance with the teachings of the Holy Prophet,” with recitation of prayers, more Quran reading and giving alms for repentance.

### Exploiting the Economic Toll

[A propaganda poster from ISIS-supporting Ribat Media declares that coronavirus “destroys the crusaders’ economy.”](#) (Ribat Media)

Al-Qaeda has long focused on encouraging debilitating actions that strike the west in the pocketbook, and COVID-19 has given a shot in the arm to this consistent



messaging. The As-Sahab statement noted that “a long-term recession is no longer a remote possibility” after “Trump could not stop bragging about economic growth,” and the piece spent extensive time ruminating on the health of the stock market and what the real effects of the stimulus package would be.

A September [article](#) in al-Qaeda’s English-language *One Ummah* magazine encouraged “Muslims, specifically specialists in economy and finance, to find loopholes in the American economic structure and find new ways of exploiting America’s economic vulnerabilities,” essentially continuing the goals of the attack on the World Trade Center. Al-Qaeda argued that their economic focus shows they “understand the nature of the war against America,” and said after the 9/11 attacks Osama bin Laden “would often inquire about the economic impact of the attacks, unlike most others who would limit the discussion to casualties.”

This will be al-Qaeda’s greatest fascination with the pandemic, and a greater messaging takeaway for the terror group than casualty counts. But they aren’t the only ones counting the dollars and cents: A Joint Intelligence Bulletin last week from the Department of Homeland Security, FBI and National Counterterrorism Center warned that some white supremacists seeking to exploit the COVID-19 crisis claim “government responses to the pandemic could crash the global economy, hasten societal collapse, and lead to a race war.”

### White Supremacist and Militia Boosts

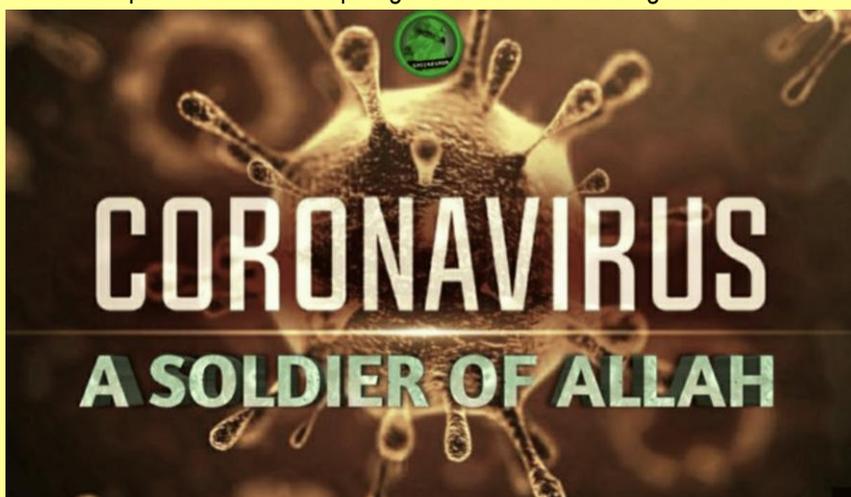
Among the extremist propaganda collected by HSToday since the beginning of the pandemic is a recent graphic distributed online saying, “COVID-19. If you have the bug give a hug, spread the flu to every Jew. Holocaust.” White supremacists have been filling online forums and social media with conspiracy theories blaming Jews and ethnic minorities for the coronavirus, and groups that paper campuses and other locations with hate fliers and stickers have been including the virus in their propaganda.

Law enforcement agencies were also warned in the recent Joint Intelligence Bulletin about the potential for violent reactions to conspiracy theories circulating about the pandemic, including the branding of the deadly virus as a government hoax, and noted that militia extremists have discussed online preparing for a potentially violent response.

Some stay-at-home orders will limit the mobility of extremists and mitigate “some of the risk of mass attack violence in public places,” but minority-operated businesses that remain open and other exposed racial or religious minorities “are likely at particular risk.” The bulletin predicted that “as the number of Americans affected by the COVID-19 pandemic grows, the threat posed by [domestic violent extremists] and hate crime actors towards minorities and other targets of their violence will likely increase” and extremists “will likely continue to seek to exploit the pandemic by using violence themselves or encouraging others on social media and messaging applications to use violence.”

### Turning to Lone-Attacker Networks

Terror camps and cells aren’t paragons of social distancing and can be vulnerable to the spread of the virus, especially among



loosely connected units integrated into the society around them. But modern terror by design, fed and nourished by online incitement and planning, is decentralized and relies on lone attackers to attack their native surroundings. Much of the extremist messaging since the advent of the pandemic has centered on whipping up these dispersed operatives to take advantage of crisis and take action.

(ISIS supporters’ image)

An [article](#) in the second issue of *The Voice of Hind*, a magazine published and distributed online by ISIS supporters in India, stressed that “militaries

and police have been deployed in their streets and alleys, thus making them an easy target,” and jihadists should “use this opportunity to strike them with a sword or a knife or even a rope is enough to stop their breath, fill the streets with their blood.” Attacks during a chaotic pandemic, they said, accomplish a goal to “make it worse for them.”

There’s also a concern that those veering toward extremism could be pushed over the edge by the pandemic, as noted in a pre-Easter [message](#) to the faith-based community from DHS



Cybersecurity and Infrastructure Security Agency (CISA) Assistant Director for Infrastructure Security Brian Harrell. As “there has been an increase in online hate speech intended to encourage violence or use the ongoing situation as an excuse to spread hatred,” he wrote, “stressors caused by the pandemic may contribute to an individual’s decision to commit an attack or influence their target of choice.”

White supremacist Timothy Wilson, killed last month in an FBI shootout as his alleged plan to bomb a Missouri hospital was disrupted, [linked the plot](#) to the pandemic, according to a Joint Intelligence Bulletin, stating that “if he contracts COVID-19, he would conduct a ‘lone wolf attack’ and ‘try to take out as many as I can during that time, but I don’t want to sit in a hospital bed and die, doing nothing.’” Wilson wanted to “attack high value targets if the government issued martial law and quarantine orders as a result of COVID-19.”

### Taking Advantage of Unstable Regions

“The last thing they want,” ISIS said in their *al-Naba* newsletter last month, is for jihadists to be currently preparing new attacks “similar to the strikes of Paris, London, Brussels and other places” while the security apparatus is focused on responding to – or has its ranks reduced by – coronavirus. Terrorists “must intensify the pressure” while countries are weakened as financial difficulties and “preoccupations with protecting their countries” will weaken efforts to confront terrorism, ISIS predicted.

Last month the leader of U.S. Africa Command, Gen. Stephen Townsend, [warned](#) the House Armed Services Committee that international and African efforts in West Africa and the Sahel region “are not getting the job done” as ISIS and al-Qaeda have even recently teamed up. “ISIS and Al Qaeda are on the march in West Africa,” he said. “They’re having success and the international efforts are not.”

While countries in this vulnerable region are currently reporting cases in the hundreds instead of the thousands, WHO Director-General Tedros Adhanom Ghebreyesus warned African leaders in recent days that they can expect an “imminent surge” of cases. And while the wave has been slow to arrive, it would be met by a [staggering lack of ventilators](#) and other critical resources.

An Africa hit wouldn’t be the only coronavirus calamity terrorists seek to exploit. Iraq is well [aware of the potential](#) for ISIS to make a resurgence there, buoyed not only by security forces being preoccupied with or hobbled by COVID-19 conditions but by the hope that they’ll soon get back onetime fighters from crowded prisons.

### Using COVID to Promote Bioterror

UN Secretary-General António Guterres [told](#) members of the Security Council last week that “the weaknesses and lack of preparedness exposed by this pandemic provide a window onto how a bioterrorist attack might unfold – and may increase its risks.” “Non-state groups could gain access to virulent strains that could pose similar devastation to societies around the globe,” Guterres added.

At least in their messaging, terror groups are right there. If nature can wreak such havoc, they tell followers, imagine what deliberate distribution of such agents can do. Both ISIS and al-Qaeda jumped on the news of deadly wildfires over the past few years to brand them as divine retribution and encourage loyalists to not wait for an act of God and start blazes on their own.

Terror groups have long encouraged or shown distinct curiosity in their communications about branching out into bio, agricultural or chemical attacks. ISIS supporters – while not claiming responsibility for sticking needles in fruit – used Australia’s 2018 strawberry contamination crisis to gin up more threats and suggestions, vowing to make westerners “check everything and anything you eat out of fear, horror and terror.”

Al-Faqir, one of the ISIS-backing media outlets, recently re-released a 2018 video discussing how to wage a bioattack on the West “that cannot be detected or tracked” by authorities. “Sprinkle the liquid substances or the basics of bacteria with drinking water to take effect automatically,” the video advised would-be jihadists. “Sprinkle the crushed material on exposed fruit and public foods or scatter them in the air in crowded places — with caution.”

*Bridget Johnson is the Managing Editor for Homeland Security Today. A veteran journalist whose news articles and analyses have run in dozens of news outlets across the globe, Bridget first came to Washington to be online editor and a foreign policy writer at The Hill. Previously she was an editorial board member at the Rocky Mountain News and syndicated nation/world news columnist at the Los Angeles Daily News. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is a Senior Risk Analyst for Gate 15, a private investigator and a security consultant. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera and SiriusXM.*



## Terrorism in the U.K.: Number of Suspects Tops 40,000 after MI5 Rechecks Its List

Source: <http://www.homelandsecuritynewswire.com/terrorism-uk-number-suspects-tops-40000-after-mi5-rechecks-its-list>

Apr 14 – MI5 is aware of more than 43,000 people who pose a potential terrorist threat to the U.K., according to a government report — almost twice the number of terror suspects previously disclosed. David Gadhre writes in [The Times](#) that after the 2017 attacks at London Bridge and Manchester Arena, it was revealed that MI5 had about 23,000 current and historic suspects on its radar. This included 3,000 so-called subjects of interest (SOI) who were under active investigation, as well as 20,000 people who had been investigated in the past and who might engage in terrorism in the future. The latter are known as “closed” subjects of interest (CSOI) and included terrorists such as Salman Abedi, who went on to kill 22 people in the Manchester Arena suicide bombing. Data quietly published by the Home Office last month in the early stages of the coronavirus crisis shows that after a process of recategorization there are more than 40,000 CSOIs “where MI5 judges there to be some risk of re-engaging in terrorist activity.” However, the report is at pains to point out that the higher number of CSOIs is not comparable with the 2017 figure and does not mean that twice as many people in the U.K. are now at risk of engaging in terrorism.

**EDITOR’S COMMENT:** Good news! Next time a terrorist incident happens we will have offender’s details at no time!

## Understanding Hungary’s Authoritarian Response to the Pandemic

Source: <http://www.homelandsecuritynewswire.com/dr20200417-understanding-hungary-s-authoritarian-response-to-the-pandemic>

Apr 17 – In the face of what the UN [labels](#) “the most challenging crisis since the Second World War,” governments across the world have introduced [sweeping measures](#) supposedly aimed at containing the novel coronavirus. These policies span [border closures](#), [enhanced surveillance](#), [dramatic speech and media restrictions](#), [election postponements](#), and [shuttering of legislatures and courts](#). Laura Livingston writes in [Lawfare](#) that while some forbearance of civil liberties is reasonable in the face of a grave threat, “the pandemic has already served as an opportunity for would-be authoritarians to consolidate the power they have long coveted.” She adds:

Hungary’s response to the pandemic is especially alarming. On 30 March, the Hungarian parliament [voted](#) to allow Prime Minister Viktor Orbán [to rule by decree indefinitely](#), giving him [dictatorial powers for at least the foreseeable future](#). Orbán can suspend existing laws or enact new ones—all with de facto parliamentary approval and without a known end date. The law also criminalizes spreading false or distorted facts that interfere with the public safety or are “suitable for alarming or agitating” the public, crimes punishable by several years in prison. Concerningly, this language is vague enough to cover anyone who challenges the government’s preferred narratives and handling of the coronavirus. With lower courts already suspended and the path to the Constitutional Court unclear, it’s difficult to envision the legislation being challenged. As legal sociologist Kim Lane Scheppele [writes in the Hungarian Spectrum](#), Orbán’s “emergency gives him everything he ever dreamed of: The absolute freedom to do what he wants.”

Such sweeping measures did not unfold overnight. For Hungary, the coronavirus has [accelerated a decade-long democratic crisis](#), during which Orbán has [gradually consolidated his power](#) and [weaponized rhetoric](#) to emphasize an [ethnic Hungarian identity](#), target vulnerable groups, and dismantle the institutions responsible both for protecting those groups and for checking executive power—ultimately transforming Hungary into an illiberal state.

*Laura Livingston writes that “as governments pursue border closures, enhanced surveillance, and the shuttering of institutional checks in the name of protecting countries from this “outside virus,” Hungary should serve as a cautionary tale.” Laura Livingston is Regional Director, Europe at Over Zero, an organization that supports community leaders, civil society organizations, and researchers to create long-term societal resilience to violence. She has a background in the intersection of governance, conflict, and peacebuilding, and has advised related civil society initiatives in the Balkans, East Africa, and the MENA region. Laura received her JD from the Georgetown University Law Center.*

**EDITOR’S COMMENT:** How easily young “experts” put labels on people they do not like ...



**A MUST-READ PAPER**Source: <https://msystems.asm.org/content/msys/5/2/e00245-20.full.pdf>
**MINIREVIEW**  
 Applied and Environmental Science


## 2019 Novel Coronavirus (COVID-19) Pandemic: Built Environment Considerations To Reduce Transmission

 ✉ Leslie Dietz,<sup>a</sup> ✉ Patrick F. Horve,<sup>a</sup> ✉ David A. Coll,<sup>b</sup> Mark Fretz,<sup>a,c</sup> ✉ Jonathan A. Eisen,<sup>d,e,f</sup> ✉ Kevin Van Den Wymelenberg<sup>a,c</sup>
<sup>a</sup>Biology and the Built Environment Center, University of Oregon, Eugene, Oregon, USA

<sup>b</sup>Genome Center, University of California—Davis, Davis, California, USA

<sup>c</sup>Institute for Health and the Built Environment, University of Oregon, Portland, Oregon, USA

<sup>d</sup>Department of Evolution and Ecology, University of California—Davis, Davis, California, USA

<sup>e</sup>Department of Medical Microbiology and Immunology, University of California—Davis, Davis, California, USA

<sup>f</sup>Genome Center, University of California—Davis, Davis, California, USA


With the rapid spread of severe acute respiratory syndrome coronavirus2 (SARS-CoV-2) that results in coronavirus disease 2019 (COVID-19), corporate entities, federal, state, county, and city governments, universities, school districts, places of worship, prisons, health care facilities, assisted living organizations, daycares, homeowners, and other building owners and occupants have an opportunity to reduce the potential for transmission through built environment (BE)-mediated pathways. Over the last decade, substantial research into the presence, abundance, diversity, function, and transmission of microbes in the BE has taken place and revealed common pathogen exchange pathways and mechanisms. In this paper, we synthesize this microbiology of the BE research and the known information about SARS-CoV-2 to provide actionable and achievable guidance to BE decision makers, building operators, and all indoor occupants attempting to minimize infectious disease transmission through environmentally mediated pathways. We believe this information is useful to corporate and public administrators and individuals responsible for building operations and environmental services in their decision-making process about the degree and duration of social-distancing measures during viral epidemics and pandemics.

### Against pandemic research exceptionalism

 By Alex John London<sup>1</sup> and Jonathan Kimmelman<sup>2</sup>
<sup>1</sup>Center for Ethics and Policy, Carnegie Mellon University, Pittsburgh, PA, USA.

<sup>2</sup>Studies of Translation, Ethics, and Medicine (STREAM), Biomedical Ethics Unit, McGill University, Montreal, QC, Canada.

 Source: <https://science.sciencemag.org/content/early/2020/04/22/science.abc1731>

Apr 23 – The global outbreak of coronavirus disease 2019 (COVID-19) has seen a deluge of clinical studies, with hundreds registered on clinicaltrials.gov. But a palpable sense of urgency and a lingering concern that “in critical situations, large randomized controlled trials are not always feasible or ethical” (1) perpetuate the perception that, when it comes to the rigors of science, crisis situations demand exceptions to high standards for quality. Early phase studies have been launched before completion of investigations that would normally be required to warrant further development of the intervention (2), and treatment trials have used research strategies that are easy to implement but unlikely to yield unbiased effect estimates. Numerous trials investigating similar hypotheses risk duplication of effort, and droves of research papers have been rushed to preprint servers, essentially outsourcing peer review to practicing physicians and journalists. Although crises present major logistical and practical challenges, the moral mission of research remains the same: to reduce uncertainty and enable caregivers, health systems, and policy-makers to better address individual and public health. Rather than generating permission to carry out



low-quality investigations, the urgency and scarcity of pandemics heighten the responsibility of key actors in the research enterprise to coordinate their activities to uphold the standards necessary to advance this mission.

Rigorous research practices can't eliminate all uncertainty from medicine, but they represent the most efficient way to clarify the causal relationships clinicians hope to exploit in decisions with momentous consequences for patients and health systems. Nevertheless, fastidious research standards may seem a luxury that pandemics can ill accommodate. Commenting on a study using suboptimal design, one group of scientists stated, "Given the urgency of the situation, some limitations...may be acceptable, including the small sample size, use of an unvalidated surrogate end point, and lack of randomization or blinding" (1). The perception that core methodological components of high-quality research are dispensable is underpinned by three problematic assumptions. The first is that some evidence now, even if flawed, seems preferable to expending greater resources on more-demanding studies whose benefits only materialize later. Because the window for learning in pandemics is often short, the need to "balance scientific rigor against speed" seems inevitable (3).

The problem with this view is that challenges that rigorous methods address do not disappear in the face of urgent need. Small studies that build on basic science and preclinical research in early phases of drug development routinely generate signals of promise that are not confirmed in subsequent trials. Even when new drugs are established to be safe and effective, rarely are their benefits so massive that they can be detected in small, open-label, nonrandomized trials. The proliferation of small studies that are not part of an orchestrated trajectory of development is a recipe for generating false leads that threaten to divert already scarce resources toward ineffective practices, slow the uptake of effective interventions because of an inability to reliably detect smaller but clinically meaningful benefits, and engender treatment preferences that make patients and clinicians reluctant to participate in randomized trials. These problems are amplified by published reports of compassionate use, which was designed as an alternative pathway to access interventions outside of research, not to support systematic evaluation.

The second underpinning of research exceptionalism is the view that key features of rigorous research, like randomization or placebo comparators, conflict with clinicians' care obligations. However, when studies begin in, and are designed to disturb a state of, clinical equipoise (meaning that it's uncertain whether a particular treatment is better than the alternatives), they ensure that no study participant receives a standard of care known to be inferior to any available alternative (4). Under this condition, randomized trials with appropriate comparators configure medical practice in a way that allows patients to access investigational interventions under conditions designed to eliminate ineffective strategies and exploit effective alternatives.

The third underpinning of research exceptionalism derives from the expectation that researchers and sponsors are generally free to exercise broad discretion over the organization and design of research. However, that discretion never operates in a vacuum. Even under normal conditions, the goal of research ethics and policy is to use regulations, reporting guidelines, and other social controls to align research conduct with the public interest. Crucially, the information that research produces is a public good on which caregivers, health systems, and policy-makers rely to efficiently discharge important moral responsibilities. As recent international guidelines for ethical research emphasize, the justification for research is its social and scientific value, understood as its ability to produce the information that multiple actors need to make decisions that implicate health, welfare, and the use of scarce resources (5).

**To enable stakeholders to fulfill their social responsibilities, research should embody five conditions of informativeness and social value (6).**

**The first is importance.** Trials should address key evidence gaps. Interventions selected for testing should capture the most promising therapeutic and prophylactic alternatives as judged from reviews of existing evidence and trials. They should aim to detect effects that are realistic but clinically meaningful. As of this writing, more than 18 clinical trials enrolling more than 75,000 patients have been registered in North America for testing various hydroxychloroquine regimens for COVID-19. This massive commitment concentrates resources on nearly identical clinical hypotheses, creates competition for recruitment, and neglects opportunities to test other clinical hypotheses. Testing different regimens derived from a common clinical hypothesis in uncoordinated protocols increases the probability of false-positive findings due to chance (7). This also frustrates cross-comparisons and squanders opportunities to evaluate regimens side by side (8).

**The second component is rigorous design.** Trials should be designed to detect clinically meaningful effects so that both positive and negative results serve the informational needs of clinicians and health systems. Studies designed to detect massive effects often eschew randomization or use surrogate end points. Although easily launched, such studies are at high risk for producing inconclusive findings that sow confusion and necessitate further evaluation. The decision to forgo a dummy comparator and use a nonvalidated surrogate end point, absenteeism, in a study testing use of a tuberculosis vaccine to prevent coronavirus infection jeopardizes the study's ability to clarify the merits of this intervention (9).



**The third component is analytical integrity.** Designs should be prespecified in protocols, prospectively registered, and analyzed in accordance with prespecification. A recent study of hydroxychloroquine reported a beneficial effect on clinical primary outcomes in a preprint, whereas registration documents revealed a different study design and a polymerase chain reaction–based primary end point. The glaring discrepancy, a well-known source of bias in trials, was not flagged in some reporting on the trial ([10](#)).

**Fourth, trials should be reported completely, promptly, and consistently with prespecified analyses.** One reporting challenge present in the best of times, and likely to reemerge during pandemics, is the deposition of positive findings in preprint servers earlier than nonpositive studies. Another challenge is quality control. Qualified peer reviewers are a scarce resource, and the proliferation of low-quality papers saps the ability of scientists to place findings into context before they are publicized ([11](#)). Some recent trials garnering press coverage did not adhere to well-established reporting standards.

**The fifth component is feasibility:** Studies must have a credible prospect of reaching their recruitment target and being completed within a time frame where the evidence is still actionable. This condition is in tension with the others because their resource demands under conditions of scarcity create the prospect that research might never be completed. However, making research feasible by relaxing the other four standards contradicts the social justification for research.

The system of incentives normally used to align research actors with the public good is imperfect in noncrisis situations and likely to be ineffective in the context of a pandemic. Therefore, to meet the requirement of feasibility, investigators, sponsors, health systems, and regulators have responsibilities to make exceptional efforts to cooperate and collaborate in a way that concentrates resources on a portfolio of studies that satisfy the above conditions.

Sponsors, research consortia, and health agencies should prioritize research approaches that test multiple interventions, foster modularity, and permit timely adaptation ([12](#)). Master protocols enable multiple interventions to be trialed under a common statistical framework, facilitating cross-comparisons and promoting multicenter collaboration ([13](#)). Adaptive designs allow flagging interventions to be dropped quickly and promising alternatives to be added with fewer delays than would be incurred from the design and approval of new studies. Seamless trial designs reduce transition time between trial phases and can extend into the provision of care to large numbers of patients.

Individual clinicians should avoid off-label use of unvalidated interventions that might interfere with trial recruitment and resist the urge to carry out uncontrolled, open-label studies. They should instead seek out opportunities to join larger, carefully orchestrated protocols to increase the prospect that high-quality studies will be completed quickly and generate the information needed to advance individual and public health. Academic medical centers can facilitate such coordination by surveying the landscape of ongoing studies and establishing mechanisms for “prioritization review” to triage studies ([14](#)). The goal would be to incentivize participation in efforts that uphold the criteria outlined here and to foster robust participation in multicenter studies so that data can be generated from different institutions before their capacity to meet fastidious research requirements is overwhelmed by surging medical demand.

Regulatory agencies and public health authorities should play a leading role in identifying studies that meet these standards and fostering collaboration among a sufficient number of centers to ensure adequate recruitment and timely results. They should also avoid making public recommendations or granting emergency use authorization for interventions whose clinical merits remain to be established and, instead, present clinical trials as a mechanism for addressing uncertainty without compromising patient interests. At public briefings, health authorities can point stakeholders to trials being pursued within their catchment and report recruitment milestones to elevate the profile and progress of high-quality studies.

In a report on the ethics and science of research conducted during the 2014–2015 Ebola outbreak (during which ethical and practical concerns about using standard research methodologies, like randomization and placebo comparators, yielded a body of inconclusive findings), a U.S. National Academy of Medicine committee argued that clinical research is an integral part of outbreak response and that “despite [the] sense of urgency, research during an epidemic is still subject to the same core scientific and ethical requirements that govern all research on human subjects” ([15](#)). One lesson of the current outbreak is that expeditious research in a crisis situation is feasible. Absent robust leadership from regulators, health authorities, and major funding bodies, however, the responsibility for coordinating research activities falls to the wide range of stakeholders who might normally pursue research on a more independent basis. Although many of these parties face powerful, parochial incentives to conduct research that is feasible with the resources that are locally available, the exigencies of crisis situations like global pandemics require exceptional steps to combine efforts, divide labor, and triage out low-value and duplicative research.

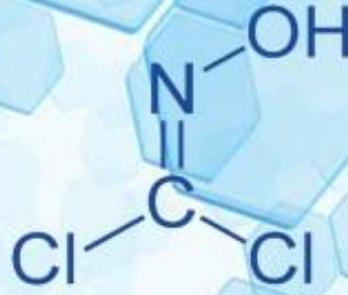
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# CHEM NEWS



## 25 years after Tokyo subway attack, Aum is a shadow of its former self

Source: <https://www.japantimes.co.jp/news/2020/03/25/reference/25-years-tokyo-attack-aum-shinrikyo/#.XnxdHLQDIU>

May 25 – On the morning of March 20, 1995, members of the doomsday cult Aum Shinrikyo released sarin gas on Tokyo subway trains, killing 13 people and injuring over 5,800. The attack came as the nation was still reeling from the Great Hanshin Earthquake in Kobe just over two months earlier. It deeply shocked Japan and the world and raised concerns over nonstate organizations obtaining weapons of mass destruction.



### What was Aum Shinrikyo and who led it?

Shoko Asahara, then head of the Aum Shinrikyo cult, in 1990. | KYODO

Aum Shinrikyo was a doomsday cult that fused elements of different religions, including Buddhism, along with the works of Nostradamus into its own belief system. The cult began in 1984 and included a yoga training center run by Chizuo Matsumoto, who was blind in his left eye and had limited sight in his right eye. Matsumoto was born in Kumamoto Prefecture, traveled to India (where he met, briefly, the Dalai Lama) and, in the mid-1980s, reinvented himself in Tokyo as Shoko Asahara, an aspiring holy man. But he also had an interest in UFOs and telepathy. At various times, Asahara claimed he could levitate, meditate underwater, walk through walls and even — after a trip to Cairo — took credit for helping design the ancient pyramids in a past life.

In 1989, the Tokyo Metropolitan Government granted Aum status as a religious corporation. This meant tax breaks and less accountability to authorities. From there, Aum's internal structure would grow and mimic that of the central government, with Asahara creating different "ministries and agencies" within the cult, including a "Health and Welfare Ministry," a "Home Affairs Ministry," and an "Intelligence Agency," among others. Further, Asahara and his family were taken care of by an "Imperial Household Agency."

### How many members did Aum have and what was its financial situation?

The cult says it grew from only a few members at the time it was incorporated to around 10,000 by 1992, and then to 50,000 worldwide, including 11,400 in Japan, by the time of the 1995 attack. Japanese police said the cult was worth around ¥430 million when it received religious corporation status in 1989, and that grew to an estimated ¥100 billion in 1995, by which time Aum had more than 30 branches in six countries.

The money came from Aum members themselves, who were asked to donate all of their worldly possessions upon entering the cult. Funds were also generated by Aum-related businesses, including yoga lessons, book sales and computer service centers. In addition, Japanese media reports quoted in Aum-related testimony presented to the U.S. Senate on Oct. 31 and Nov. 1, 1995, listed classes that claimed to teach supernatural powers and described blood initiation rites where devotees paid ¥1 million to drink blood supposedly from Asahara. Headgear that Aum said would synchronize a follower's brain waves with those Asahara could be rented for ¥1 million per month.

### What kind of people joined Aum, and what were their motivations?

Aum members came from all walks of life, but the senior leadership surrounding Asahara, the various "ministers" and those below them included scientific researchers and technical experts from Japan's most respected public and private universities. Some joined because Aum offered them funding for their various research interests and what seemed to be the freedom to pursue them more easily than would have been the case if they'd joined the government, large corporations or academic research institutes. Others were brilliant intellectually but felt spiritually empty and saw something they liked in Asahara and Aum's philosophy. Some were drawn to the cult's quest for spiritual salvation and beliefs.

### What happened in the months and years prior to the 1995 attack?

In February 1990, Asahara and 24 other members of Aum campaigned for seats in the Lower House election. All were soundly defeated, and from then on Aum became more paranoid, emphasizing the rhetoric of Armageddon. The cult was already controversial. It would later



be confirmed that in November 1989, Aum members kidnapped and murdered Yokohama lawyer Tsutsumi Sakamoto, his wife and their 1-year old son. Sakamoto had represented a number of anti-Aum groups.



Patients receive treatment in front of Tsukiji Station in Tokyo on March 20, 1995, after a sarin gas attack by the Aum Shinrikyo cult. Right: A squad from the Tokyo Fire Department works near Kasumigaseki Station in Tokyo after the attack. KYODO

Over the next few years, Aum, whose main compound was in Kamikuishiki, Yamanashi Prefecture, produced chemical weapons and agents, including sarin, VX, phosgene and sodium cyanide. It was working on developing biological weapons and diseases including anthrax, botulism, and Q-fever.

Aum set up in Russia not long after the collapse of the Soviet Union, attracting somewhere between 30,000 to 50,000

Russian members, the majority of the cult's membership. It acquired Russian military technology, including a helicopter.

In June 1994, in a test run for the March 1995 attack in Tokyo, Aum members conducted a sarin attack in Matsumoto, Nagano Prefecture, in which eight people died and hundreds more were injured.

[Aum's 'Satyan 7' facility, near Mount Fuji in the village of Kamikuishiki, Yamanashi Prefecture, in 1995. | KYODO](#)

### Did Aum really try to buy a nuclear weapon?

Kiyohide Hayakawa, Aum's "construction minister," visited Russia over 20 times between 1992 and 1995 and was involved in many negotiations with Russian officials to buy various weapons. In documents seized after the March 1995 sarin attack, it was revealed that he had written "how much is a nuclear warhead?" It was unclear whether this referred to actual discussions or negotiations. In addition, Aum purchased, in 1993, a sheep farm 375 miles from Perth in Western Australia's Banjawarn, which also had some uranium deposits. Ultimately, however, investigations in Japan and the U.S. concluded the cult never came particularly close to actually developing or buying nuclear weapons.

### What legal changes were made following the attack?

Aum had been able to operate for years due to a legal system that made it tough for police and prosecutors to take action against religious groups. A 1951 law enacted to ensure strong religious freedoms meant that government oversight was, in practice, quite difficult.

Following the attack, Aum was forced by the Tokyo District Court to break up, and it did so in December 1995. However, Aum members were not forbidden from practicing their faith or running affiliated businesses. The Diet passed a law forbidding the manufacture, possession or use of sarin and similar substances, and the law was revised to allow more monitoring of organizations deemed suspicious and potentially dangerous. Another law gave more autonomy to local police when dealing with cross-prefectural crimes.





Aum Shinrikyo founder Shoko Asahara is transferred to the Metropolitan Police Department for questioning. Asahara, whose real name was Chizuo Matsumoto, was hanged on July 6, 2018. KYODO

### What is the status of Aum cult today?

Asahara and 12 senior Aum leaders were executed in July 2018. Since 2000, Aum has been the subject of government surveillance. Aum is now split into a mainstream group called Aleph (with a further faction called “group led by Yamada”) and Hikari no Wa (The Circle of Rainbow Light), led by former Aum spokesman Fumihiko Joyu.

As of last year, all groups were under surveillance. A 2019 report by the Public Security Intelligence Agency estimated that there were 1,650 members of all three groups within Japan, and still some in Russia. At the end of October 2019, they had ¥1.3 billion in assets. The agency warns that Aleph and the group led by Yamada remain devoted to Asahara, while Hikari no Wa displays Buddhist paintings apparently connected to Asahara

and conducts visits to places deemed holy by Joyu and to shrines deemed related to Asahara.

After Asahara’s execution, Joyu offered an apology to the sarin victims and said he had no special feelings for Asahara. In April 2019, Aleph was ordered by a Tokyo court to pay out more than ¥1 billion to victims of the attack.

## Researchers Study Characteristics of Extremists Who Pursue Chemical, Biological Weapons

Source: <https://www.start.umd.edu/news/researchers-study-characteristics-extremists-who-pursue-chemical-biological-weapons>

Mar 10 – New research from the National Consortium for the Study of Terrorism and Responses to Terrorism (START) could help authorities better head off plans for chemical and biological attacks by identifying commonalities among violent non-state actors who pursue such methods.

In a paper [published](#) in the journal *Behavioral Sciences of Terrorism and Political Aggression*, START Assistant Research Scientist [Thomas Guarrieri](#) found that older extremists are more likely to pursue CB weapons, as are those who are jobless or students. Additionally, Islamist, far-right and far-left extremists are less likely to pursue CB weapons than those acting on behalf of a single issue. The study found no evidence that gender or education affect whether an extremist will pursue CB weapons.

“As advances in technology make it easier for extremists to adopt more destructive attack modalities, analyzing the data that we collect and maintain at START will be crucial in understanding the terrorist threatscape,” said Guarrieri. “Even though this study is exploratory, there has been little scientific examination to date of unconventional weapon choices among violent extremists.”

For the study, Guarrieri and co-author [Collin Meisel](#), a former START research assistant now at the University of Denver, analyzed and compared two START datasets that include violent extremists from the [Profiles of Individual Radicalization in the United States \(PIRUS\) dataset](#) and individuals from the [Chemical and Biological Non-state Adversaries Database \(CABNSAD\)](#).

## Ultra-Realistic Simulation for First Responders

Source: <https://i-hls.com/archives/100418>

Apr 09 – A new technology provides first responders with an advanced training solution for the protection against radiological or nuclear terrorism and the capability to deal with their subsequent aftermath.

The **Radiation Field Training Simulator (RaFTS) technology** was developed by a collaboration between Lawrence Livermore National Laboratory (LLNL, California) and Argon Electronics (UK).



## HZS C<sup>2</sup>BRNE DIARY – April 2020

In contrast to other existing simulator training methods, the RaFTS technology produces a response within an actual radiation detector that exactly replicates all the physics of real-world usage.

The technology will facilitate the development of an ultra-realistic radiation simulator tool. The project will combine LLNL's innovative Radiation Field Training Simulator (RaFTS) technology with Argon's simulation software and hardware capabilities.

According to [homelandsecuritynewswire.com](http://homelandsecuritynewswire.com), the hardware has been designed as an externally mounted device that interfaces directly with the circuitry of operational radiation detection systems.

The data that is collected offers a sufficient degree of realism to enable the energy-spectra-based identification, measurement and location of a radioactive source.

## How simulations and simulator training have amplified CBRNe capability

By Steven Pike

Source: <https://www.argonelectronics.com/blog/simulator-training-cbrne-capability>

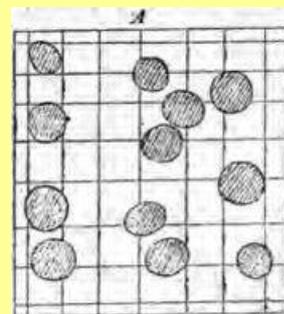
Apr 15 – The earliest documented records of war gaming can be traced back as far as the ancient Greeks in the 5th century BC, who are known to have played a skill-based board game called [petteia](#) or 'pebbles' (Greek: *πεττεία – πεσσοί = stones*).

By the 2nd Century BC *petteia* was being played widely throughout the Roman Empire, under the name of *ludus latrunculorum* (*latrunculi*) or 'the game of little soldiers'.

Chess, which has its origins in Northern India in the 6th century AD, is an example of an early war game that combined both strategy and tactical skill.

By the mid 1700s, the fundamentals of chess would also stimulate the development of an increasingly elaborate range of new battlefield strategy games.

Perhaps the most notable of these is the genre known as [kriegspiel](#), which was formulated in Prussia in the early 1800s and which is now widely regarded as being the 'grandfather' of modern military gaming.



### The role of simulation in CBRNe training scenarios

As the use of modern weaponry has become more widespread and more destructive in its capability, military strategists have been forced to look for more 'abstract' ways to safely imitate and prepare for the realities of conflict conditions.

Today, the tools, technologies and [scenarios](#) that are used to train real-life CBRNe incidents have become increasingly sophisticated and life-like in their design.

The use of simulations and simulator detector equipment has become an invaluable addition to many military and civilian CBRNe training programmes.

One example of the way in which simulation is being used to enhance CBRNe capability is through the use of wide-area instrumented training systems such as Argon Electronics' [PlumeSIM](#).

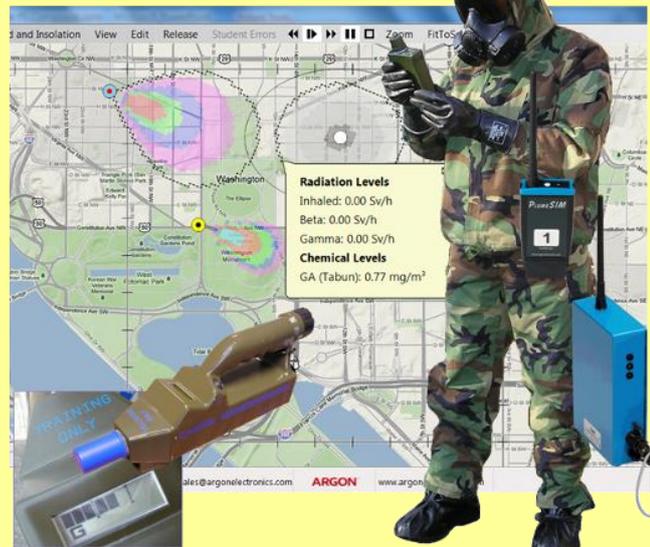
### The PlumeSIM wide-area training system

Using PlumeSIM technology, trainees are able to safely and effectively hone their skills in the operation of chemical and radiological equipment in a diverse variety of true-to-life threat scenarios.

For those tasked with CBRNe instruction, balancing [realism](#) with safety is a crucial consideration.

Using PlumeSIM's innovative simulator technology, the parameters of each training scenario can be rigorously selected and controlled.

Instructors are able to recreate a specific threat, to simulate plumes, deposition or hotspots, to mimic the release of single or multiple CWA, HazMat or radiological sources and to replicate environmental conditions such as changes in wind direction.



## HZS C<sup>2</sup>BRNE DIARY – April 2020

Portability, speed of set-up and ease of use are also key factors. PlumeSIM's planning mode provides CBRNe instructors with the ability to prepare exercises in advance on a laptop or PC and without the need for any type of system hardware.

Its innovative system design allows the use of common file format map images or even 'homemade' sketches of a proposed training area.

The addition of a tabletop classroom mode also enables trainees to familiarise themselves with every aspect of the exercise before hands-on training commences.

Using simple gamepad controllers, students are able to 'move' icons of themselves around an on-screen display of the training area. Once the virtual plume scenario has been activated, all student movement can also be recorded during the session and played back for later analysis.

In field exercise mode, trainees are provided with GPS enabled Player Units before being deployed to the external training area.

Their instructor can then monitor their location on the control base map in real-time via the use of a long-range radio communications link.

The ability to be able to record, document and review trainees' decisions and actions is a vital element in the effectiveness of a simulator training system.

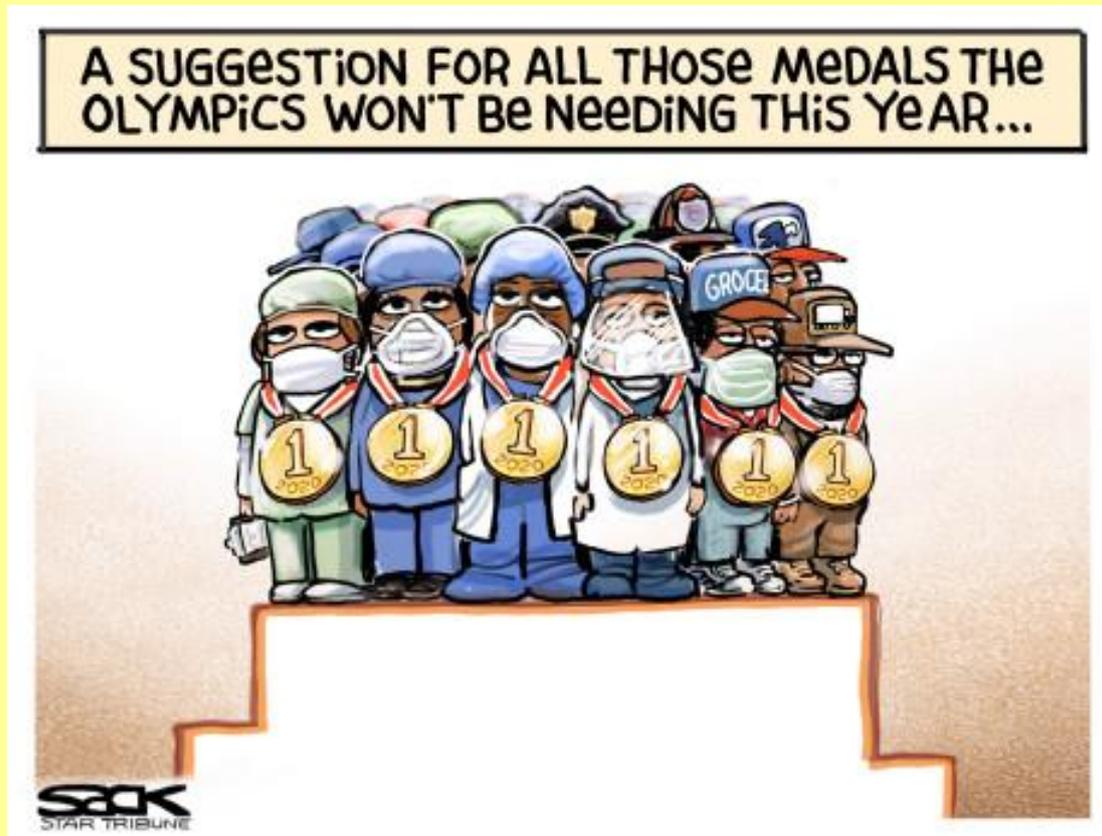
PlumeSIM's [After Action Review](#) capability means trainee movement and instrument usage can be monitored in real time and can then be analysed and discussed once the exercise has been completed.

### Enhanced CBRNe training capability

Simulator training is widely regarded for the role it plays in enhancing the effectiveness of 21st century military and civilian CBRNe capability.

With the help of simulator technology, students can train against actual threats in a realistic, safe and controlled environment.

In addition, expensive detector equipment is protected from needless wear and tear and instructors are able to monitor, assess and review every aspect of their trainees' movements and decision-making.



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## In Memoriam: Healthcare Workers Who Have Died of COVID-19



Source: <https://www.medscape.com/viewarticle/927976>

Apr 07 – As front-line healthcare workers care for patients with COVID-19, they commit themselves to difficult, draining work and also put themselves at risk of infection. Hundreds throughout the world have died. Medscape wants to make sure they are not forgotten, and we will update this list as — sadly — needed.

Medscape needs your help to ensure this list is complete. Please submit names with an age, profession or specialty, and location through [this form](#).

## Pandemics and the Shape of Human History

*Outbreaks have sparked riots and propelled public-health innovations, prefigured revolutions and redrawn maps.*

By Elizabeth Kolbert

Source: <https://www.newyorker.com/magazine/2020/04/06/pandemics-and-the-shape-of-human-history>

Mar 30 – What’s often referred to as the first pandemic began in the city of Pelusium, near modern-day Port Said, in northeastern Egypt, in the year 541. According to the historian Procopius, who was alive at the time, the “pestilence” spread both west, toward Alexandria, and east, toward Palestine. Then it kept on going. In his view, it seemed to move almost consciously, “as if fearing lest some corner of the earth might escape it.”

The earliest symptom of the pestilence was fever. Often, Procopius observed, this was so mild that it did not “afford any suspicion of danger.” But, within a few days, victims developed the classic symptoms of bubonic plague—lumps, or buboes, in their groin and under their arms. The suffering at that point was terrible; some people went into a coma, others into violent delirium. Many vomited blood. Those who attended to the sick “were in a state of constant exhaustion,” Procopius noted. “For this reason everybody pitied them no less than the sufferers.” No one could predict who was going to perish and who would pull through.

In early 542, the plague struck Constantinople. At that time, the city was the capital of the Eastern Roman Empire, which was led by the Emperor Justinian. A recent assessment calls Justinian “one of the greatest statesmen who ever lived.” Another historian describes the first part of his reign—he ruled for almost forty years—as “a flurry of action virtually unparalleled in Roman history.” In the fifteen years before the pestilence reached the capital, Justinian codified Roman law, made peace with the Persians, overhauled the Eastern Empire’s fiscal administration, and built the Hagia Sophia.

As the plague raged, it fell to Justinian, in Procopius’ words, to “make provision for the trouble.” The Emperor paid for the bodies of the abandoned and the destitute to be buried. Even so, it was impossible to keep up; the death toll was too high. (Procopius thought it reached more than ten thousand a day, though no one is sure if this is accurate.) John of Ephesus, another contemporary of Justinian’s, wrote that “nobody would go out of doors without a tag upon which his name was written,” in case he was suddenly stricken. Eventually, bodies were just tossed into fortifications at the edge of the city.

The plague hit the powerless and the powerful alike. Justinian himself contracted it. Among the lucky, he survived. His rule, however, never really recovered. In the years leading up to 542, Justinian’s generals had reconquered much of the western part of the Roman Empire from the Goths, the Vandals, and other assorted barbarians. After 542, the Emperor struggled to recruit soldiers and to pay them. The territories that his generals had subdued began to revolt. The plague reached the city of Rome in 543, and seems to have made it all the way to Britain by 544. It broke out again in Constantinople in 558, a third time in 573, and yet again in 586.

The Justinianic plague, as it became known, didn’t burn itself out until 750. By that point, there was a new world order. A powerful new religion, Islam, had arisen, and its followers ruled territory that included a great deal of what had been Justinian’s empire, along with the Arabian Peninsula. Much of Western Europe, meanwhile, had come under the control of the Franks. Rome had been reduced to about thirty thousand people, roughly the population of present-day Mamaroneck. Was the pestilence partly responsible? If so, history is written not only by men but also by microbes.

Just as there are many ways for microbes to infect a body, there are many ways for epidemics to play out in the body politic. Epidemics can be short-lived or protracted, or, like the Justinianic plague, recurrent. Often, they partner with war; sometimes the pairing favors the aggressor, sometimes the aggressed. Epidemic diseases can become endemic, which is to say constantly present, only to become epidemic again when they’re carried to a new region or when conditions change.



To this last category belongs smallpox, dubbed the speckled monster, which may have killed more than a billion people before it was eradicated, in the mid-twentieth century. No one knows exactly where smallpox originated; the virus—part of the genus that includes cowpox, camelpox, and monkeypox—is believed to have first infected humans around the time that people began domesticating animals. Signs of smallpox have been found in Egyptian mummies, including Ramses V, who died in 1157 B.C. The Romans seem to have picked up the pox near present-day Baghdad, when they went to fight one of their many enemies, the Parthians, in 162. The Roman physician Galen reported that those who came down with the new disease suffered a rash that was “ulcerated in most cases and totally dry.” (The epidemic is sometimes referred to as the Plague of Galen.) Marcus Aurelius, the last of the so-called Five Good Emperors, who died in 180, may also have been a smallpox victim.

By the fifteenth century, as Joshua S. Loomis reports in [“Epidemics: The Impact of Germs and Their Power Over Humanity”](#) (Praeger), smallpox had become endemic throughout Europe and Asia, meaning that most people were probably exposed to it at some point in their lives. Over all, the fatality rate was a terrifying thirty per cent, but among young children it was much higher—more than ninety per cent in some places. Loomis, a professor of biology at East Stroudsburg University, writes that the danger was so grave that “parents would commonly wait to name their children until after they had survived smallpox.” Anyone who made it through acquired permanent immunity (though many were left blind or horribly scarred). This dynamic meant that every generation or so there was a major outbreak, as the number of people who had managed to avoid getting infected as children slowly rose. It also meant, as Loomis rather cavalierly observes, that Europeans enjoyed a major advantage as they “began exploring distant lands and interacting with native populations.”

Alfred W. Crosby, the historian who coined the phrase “the Columbian Exchange,” also coined the term “virgin soil epidemic,” defined as one in which “the populations at risk have had no previous contact with the diseases that strike them and are therefore immunologically almost defenseless.” The first “virgin soil epidemic” in the Americas—or, to use another one of Crosby’s formulations, “the first New World pandemic”—began toward the end of 1518. That year, someone, presumably from Spain, carried smallpox to Hispaniola. This was a quarter of a century after Columbus ran aground on the island, and the native Taíno population had already been much reduced. The speckled monster laid waste to those who remained. Two friars, writing to the King of Spain, Charles I, in early 1519, reported that a third of the island’s inhabitants were stricken: “It has pleased Our Lord to bestow a pestilence of smallpox among the said Indians, and it does not cease.” From Hispaniola, smallpox spread to Puerto Rico. Within two years, it had reached the Aztec capital of Tenochtitlán, in what’s now Mexico City, a development that allowed Hernán Cortés to conquer the capital, in 1521. A Spanish priest wrote, “In many places it happened that everyone in a house died, and, as it was impossible to bury the great number of dead, they pulled down the houses over them.” Smallpox seems to have reached the Incan Empire before the Spaniards did; the infection raced from one settlement to the next faster than the conquistadores could travel.

It’s impossible to say how many people died in the first New World pandemic, both because the records are sketchy and because Europeans also brought with them so many other “virgin soil” diseases, including measles, typhoid, and diphtheria. In all, the imported microbes probably killed tens of millions of people. “The discovery of America was followed by possibly the greatest demographic disaster in the history of the world,” William M. Denevan, a professor emeritus at the University of Wisconsin-Madison, has written. This disaster changed the course of history not just in Europe and the Americas but also in Africa: faced with a labor shortage, the Spanish increasingly turned to the slave trade.

The word “quarantine” comes from the Italian *quaranta*, meaning “forty.” As Frank M. Snowden explains in [“Epidemics and Society: From the Black Death to the Present”](#) (Yale), the practice of quarantine originated long before people understood what, exactly, they were trying to contain, and the period of forty days was chosen not for medical reasons but for scriptural ones, “as both the Old and New Testaments make multiple references to the number forty in the context of purification: the forty days and forty nights of the flood in Genesis, the forty years of the Israelites wandering in the wilderness . . . and the forty days of Lent.”

The earliest formal quarantines were a response to the Black Death, which, between 1347 and 1351, killed something like a third of Europe and ushered in what’s become known as the “second plague pandemic.” As with the first, the second pandemic worked its havoc fitfully. Plague would spread, then abate, only to flare up again.

During one such flareup, in the fifteenth century, the Venetians erected lazarettos—or isolation wards—on outlying islands, where they forced arriving ships to dock. The Venetians believed that by airing out the ships they were dissipating plague-causing vapors. If the theory was off base, the results were still salubrious; forty days gave the plague time enough to kill infected rats and sailors. Snowden, a professor emeritus at Yale, calls such measures one of the first forms of “institutionalized public health” and argues that they helped legitimize the “accretion of power” by the modern state.

There’s a good deal of debate about why the second pandemic finally ended; one of the last major outbreaks in Europe occurred in Marseille in 1720. But, whether efforts at control were effective or not, they often provoked, as Snowden puts it, “evasion, resistance, and riot.” Public-health measures ran up against religion and tradition, as, of course, they still do. The



fear of being separated from loved ones prompted many families to conceal cases. And, in fact, those charged with enforcing the rules often had little interest in protecting the public.

Consider the case of cholera. In the ranks of dread diseases, cholera might come in third, after the plague and smallpox. Cholera is caused by a comma-shaped bacterium, *Vibrio cholerae*, and for most of human history it was restricted to the Ganges Delta. Then, in the eighteen-hundreds, steamships and colonialism sent *Vibrio cholerae* travelling. The first cholera pandemic broke out in 1817 near Calcutta. It moved overland to modern-day Thailand and by ship to Oman, whence it was carried down to Zanzibar. The second cholera pandemic began in 1829, once again in India. It wound its way through Russia into Europe and from there to the United States.

In contrast to plague and smallpox, which made few class distinctions, cholera, which is spread via contaminated food or water, is primarily a disease of urban slums. When the second pandemic struck Russia, Tsar Nicholas I established strict quarantines. These may have slowed the spiral of spread, but they did nothing to help those already infected. The situation, according to Loomis, was exacerbated by health officials who indiscriminately threw together cholera victims and people suffering from other ailments. It was rumored that doctors were purposefully trying to kill off the sick. In the spring of 1831, riots broke out in St. Petersburg. One demonstrator returning from a melee reported that a doctor had “got a coupl’v’e rocks in the neck; he sure won’t forget us for a long time.” The following spring, cholera riots broke out in Liverpool. Once again, doctors were the main targets; they were accused of poisoning cholera victims and turning them blue. (Cholera has been called the “blue death” because those suffering from the disease can get so dehydrated that their skin becomes slate-colored.) Similar riots broke out in Aberdeen, Glasgow, and Dublin.

In 1883, during the fifth cholera pandemic, the German physician Robert Koch established the cause of the disease by isolating the *Vibrio cholerae* bacterium. The following year, the pandemic hit Naples. The city dispatched inspectors to confiscate suspect produce. It also sent out disinfection squads, which arrived at the city’s tenements with guns drawn. Neapolitans were, understandably, skeptical of both the inspectors and the squads. They responded with an impressive sense of humor, if not necessarily a keen understanding of epidemiology. Demonstrators showed up at city hall with baskets of overripe figs and melons. They proceeded, Snowden writes, “to consume the forbidden fruit in enormous quantities while those who watched applauded and bet on which binger would eat the most.”

Eight years later, while the fifth pandemic raged on, one of the most violent cholera riots broke out in what’s now the Ukrainian city of Donetsk. Scores of shops were looted, and homes and businesses were burned. The authorities in St. Petersburg responded to the violence by cracking down on workers accused of promoting “lawlessness.” According to Loomis, the crackdown prompted more civil unrest, which in turn prompted more repression, and, thus, in a roundabout sort of way, cholera helped “set the stage” for the Russian Revolution.

The seventh cholera pandemic began in 1961, on the Indonesian island of Sulawesi. During the next decade, it spread to India, the Soviet Union, and several nations in Africa. There were no mass outbreaks for the next quarter century, but then one hit Peru in 1991, claiming thirty-five hundred lives; another outbreak, in what is now the Democratic Republic of the Congo, in 1994, claimed twelve thousand.

By most accounts, the seventh pandemic is ongoing. In October, 2010, cholera broke out in rural Haiti, then quickly spread to Port-au-Prince and other major cities. This was nine months after a magnitude-7.0 earthquake had devastated the country. Rumors began to circulate that the source of the outbreak was a base that housed United Nations peacekeeping troops from Nepal. Riots occurred in the city of Cap-Haïtien; at least two people were killed, and flights carrying aid to the country were suspended. For years, the U.N. denied that its troops had brought cholera to Haiti, but it eventually admitted that the rumors were true. Since the outbreak began, eight hundred thousand Haitians have been sickened and nearly ten thousand have died.

Epidemics are, by their very nature, divisive. The neighbor you might, in better times, turn to for help becomes a possible source of infection. The rituals of daily life become opportunities for transmission; the authorities enforcing quarantine become agents of oppression. Time and time again throughout history, people have blamed outsiders for outbreaks. (On occasion, as in the case of the U.N. peacekeeping troops, they’ve been right.) Snowden recounts the story of what happened to the Jews of Strasbourg during the Black Death. Local officials decided that they were responsible for the pestilence—they had, it was said, poisoned the wells—and offered them a choice: convert or die. Half opted for the former. On February 14, 1349, the rest “were rounded up, taken to the Jewish cemetery, and burned alive.” Pope Clement VI issued papal bulls pointing out that Jews, too, were dying from the plague, and that it wouldn’t make sense for them to poison themselves, but this doesn’t seem to have made much difference. In 1349, Jewish communities in Frankfurt, Mainz, and Cologne were wiped out. To escape the violence, Jews migrated en masse to Poland and Russia, permanently altering the demography of Europe. Whenever disaster strikes, like right about now, it’s tempting to look to the past for guidance on what to do or, alternatively, what not to do. It has been almost fifteen hundred years since



the Justinianic plague, and, what with plague, smallpox, cholera, influenza, polio, measles, malaria, and typhus, there are an epidemic number of epidemics to reflect on.

The trouble is that, for all the common patterns that emerge, there are at least as many confounding variations. During the cholera riots, people blamed not outsiders but insiders; it was doctors and government officials who were targeted. Smallpox helped the Spanish conquer the Aztec and Incan Empires, but other diseases helped defeat colonial powers. During the Haitian Revolution, for example, Napoleon tried to retake the French colony, in 1802, with some fifty thousand men. So many of his soldiers died from yellow fever that, after a year, he gave up on the attempt, and also decided to sell the Louisiana Territory to the Americans.

Even the mathematics of outbreaks varies dramatically from case to case. As Adam Kucharski, a professor at the London School of Hygiene & Tropical Medicine and the author of "[The Rules of Contagion](#)" (forthcoming in the U.S. from Basic Books), points out, the differences depend on such factors as the mode of transmission, the length of time an individual is contagious, and the social networks that each disease exploits. "There's a saying in my field: 'if you've seen one pandemic, you've seen . . . one pandemic,'" he writes. Among the few predictions about COVID-19 that it seems safe to make at this point is that it will become the subject of many histories of its own.

*Elizabeth Kolbert has been a staff writer at The New Yorker since 1999. Previously, she worked at the Times, where she wrote the Metro Matters column and served as the paper's Albany bureau chief. Her three-part series on global warming, "[The Climate of Man](#)," won the 2006 National Magazine Award for Public Interest and the 2006 National Academies Communication Award. She received a Heinz Award, in 2010, and won the 2010 National Magaz Award for Reviews and Criticism. She is the editor of "[The Best American Science and Nature Writing 2009](#)" and the author of "[The Prophet of Love: And Other Tales of Power and Deceit](#)"; "[Field Notes from a Catastrophe](#);" and "[The Sixth Extinction](#)," for which she won the Pulitzer Prize for general nonfiction in 2015. She received the Blake-Dodd Prize, from the American Academy of Arts and Letters, in 2017.*

## **The Prospect of Bioterrorism: The Threat of Pathogen, Biting Insects and Dirty Bomb in Europe and UK**

By Musa Khan Jalalzai

Source: <https://moderndiplomacy.eu/2020/03/24/the-prospect-of-bioterrorism-the-threat-of-pathogen-biting-insects-and-dirty-bomb-in-europe-and-uk/>

Mar 24 – The recent coronavirus attacks authenticate my postulation of the intensification of bioterrorism in Europe and Asia in 2020. The blame game between Washington and China further prompted misunderstanding about the hegemonic role of the US army that it wants to mitigate the future role of nuclear weapons and missile technology in peace and war. Chinese Ambassador was summoned in Washington when Foreign Ministry in Beijing tweeted that the deadly coronavirus was seeded in Wuhan by the US military. US President Donald Trump also called Covid-19 a "Chinese" and "foreign" virus, earning condemnations not only from Beijing but also from much of the mainstream media. However, China categorically stated that the coronavirus attack was a hybrid war against its economy and industry. Moreover, initially, Iranian officials also declared that the coronavirus was a biological weapon created in US military laboratories. Some state in Europe demonstrated weakness in fighting the Coronavirus war against their population.

Italy and France have been irritated in overcoming the death rate from the disease, while the British Prime Minister become frustrated in changing his controversial approach to the pandemic spread across the country. On 22 March 2020, the Guardian newspaper reported frustration of Downing Street about the shameless statement of controversial adviser to the Prime Minister Boris Johnson, Dominic Mckenzie Cummings, who argued in a private meeting that the government's strategy towards the coronavirus was "herd immunity, protect the economy and if some pensioners die". The allegations, which were widely circulated online widely criticised that the government response to the Coronavirus was initially too weak, frustrated and controversial based on a notion that rather than limiting its spread, enough people could be allowed to contract it to give population-wide "herd immunity". Dominic Mckenzie Cummings was born 25 November 1971 is a British political strategist who has been serving as Chief Adviser to Prime Minister Boris Johnson since July 2019.

Since 9/11, the threat of nuclear and biological terrorism has been at the forefront of the international security agenda. Bio terror experts have stressed the need on prevention of terrorist groups operating in Europe and the UK from gaining access to weapons of mass destruction and from perpetrating atrocious acts of biological terrorism. Recent events in Europe have raised the prospect of extremist and jihadist groups using biological,



radiological and chemical attacks against civilian and military installations. The greatest threat to the national security of Europe and the UK stems from smuggling of material of dirty bomb, pathogen and smuggling of biting insects. As international media focused on the looming threat of chemical and biological terrorism in Europe, extremist and jihadist groups are seeking these weapons to inflict fatalities on civilian population.

Bioterrorism is terrorism involving the intentional release or dissemination of biological agents. These agents are bacteria, viruses, fungi, or toxins, and may be in a naturally occurring or a human-modified form, in much the same way in biological warfare. Biological agents are used by the terrorists to attain their social or political goals and are used for killing or injuring people, plants and animals. Response of Europe to the threat of future bioterrorism seems limited due to political and economic reservations of some member states. The approach to searching for biological agents at airports and shipping container entry points, and promoting bio-hazard awareness raised several important questions. Biological terrorism can be loosely categorised based on the agent used. The virus threat including smallpox, influenza, dengue fever, yellow fever, Rift Valley fever, and hemorrhagic fevers like Lassa, Ebola, and Marburg. Smallpox spreads directly from person to person. The third category of bio-threat is 'bacteria', which includes anthrax, plague, and cholera. There are numerous reports on the genetically development of viruses by some states to use it and achieve their political and economic goal.

One of these reports on insect war is the investigative report of Bulgarian investigative journalist and Middle East correspondent Dilyana Gaytandzhieva (12 September 2018), who published a series of reports. Her current work focuses on war crimes and illicit arms exports to war zones around the world. The Alternative World Website and Zodlike Productions, a news forum has published her fresh analysis of future insect war. She has painted a consternating picture of US insect war in her investigative report, and warns that the prospect of biological terrorism is consternating:

"Pentagon's scientists have been deployed in 25 countries and given diplomatic immunity to research deadly viruses, bacteria and toxins at US military offshore biolaboratories under a \$2.1 billion DoD program. The US Embassy to Tbilisi transports frozen human blood and pathogens as diplomatic cargo for a secret US military program. Internal documents, implicating US diplomats in the transportation of and experimenting on pathogens under diplomatic cover were leaked to me by Georgian insiders. According to these documents, Pentagon scientists have been deployed to the Republic of Georgia and have been given diplomatic immunity to research deadly diseases and biting insects at the Lugar Center—the Pentagon biolaboratory in Georgia's capital Tbilisi. In 2014, The Lugar Center was equipped with an insect facility and launched a project on Sand Flies in Georgia and the Caucasus. In 2014-2015 sand fly species were collected under another project "Surveillance Work on Acute Febrile Illness" and all (female) sand flies were tested to determine their infectivity rate. A third project, also including sand flies' collection, studied the characteristics of their salivary glands. Sand flies carry dangerous parasites in their saliva which they can transmit to humans through a bite".

With the establishment of Islamic State ISIS in Syria and Iraq, Pakistan and Afghanistan, and its secret networks in Europe, international community has now focused on the proliferation and smuggling of chemical and biological weapons in the region. Recent debate in Europe-based think tanks suggests that, as the group retrieved nuclear and biological material from the Mosul University in Iraq, it can possibly make Nuclear Explosive Devices (NED) with less than eight kilograms plutonium. The debate about bioterrorism and bio-defence is not entirely new in the military circles of Europe; the involvement of ISIS in using biological weapons against the Kurdish army in Kobane is a warning for the UK and European Union member states to deeply concentrate on the proliferation of these weapons in the region.

As Islamic State ISIS now controls parts of Iraq and Syria and has carried out successful attacks in France, Germany, UK and Brussels, the group now wants to expand its terror networks to the borders of Russia and China. According to some confirmed reports, hundreds of Pakistanis have joined the army of ISIS in Syria and Iraq, while a women brigade of the ISIS army is operating in Pakistan. The problem of nuclear and biological terrorism deserves special attention from the EU and UK governments because experts warned that the army of ISIS has retrieved capabilities to develop a dirty bomb in which explosives can be combined with a radioactive source like those commonly used in hospitals or extractive industries. The use of this weapon might have severe health effects, causing more disruption than destruction.

In Europe, there is a general perception that ISIS has already used some dangerous gases in Iraq, and it could use biological weapons against civilian populations in UK and EU. If control over these weapons is weak, or if their components are available in the open market, there would be huge destruction in the region. In July 2014, the government of Iraq notified that nuclear material had been seized by the ISIS army from Mosul University. The ISIS published a 19-page document in Arabic on how to develop biological weapons, and a 26-page religious fatwa that allows the use of weapons of mass destruction. "If Muslims cannot defeat the kafir (non-believers) in a different way, it is permissible to use weapons of mass destruction," warns the fatwa.

The effects of biological weapons are worse as they cause death or disease in humans, animals or plants. The fatalities of dengue and Ebola viruses in West Africa are the worst



forms of bioterrorism. There are speculations that, in future, measles, dengue, polio and the Ebola viruses can be used as weapons of bioterrorism in Europe and the UK. Some states might use drones for the purposes of bio-war against their rival states. In 2013, writing in the *Global Policy* journal, Amanda M Teckman warned that ISIS might possibly use ebola as a weapon against the civilian population: “It remains to be seen if a terrorist group like ISIS, which has demonstrated a willingness to engage in large scale mass murder, including the uninhibited murder of civilians, has the capability to produce a weaponised version of Ebola.”

Debate among the European Union intelligence experts normally starts with the assumption that without a professional intelligence analysis on law enforcement level, prevention of bioterrorism is impossible. In the wake of the terrorist attacks in Brussels, security experts raised the question of intelligence-sharing failure, which caused huge infrastructural destruction and the killings of innocent civilians. Terrorists killed more than 34 innocent people and injured over 200 in Brussels. The failure of French and Brussels intelligence agencies to tackle the menace of extremism and the exponentially growing networks of the Islamic State (ISIS) prompted a deep distrust between the law enforcement agencies and civil society of the two states. The French and Belgium intelligence infrastructure also suffered from a lack of check and balance. This huge intelligence gap has badly affected the intelligence cooperation with other EU member states. The Belgian Foreign Minister warned that more intelligence on home-growing extremism was a must after the EU secret agencies came under heavy criticism immediately after they failed to share intelligence with France about the Paris attackers. French Interior Minister complained that no information about possible attacks was provided by EU secret agencies.

*Musa Khan Jalalzai is a writer, journalist and, a research contributor in Research Institute for European and American Studies (RIEAS) Greece, and London. He has been contributing articles and research papers in Global Security Review USA, Journal of European and American Intelligence Studies, Daily Times, The Nation, Telegraph, Times of London, Daily Outlook Afghanistan, The New Nation Bangladesh, New Yorker, and Journal (Fautline) of the Institute for Conflict Management Delhi India since 1994. His intellectual experience is up to 30 years extensive research in political analysis, Pakistan, Afghanistan, terrorism, Taliban, the ISIS, nuclear and biological terrorism, and intelligence analysis. His skills cover counterterrorism, the EU and UK law enforcement analysis, and intelligence and security crisis in Asia and Europe. From 1992-1994, he worked as a research scholar in Pakistan’s Institute of National Affairs (PINA), and authored two book on the war in Persian Gulf in 1993. He has been helping the UK law firms, and courts in demonstrating fear of persecution of asylum seeker by expert opinion reports since 2009. He completed MA in English Literatures, Diploma in Geospatial Intelligence, University of Maryland Washington DC.*

## **Coronavirus: Bioterrorism or Not, Who Is the Winner?**

By Sajad Abedi (National Security and Defense Think Tank) and Mohammad Amin Zabihi (MSc. Regional Studies, Allameh Tabatabaei University, Iran)

Source: <https://modern diplomacy.eu/2020/03/24/coronavirus-bioterrorism-or-not-who-is-the-winner/>

Mar 24 – It has been so long since the early instances of using toxins, chemicals, and diseases as agents of assassinations and/or even mass murder. There are numerous historical and even modern instances of using toxins in assassinations, or using contagious diseases in warfare without even knowing about the bacteria or virus. For example, (allegedly) the first registered event of such method goes back to 14th century when Tatar army, desperate to win after three years of siege, threw corpses of plague victims to the Caffa city, causing an outbreak of this disease within the city. But the most important part happened afterwards; some soldiers could manage to escape on boats – Caffa was a port city on the Crimea Sea – to Italy, unaware of the fact that they were already infected. Nevertheless, most of them died along the way, but infected rats and remaining bodies caused one the major waves of plague pandemic all over the Europe.

The paramount point is that in our modern world, it is just a matter of hours to leave New York and land somewhere else, thousands of miles away, even before the first symptoms of your disease manifest itself. In fact, the most horrifying factor of any contagious disease could be its latent period.

On the other hand, considering the unprecedented pace of ever-growing biological technologies, many developed countries possess the ability to develop an intelligent virus equipped with customized features in order to remain unnoticed on the victim’s (vector’s) body for quite a time, and only manifest itself after it infected a considerable number of surrounding people. More interestingly, such customized virus can be planned whether to disable a specific organ or to metastasize within the whole system of



the host. Even more, it can be planned according to the genetic map of people within a given region.

Looking at the whole picture with broader perspective, it does not matter whether the agent is toxic, chemical, or biological. The capability to produce and employ a virus, bacteria, or toxin by malicious actors, namely terrorists or criminals, could bring disastrous results. As we witnessed such case during 1990s in Japan – the Aum Shinrikyo Cult.

In fact, if we are going to prevent such disasters, first we should find the potential actors who may resort to such actions, investigate the probable ways, and also understand the costs, benefits, motives, and risks of which for these potential actors.

Of course, terrorists and criminals are the first probable examples which may pop up in our minds, but looking more rigorously, state actors are also among the potential cases. In the case of Coronavirus outbreak, if one considers it as an instance of bioterrorism/biological-war act, the probability of participation of terrorist or criminal organizations seems to be low, due to the complexity of production process and the highly advanced technologies required to produce such virus at the first place. On the other hand, a terrorist organization typically claims the responsibility of such attack in order to earn the reputation, and a criminal organization may demand ransom prior to release the virus – otherwise it would not be beneficial, unless they already have the cure (vaccine/antidote) ready to sell. In any case, it doesn't seem probable.

Considering the fact that, in the case of a pandemic, finding the main cause and the zero patient in this complex, interconnected world is significantly difficult (if possible), state actors may resort to such options due to multiple reasons. They may try to initiate a hidden biological war against another country (countries), in order to cause economic interruptions, socio-political chaos, create power vacuum in a specific area, forcing another actor to leave a region, or just simply to enjoy the economic benefits of selling the vaccine or antidote to victims. Obviously, there will be some serious prosecutions and consequences in the case that some concrete evidence shows any tracks of participation of an actor – whether a sovereign state or even a pharmaceutical company; but in such cases, states usually start to throw allegations at each other anyway.

We are living in a world that any kind of news affect the open markets immediately; the more important the news is, the deeper it affects the markets. In this case – Coronavirus – we witnessed a serious drop in international stock markets –especially oil markets – all over the world, which coincided with Russia's ambivalence approach regarding the cutting supply decision made by OPEC – and also Saudi Arabia's reaction to the whole story. Altogether, these factors caused a serious drop in different markets which, in fact, started with the news of Coronavirus outbreak at the first place. Who gets the best use of such scenario? The oil and gas producers are the main victims, obviously; but if one (the alleged perpetrator) knows the whole story before it happens, he would sell at the highest price and buy at the lowest price again – after the price crash, president Trump ordered to stock up the [US oil reserves](#). Although it seems pretty convincing, but is it really rational? What are the risks and costs? In reality, the pandemic of a dangerous virus – one like Coronavirus – equipped with a two-week latent period, in a high-populated country like China can cause sever problems in almost every corner of the planet; in fact, the bigger economy you have, the deeper your challenge would be. The implications of such outbreak are considerably wide: (1) it causes decrease in oil prices which will result in budget deficits in oil-dependent countries – like Russia, Iran, Saudi Arabia; (2) it interrupts the production process and consequently the sale chains – like China; (3) reduces the tourists travels which will consequently result in budget deficits in tourist-dependent countries – like Turkey and most of EU; (4) it causes sever socio-economic costs, especially for populated countries – like China, US, and Russia.

Altogether, if one state actor decides to initiate a biological war against another state, using a virus agent which has the potential to cause a global pandemic, it should consider the possibility of backfiring the same gun inside its own country in numerous ways. In an interconnected world like the one we are living in, such actions cause gargantuan reactions in different ways, one may not be able to predict all of them. Considering such costs and also the risk of being traced back and accused of committing such horrifying act, the possibility of state-sponsorship in these cases will be considered relatively low (but still possible). It is not like creating a computer virus – like Stuxnet – that may or may not blow back to your face; it is the matter of people's lives.

## China – one death due to Hanta Virus



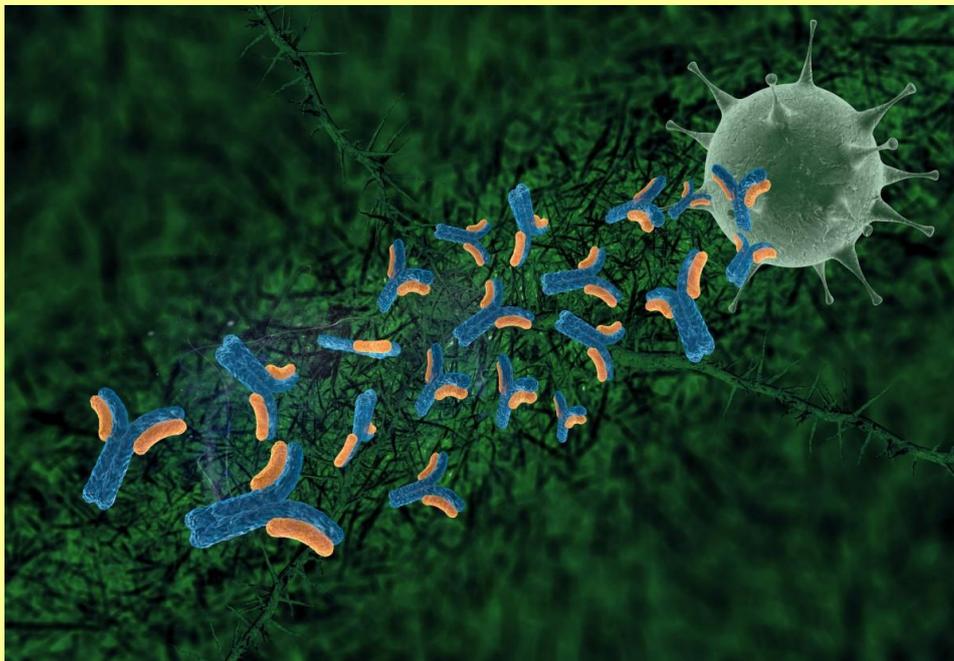
## Loop-loaded nanosheets accelerate discovery of artificial antibodies

Source: <https://newatlas.com/medical/nanosheets-artificial-antibodies/>

Mar 23 – The body does a pretty good job of protecting itself from invading viruses and bacteria. Antibodies are one of the main lines of defense, but when a new threat emerges it takes time for the body to produce new antibodies to fight it. A new study led by Berkeley Lab has designed an effective system that should speed up discovery of new artificial antibodies.



Antibodies are proteins that have specialized tips that latch onto certain molecules in pathogens. When they do, they either flag the invader for destruction by other immune cells, or neutralize the pathogen directly by inhibiting a vital function. Each antibody is focused on one particular pathogen, and your body is teeming with different types of them, targeting all sorts of invaders.



Researchers at Berkeley Lab have designed a system (not pictured) that should accelerate the discovery of new artificial antibodies (vitstudio/Depositphotos)

Since they're so effective, scientists often [harvest antibodies](#) from people who have fought off certain illnesses, or engineer them from scratch, to help strengthen the immune systems of patients currently afflicted with that disease. Unfortunately, that's a difficult and costly process.

A more effective alternative may be [artificial antibodies](#), and other [nanoparticles](#) that act in a similar way. In

the new study, Berkeley Lab researchers managed to create a new system of screening artificial antibodies.

The system starts with a nanosheet made up of molecules called peptoids. This is then coated in loops of other peptoids, which the team calls "loopoids." The nanosheet provides the supporting structure, while the loopoids are the active parts, latching onto molecules that may be present in different pathogens.

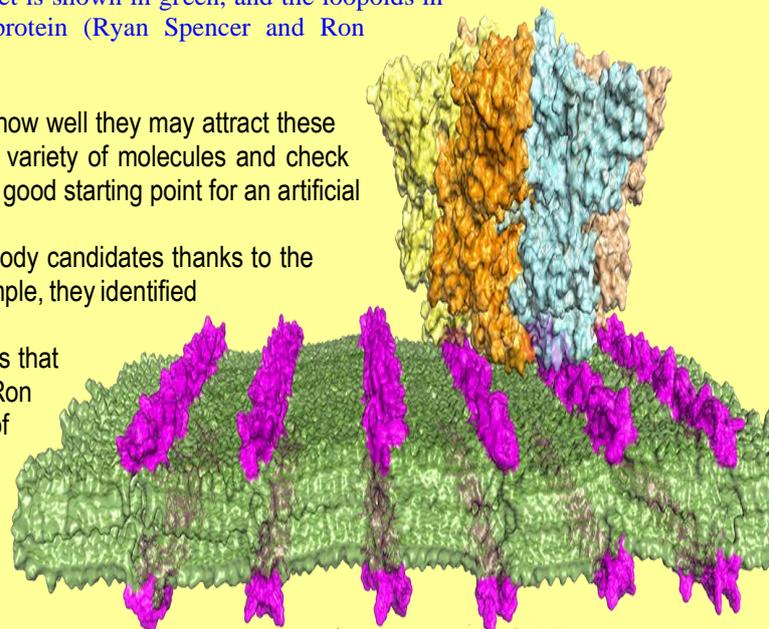
A molecular model of the artificial antibody system. The nanosheet is shown in green, and the loopoids in purple. The larger structure looming over it is an anthrax protein (Ryan Spencer and Ron Zuckermann/Berkeley Lab)

All of these loopoids can be tweaked into different shapes, to test how well they may attract these pathogen molecules. The team can then expose the system to a variety of molecules and check which ones stick. If they do, the structure of that loopoid provides a good starting point for an artificial antibody for that pathogen.

The team says that the system is efficient at capturing these antibody candidates thanks to the sheer number of loopoids on each nanosheet. In their tests, for example, they identified one that binds to and disrupts the anthrax pathogen.

"We can now readily build populations of rugged synthetic materials that can be engineered to recognize a potential pathogen," says Ron Zuckermann, co-author of the study. "It is a shining example of biomimetic nanoscience."

The system is apparently stable and inexpensive to produce, and the synthesis and screening can be automated to speed things up. Hopefully, it will accelerate the discovery of new treatments for a range of illnesses.



►► The study was published in the journal [ACS Nano](#).





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**Protect yourself!**



## The US government's secret ventilator stockpile is nowhere near enough to fight the coronavirus

Source: <https://publicintegrity.org/health/coronavirus-and-inequality/the-governments-secret-ventilator-stockpile-is-nowhere-near-enough-to-fight-the-coronavirus/>

Mar 23 – Only 16,600 ventilators.

That's the total number of breathing machines that sit in the Strategic National Stockpile, the government reserve meant to fortify overwhelmed hospitals in a crisis. It's a small supplement to the U.S. medical system's estimated 160,000 or so ventilators — many already in use — and not nearly enough to help patients survive a severe outbreak of coronavirus infections, health experts say.

The previously unreported stockpile number, confirmed by a [U.S. Department of Health and Human Services](#) official who works with the reserve program, shows just how few ventilators are available to a national health system bracing for the full impact of the coronavirus.

The U.S. could have as many as 742,000 patients who need ventilators in a severe outbreak similar to the 1918 Spanish flu, according to a [study](#) by the [Center for Health Security](#) at Johns Hopkins University, and more than 64,000 in a moderate outbreak.

New York City alone has said it needs an extra 15,000 ventilators, with [Mayor Bill de Blasio tweeting](#) at billionaire Elon Musk begging for his company to start making the medical devices — a sign of the desperation for the breathing machine crucial for combating a virus that targets lungs. New York state had more than 25,000 [confirmed cases](#) of the coronavirus as of Tuesday.

As hospitals prepare for a flood of patients that could overwhelm them, some are going to desperate lengths to find additional breathing machines. For example, a hospital in Spokane, Washington, borrowed a ventilator from a veterinary hospital in Portland, Oregon, 350 miles away, a spokesperson for the [DoveLewis Emergency Animal Hospital](#) said.

The stockpile was started in 1999 primarily to prepare for attacks against Americans using weapons of mass destruction. Once an obscure government initiative, it has been shoved into the spotlight as state officials and hospital administrators search for every available breathing machine ahead of the expected wave of hospitalizations as U.S. coronavirus cases crested 50,000 on Tuesday with no signs of slowing.

The ventilator shortage may be particularly dire in hospitals in rural and low-income areas. While there's little data tracking the location of ventilators, the machines are expensive — costing around \$25,000 for a basic model — and many small hospitals in remote areas are already under severe financial strain.

For example, [Washington County](#) in Kansas, home to 5,700 residents, has two hospitals — but no ventilators at all. The county in 2018 had a median household income of \$48,889, more than 20 percent below the national average.

In severe cases of COVID-19, patients' lives will depend on ventilators. The coronavirus can [destroy the small air sacs](#) in the lungs, preventing them from passing oxygen to the blood — suffocating patients from the inside. Ventilators take over for weak lungs, forcing air and oxygen into the body.

Without a ventilator, said Lisa Shultis, a respiratory therapist who teaches at [Long Island University](#), patients would need someone pumping air into their lungs by hand, via a plastic manual resuscitator bag.

"You would have to be right there, squeezing that bag," she said. "And how long can you do that? We really need these mechanical ventilators."

Shultis is already training her students how to operate ventilators in the stockpile. On Monday, the National Guard transported her school's 13 ventilators for use in the makeshift hospital set up inside New York City's Javits Center.

While states have been turning to the federal government asking for the breathing machine, those familiar with the federal repository say there's little that can be done.

"The reality is the stockpile could never have enough money to be the immediate fallback for everybody, and nobody does anything themselves," said Greg Burel, who spent a dozen years until January as the director of the stockpile.

### New mission, tough trade-offs

In 2009, amid growing fears about the H1N1 flu outbreak that would eventually claim more than 12,000 American lives, Congress pushed through \$7.7 billion in special funding, including billions for the stockpile, and tasked Burel with preparing for "pandemic influenza," a catchall term for a range of viruses that target the respiratory system.

At the time, the stockpile only had about 4,000 ventilators spread around a handful of secret warehouses, according to a report written by a [Centers for Disease Control and Prevention](#) researcher in 2008. The funds bolstered stockpiles of masks and other equipment that would



## HZS C<sup>2</sup>BRNE DIARY – April 2020

help fight infectious disease outbreaks, although about a quarter of the supplies were immediately consumed on combating H1N1. Burel said Congress never set aside funds specifically for pandemic influenza again. Working with a government oversight committee, he was forced to squeeze funds from other areas of the stockpile's mission, including supplies for illnesses caused by a chemical, biological, radiological or nuclear weapon.

Every year, Burel would review a list of items the experts wanted to have in the \$8 billion stockpile, and every year the \$500 million to \$600 million he'd receive from Congress would only cover about half of those items. That meant making tough choices about what to stock, he said.

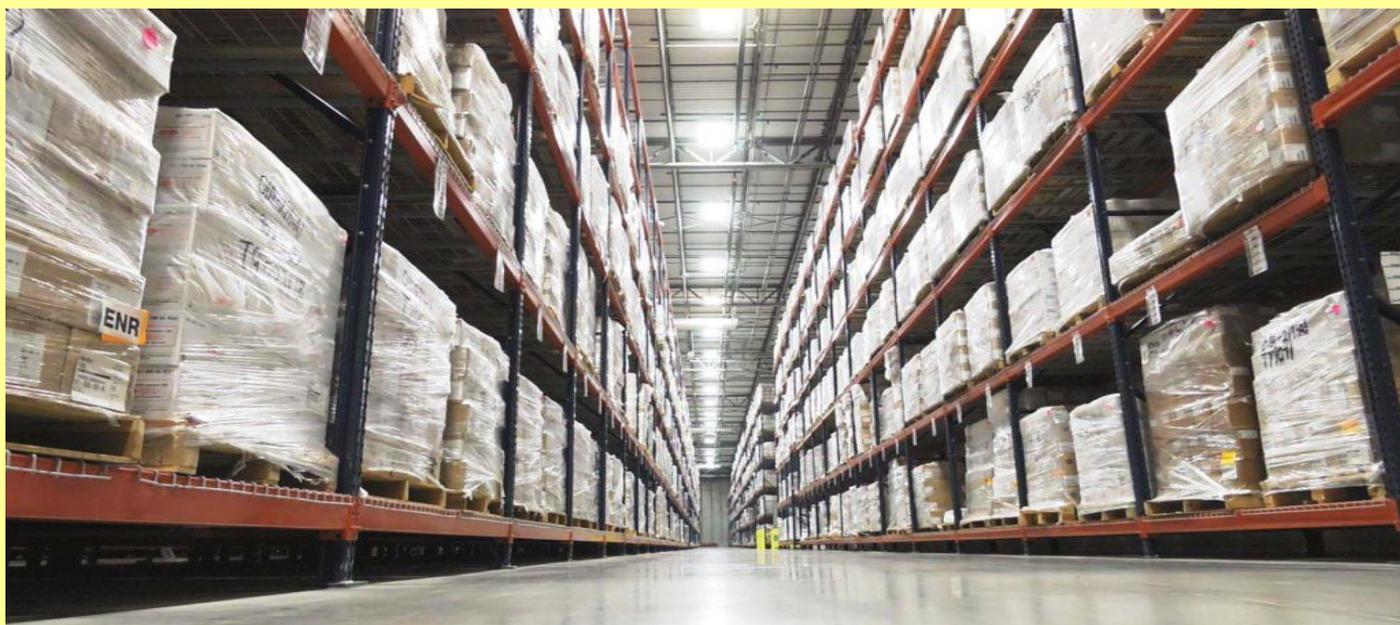
"It's always a hard trade off, and there's never a right answer," Burel said.

When pressed, the experts running the stockpile moved to buy obscure pharmaceuticals likely to go out of production without a big government purchase. They left off items such as ventilators and masks, which sell to medical systems anyway.

The stockpile was meant as a bridge, with the expectation that hospitals would have their own backup supplies. But with funding tight, many hospital systems have moved to a "just in time" supply system where they maintain few reserves, Burel said.

Still, the totals of ventilators ticked up, to more than 8,000 in 2010 and eventually the 16,600 that are in the stockpile now, Amber Dukes, a health communications specialist who works in the stockpile's operations branch at HHS, said in an email. Like many details of the stockpile, the total number of ventilators has been the subject of secrecy recently, as officials point to national security concerns over letting the public know the total figure.

"All of a sudden that number has become protected infrastructure information for some reason," said Richard Branson, a respiratory therapist and professor at the University of Cincinnati Medical Center who has helped federal officials plan how to allocate stockpile resources in emergencies. Branson said he doesn't think it's really about national security, but rather officials trying to control media reports about the stockpile and manage public concerns about equipment shortages.



Hospitals are hoping to get extra ventilators from the Strategic National Stockpile, pictured here, but there may not be enough to meet the needs of COVID-19 patients. (Courtesy of Assistant Secretary for Preparedness and Response)

### Problems beyond the numbers

One concern about the stockpile is that some machines have been sitting for years or, in some cases, decades.

Of the three models of ventilators currently in the stockpile, one hasn't been manufactured since 2006, and the manufacturer stopped servicing the machines in 2011. A 2018 study jointly run by the CDC and the U.S. Food and Drug Administration found that, aside from some battery life concerns, the machines seemed to be functional, although the ventilators in the stockpile have suffered through another two years of deterioration.

While the nation's medical system may have about 160,000 ventilators overall, many of them may already be in use. In Illinois, for example, there are 1,467 ventilators in the state, health officials [told WGN-TV in Chicago](#), but 1,093 of them are already being used. That leaves only 374 available.



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Burel and the experts who made the buying decisions for the stockpile knew that the total number of ventilators they had would never be enough for a major flu or coronavirus outbreak.

And even if the stockpile had hundreds of thousands more ventilators, hospitals may not have the staff to operate that many more. A [2015 study](#) by federal government researchers concluded that only about 50,000 new people could safely be put on ventilators because of limitations in medical experts and ventilators. That number could be increased — if corners are cut, and doctors eschewed some normal precautions meant to prevent infections, among other complications.

That challenge could be especially difficult in rural hospitals.

Under normal circumstances, America's smallest hospitals transfer their most severe patients to bigger urban hospitals with more resources. Many rural hospitals don't have the staff and expertise and organizational setup to care for patients on ventilators for extended periods of time and then wean them off successfully, said [David Wallace](#), a doctor who studies critical care medicine at the University of Pittsburgh.

"If we expect patients to remain in those locations, that's going to put new stresses and strains on those hospitals," he said. "Those challenges will create even more problems."

If he were running a small, rural intensive care unit during this pandemic, Wallace said, he'd be "scared."

Branson, the respiratory therapist at the University of Cincinnati Medical Center, took part in meetings with federal officials who wanted to more than double the stockpile's inventory of ventilators.

To boost its stockpile, the government tapped Philips Respironics, awarding the division of the global electronics giant [a \\$13.8 million contract](#) in 2014 to develop a new model of ventilator for the stockpile. The contract included a \$32.8 million option to buy 10,000 units of a new Advanced All Hazard Stockpile Ventilator, but Branson said the ventilators haven't been manufactured. Dukes, the HHS official, listed three types of ventilators currently in the inventory, which did not include a Philips Respironics model.

Around the world, doctors are exploring ways to [jury-rig ventilators](#) to help more people. Shultis at Long Island University is teaching her students to keep two patients alive on a single ventilator.

An HHS spokesperson, Stephanie Bialek, said the agency could not list states that had requested ventilators, as those who manage the stockpile are "in the middle of an ongoing response."

Even well-funded hospitals are desperate to find more machines.

In Baltimore, Johns Hopkins Hospital has a large stock of ventilators and has ordered more. But it still might also request some from the stockpile, said [R. Scott Stephens](#), the doctor who manages an intensive care unit there.

"We are not counting on those, to be honest," he said. "We're trying to do all that we can ourselves."

## U.S. Intelligence Reports from January and February Warned about a Likely Pandemic

Source: <http://www.homelandsecuritynewswire.com/dr20200325-u-s-intelligence-reports-from-january-and-february-warned-about-a-likely-pandemic>

Mar 25 – The U.S. intelligence community was issuing ominous, classified warnings in January and February about the global danger posed by the coronavirus while President Donald Trump and lawmakers who support him played down the threat and failed to take action that might have slowed the spread of the pathogen, according to U.S. officials familiar with the intelligence community's reporting. White House officials told Shane Harris, Greg Miller, Josh Dawsey, and Ellen Nakashima of the *Washington Post* that one of the main reasons for Trump's false and misleading statements in January and February was the fact that he chose to believe China's President Xi Jinping rather than the U.S. intelligence community on the issue of the coronavirus. During January and February, China was still adamantly denying that there was any epidemic spreading in China.

## Coronavirus: How the Current Number of People Dying in the U.K. Compares to the Past Decade

By Danny Dorling

Source: <http://www.homelandsecuritynewswire.com/dr20200325-coronavirus-how-the-current-number-of-people-dying-in-the-u-k-compares-to-the-past-decade>

Mar 25 – The speed of the global spread of coronavirus [is staggering](#).



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On 5 March, Chris Whitty, the UK's chief medical adviser, [announced the death](#), in Berkshire, of the first U.K. patient to have tested positive for COVID-19, the disease associated with the new coronavirus. That patient had contracted the virus within the U.K. Exactly eight weeks earlier, on [9 January](#), in the Chinese city of Wuhan, the first such death worldwide had occurred. At the time it [was reported](#) that there was no evidence the virus could spread between humans. That was quickly proved wrong. The virus spread around the world and the rise in deaths is [now slowest](#) in those countries it reached first.

In England and Wales, the very latest data has just been published on the number of all deaths registered in the [week ending 13 March](#) – which was 11,019 people. This was some 186 fewer than in that same week over the course of the last five years.

It's worth looking in detail at the period just before the pandemic reached the U.K. to understand what huge variations in mortality occurred recently before anyone died due to COVID-19. That's because it's useful to know how bad the situation already was in late January, February and early March before the crisis fully hit as it is expected to – and how often the numbers dying at this time of year have risen above what the NHS and adult social services have (and have not) been able to cope with in very recent years.

### Fewer Deaths Than Average

In the 56 days from 11 January to 6 March, the total number of people who died in England and Wales was [recorded as being 90,940](#), only one of whom was known to have tested positive for COVID-19. Others who died may possibly have had the disease, but not been tested for it. However, it's unlikely that the virus was widespread in England and Wales in the first few months of 2020. That's because the 90,940 deaths was [5,023 people lower](#) than the average in the same eight-week period over the previous five years, which was 95,963.

One obvious reason why fewer people died in early 2020 was because the previous five years had been extraordinarily bad, as a comparison of the absolute numbers of deaths in these same 56 days in each of the last 11 years shows.

In England and Wales the most recent year of low mortality was 2014, in which 82,670 people died and life expectancy across the whole UK temporarily reached its highest ever level for both men and women. However, 2014 was not that unusual until recently. For the five years before that, between 2009 and 2013, 85,023 people died on average in England and Wales in these same eight winter weeks. Part of the reason why there may be fewer recorded deaths during these eight weeks in 2016, 2019 and 2020 than in 2015 and 2018 is because more people died when social services and the NHS were particularly overwhelmed, leaving fewer frail people alive and at risk the next year.

The huge rises in mortality across the U.K. since 2010 are [now widely accepted](#) to have been linked to austerity cutbacks on services, especially social services. The rise in deaths was not due to ageing as there were very few births in the 1930s when the population currently aged 81 to 90 were born.

### Mitigation Matters

So how well is the U.K. in general geared up to deal with the spread of the virus?

It has been reported that, [compared to Germany](#), the U.K. has [five times fewer ventilators](#) per person at risk. Since austerity deepened the U.K. has been spending roughly a [million euros \(£925,000\) less a week](#) on its health services compared to Germany. There has been little planning and a great deal of denial. Reports have suggested it was only [11 March](#) that the full scale of the challenge facing the NHS fully dawned on the government's scientific advisers.

What [we know at the moment](#) is that the virus is especially deadly among the elderly. The Cambridge statistician David Spiegelhalter has implied that one way of viewing your chance of dying following contracting COVID-19 is that it's like having the mortality chance of somebody eight years older than you are. For a 20-year-old, having the mortality chances of a 28-year-old is nothing to worry about; but for an 82-year-old having the chances of a 90-year-old is.

Researchers at University College London have produced [estimates](#) for the likely number of U.K. deaths which vary from between 13,791 and 1,110,332 depending on whether mitigation is successful and if the relative risk turns out to be lower than expected, compared to a "do nothing/high-risk" scenario.

### Mortality Rates in the Spotlight

The number of people who die in each country in Europe may well depend not only on government action, but also on the number of already very elderly and frail. Another fact may be whether the usual living conditions mean that old and young tend to live together – something which [varies markedly across Europe](#). This may have been one reason why mortality rates rose faster in Italy.

As cases in China shrank and those in Europe grew, the world map [appeared split](#) when shaped by deaths due to COVID-19 as counted up to 23 March.



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According to the Centre for Evidence-Based Medicine at the University of Oxford, the current [mortality rates reported across Europe](#) for people tested and found to have the disease vary from 9.3 percent per infected person in Italy, 6.6 percent in Spain, 4% in China and 4.9 percent in the U.K., to as low as 0.4 percent in Germany and Austria, and 0.3 percent in Norway.

This is why at 8.30pm on 23 March the U.K. was put into [lockdown](#). Such action was sensible given how little we currently know. We will know much more very soon.

However, the Oxford [estimates also suggest](#) that of those actually infected, as compared to those known to be infected following testing, the actual global mortality rate may be as low as 0.2 percent – or less. This is what we should hope for – while preparing for worse.

*Danny Dorling is Halford Mackinder Professor of Geography, University of Oxford.*

## App Helps Doctors Find the Right Dose of Corona Medication

Source: <http://www.homelandsecuritynewswire.com/dr20200326-app-helps-doctors-find-the-right-dose-of-corona-medication>

Mar 26 – Leiden University researchers have developed an app that doctors can use to more easily determine the right dosage of medication for corona patients. At the moment, doctors are prescribing many existing kinds of medication to patients. Using the app, they can determine a safe and effective dosage.

### Existing Medication

While the corona virus is affecting more and more patients, doctors and researchers are busy finding an effective treatment. Because the development of new medications can take a long time, doctors often use existing treatments. But for many of these drugs, it is not yet known what the safe and effective dosage should be when dealing with COVID19, the disease caused by the corona virus. Leiden [says](#) that Coen van Hasselt's research group, part of the Leiden Academic Centre for Drug Research has developed [an app](#) doctors can use to determine what dosage of several kinds of drugs is best suited for a patient. Van Hasselt's group usually researches antibiotics, but has temporarily switched to COVID19 due to the corona crisis.



### Mathematical Models

Coen van Hasselt explains how the app can contribute: “There are many types of drugs being used to treat corona patients, but we hardly know how effective they are. We often only know how well they inhibit the virus in a petri dish, but that is obviously not the same as a live patient.”

Many of these drugs have been used for other diseases like malaria and HIV for years, therefore their behavior in the body is well understood. We

know how these drugs move through the body and what specific tissue they end up in, such as the lungs where the corona virus is. ‘Using mathematical models, we can combine our knowledge of how these drugs move through the body with everything we know about inhibiting COVID19’, van Hasselt explains, “We’ve already found that current dosages of hydroxychloroquine don’t reach the infection in children. That would mean we might have to alter the standard dosage for them.”

The researchers are now working on creating [a user friendly web application](#) that allows doctors to gain insight in correct dosages against COVID19, without specialist pharmaceutical knowledge.

In the coming weeks and months, they will continue to expand the app to include new medications that might be used against COVID19.





You will get well Soon!



You will get well Soon!



You will get well Soon!



You will get well Soon!



Congratulations!  
You got well!



## Initial Results of a New Symptom Tracking App: About 10% of Britons Are Infected

Source: <http://www.homelandsecuritynewswire.com/dr20200326-initial-results-of-a-new-symptom-tracking-app-about-10-of-britons-are-infected>

Mar 26 – The first app [monitoring symptoms](#) of people in Britain with suspected [coronavirus](#) shows that, at present, one in 10 users have a mild form of the virus at present.

*The Telegraph* [reports](#) that within the first 24 hours of the app being made available to the public, some 650,000 people had signed up – and an initial analysis revealed that 10 percent of people were showing mild [symptoms of the virus](#).

### The Study

On Tuesday, King's College London [announced](#) that around 5,000 twins and their families across the United Kingdom have been recruited from the [TwinsUK cohort study](#) to trial the app, which tracks in real time how the disease progresses. The aim of the app is to help slow the outbreak, by helping researchers identify:

- ❖ How fast the virus is spreading in your area
- ❖ High-risk areas in the country
- ❖ Who is most at risk, by better understanding symptoms linked to underlying health conditions

Twins using the app will record information about their health on a daily basis, including temperature, tiredness and symptoms such as coughing, breathing problems or headaches. Any participants showing signs of COVID-19 will be sent a home testing kit to better understand what symptoms truly correspond to the coronavirus infection. Researchers believe this is clinically urgent given the current limits on testing.

On Wednesday, the [app](#) was made available to the general public without the home testing component of the study.

Comparing genetically identical twins with non-identical twins, who are as related as regular siblings, will enable researchers to separate the effects of genes from environmental factors such as diet, lifestyle, previous illnesses and infections, and the microbes within the gut (microbiome).

Samples taken from the twin group will be used to generate a biobank for use in future research projects investigating infection and immune responses.

Researchers believe that the data from the study will reveal important information about the symptoms and progress of the

COVID-19 infection in different people, and why some go on to develop more severe or fatal disease while others have only mild symptoms.

They also say it will help the urgent clinical need to distinguish mild coronavirus symptoms from seasonal coughs and colds, which may be leading people to unnecessarily self-isolate when they aren't infected or inadvertently go out and spread the disease when they are.

Led by [Professor Tim Spector](#), professor of genetic epidemiology at King's, [TwinsUK](#) is a scientific study of 15,000 identical and non-identical twins, which has been running for nearly three decades. Most already have taken part in comprehensive genetic analysis and immune profiling, as well as detailed gut microbiome profiling. At least 5,000 members of the existing twin cohort and their families are expected to sign up for this new study.

**COVID Symptom Tracker** Frequently Asked Questions

**Take 1-minute to self-report daily, even if you are well.**

Help our scientists identify:

- High-risk areas in the UK.
- Who is most at risk, by better understanding symptoms linked to underlying health conditions.
- How fast the virus is spreading in your area.

**ZOE**  
**NIHR** | Gen and Infection Research Group

This app allows you to help others, but does not give health advice. If you need health advice please visit [NHS.uk](#)

[Download on the App Store](#) [Get it on Google Play](#)

Available in the US March 26th



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The free monitoring app has been developed as a partnership between researchers at King's and health data science company [ZOE](#) - itself a spin-out from King's - and will be widely available to health staff and the general public who wish to contribute to this research. It will also be used by other large population studies in the U.K. and the United States.

Spector said: "These are worrying times for everyone. Our twins are fantastically committed, enthusiastic health research participants who have already been studied in unprecedented detail, putting us in a unique position to provide vital answers to support the global fight against COVID-19. The more of the public that also use the app, the better the real-time data we will have to combat the outbreak in this country."

Kings notes that the TwinsUK COVID-19 research study is funded by King's College London, ZOE Global Ltd, the CDRF charity, and the National Institute of Health Research Guy's and St Thomas' Biomedical Research Center. Any data gathered from the app and study will be used strictly for public health or academic research and will not be used commercially or sold.

The [free app](#) can be downloaded at the app store.

### Public Monitoring

Reacting to the initial results obtained from the 650,000 Britons who downloaded the app, Spector said: "From the initial responses so far around 10 percent of people are reporting symptoms associated with Covid-19, although many of these are mild.

"If after we analyze the results and separate out the unrelated from related symptoms we could find that a large proportion of the population could have been affected, possibly millions.

"The larger the dataset the better we can separate out the milder effects of the virus."

Scientists are not sure whether the initial results are reflective of the rate of infection throughout the United Kingdom, but if they are, it means that about 6.5 million Britons are infected.

"At the moment, there is no alternative system," Spector told the *Telegraph*. he said. "I would have expected an NHS or Government version, but there isn't one. This could really help NHS planning, so you could see spots where there are lots of infections rather than just waiting for bombs to fall.

"We will also be able to work out if some of the symptoms are real or not."

Spector said he was amazed at the response and expected more than one million people to have registered by Thursday morning.

"Although you can have problems of self-selection and bias, when you've got big data like this you tend to trust it more. What we're seeing is a [lot of mild symptoms](#), so I think having this data should help people relax a bit more and stop seeing it as an all or nothing Black Death situation.

"Other symptoms are cropping up. Thousands of people are coming forward to say they have [loss of taste](#), and we may start to see clusters of symptoms."

On Wednesday, Public Health England (PHE) promised that [antibody tests](#) which tell people if they have had the virus and are now immune, will soon be available to the public, and King's is planning to update the app so people can input their results.

## Ethical dilemmas in the age of coronavirus: Whose lives should we save?

Source: <https://www.latimes.com/world-nation/story/2020-03-19/ethical-dilemmas-in-the-age-of-coronavirus-whose-lives-should-we-save>

Mar 19 – Three patients — a 16-year-old boy with diabetes, a 25-year-old mother and a 75-year-old grandfather — are crammed into a hospital triage tent and struggling to breathe. Only one ventilator is left. Who gets it?

This is the kind of wrenching ethical dilemma that critical-care doctors, nurses and medical officials across the United States are bracing for as cases of coronavirus surge and hospitals become overwhelmed.

Do they allocate intensive-care beds on a first-come, first-served basis? Do they pull one patient with a limited chance of survival off a ventilator to give it to another with better odds?

If two patients have equal medical need and likelihood of recovery, do they pick the youngest? Or the one with the greatest number of dependents? Should physicians and respiratory therapists, or even police officers and firefighters, be jumped to the front of the line?

Advertisement

With more than 13,000 Americans having tested positive for COVID-19, and thousands of new cases confirmed each day, health officials are hastily preparing for a barrage of critically ill patients that could force them to ration ventilators, intensive-care beds and antiviral medications.

"You only have so many negative pressure rooms or ventilators, so you have to start from an ethical standpoint: How do you prioritize?" said Dr. Virginia A. Caine, the director of Marion County's public health department in Indianapolis.



“Should age play a role?” she said. “If I have a 75-year-old and I have a young mom with three children, there would be no one to take care of the children with the mom gone. But the 75-year-old has lived a good life.”

Agonizing decisions are already being made in Italy, where more than 3,400 have died as critically ill patients cram into hospital corridors and doctors turn their operating rooms into makeshift ICUs. Without enough ventilators to deal with the influx of patients, doctors are denying services to the elderly in favor of young and otherwise healthy patients.

“There is no way to find an exception,” a doctor in northern Italy [told](#) the New England Journal of Medicine. “We have to decide who must die and whom we shall keep alive.”

In routine times, emergency room physicians operate on egalitarian principles, offering first-come, first-served intensive care on the basis that everybody’s life is equal.

But the approach becomes more utilitarian in times of catastrophe. When systems are overrun during wars and natural disasters, doctors must decide how to maximize resources for the greatest social good.



“This is the largest experiment of social mitigation strategies and handling of a pandemic in human history,” said Howard Markel, a professor of history at the University of Michigan. “Historical epidemics don’t count because they didn’t have intensive care, respirators or intravenous fluids. We’re all flying by the seat of our pants.”

The U.S. has fewer than 100,000 intensive-care beds. But it would probably need a total of 200,000 in a moderate outbreak and 2.9 million in an outbreak akin to the 1918 Spanish flu, according to a [report](#) from the Johns Hopkins University Center for Health Security.

Even if critical cases were spread out over several months, the report said, “the mismatch between demand and resources is clear.”

“Everyone’s on red alert and gaming things out and saying, ‘What are we going to do if ... ?’” said Dr. Matthew K. Wynia, director of the Center for Bioethics and Humanities at the University of Colorado

Last week, medical experts with the Italian College of Anesthesia, Analgesia, Resuscitation and Intensive Care published a [report](#) that raised the possibility of establishing age limits for admission to intensive care units.

Excluding the elderly from critical care in the event of a pandemic is not a new idea. Some clinicians have [recommended](#) denying critical care to anyone over the age of 85 should an influenza pandemic strike. But many ethicists say Americans would be less likely than European countries to introduce blanket age limits, viewing it as discrimination against the elderly.

Still, there is not consensus on how healthcare in the United States would be rationed in a pandemic.

Although the U.S. Centers for Disease Control and Prevention [outlines](#) general principles, it’s down to individual hospitals, health systems and states to decide policy. The result is a patchwork system. States including [New York](#) and [Minnesota](#) have drawn up detailed guidelines for

allocating resources. Others have not talked about it much at all.

Bioethicists and hospital leaders across the country are now huddling online to formulate COVID-19 algorithms, brainstorm protocols and share policy drafts in hopes of ensuring fairness.

“We don’t want a situation where we’re putting bedside physicians in the position of making decisions patient by patient,” said Felicia Cohn, clinical professor of bioethics at the UC Irvine School of Medicine.

Laying out clear guidelines is also important for the public. The shift from routine to extreme emergency care during a crisis can be bewildering for patients who are denied care and families who are suddenly no longer allowed to visit or help make medical decisions. “People are used to certain rights and privileges,” Cohn said. “In a public health crisis, the context changes completely. Rights we would normally have, we no longer have.”

In determining who should get treatment when resources are scarce, experts say the most pressing criterion is chance of survival: Who is likely to die and who can be saved?

More clinical guidance is needed to determine the odds that a coronavirus patient will recover, but new information is emerging. A recent [study](#) of infected adults in mainland China showed that older patients, as well as those showing signs of sepsis or underlying issues such as high blood pressure and diabetes, had a higher risk of dying.



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Faced with a tiebreaker — how to allocate resources to people with a similar likelihood of survival — medical workers might turn to a secondary criterion: Who would have the most long-term benefit?

Someone who has a longer potential life in front of them can derive a greater benefit than someone who has already lived a long life.

A third criterion might be: Are you a hospital worker who would go on to save additional people?

Some argue that people who are working to save lives, such as respiratory therapists or ICU clinicians, deserve higher priority because they are needed to get back to the fight and prevent additional deaths down the road.

Healthcare systems have long faced ethical questions about how to allocate limited resources.

“Organs get rationed every single day, and a lot of people die who don’t get a shot at a transplant,” said Arthur L. Caplan, the head of the division of medical ethics at NYU School of Medicine in New York City, which runs Bellevue Hospital.

And over the last two decades, a flurry of infectious disease outbreaks — SARS, H1N1 and Ebola — stretched resources and sometimes forced doctors to offer specialized treatment to only the most critical patients. Reports were filed and forgotten.

“The final act of most pandemics is amnesia,” said Markel. “We’ve had plenty of warning. This kind of a crisis has been talked about for at least 20 years. But we tend to all just go back to normal afterwards.”

Experts said that before forcing doctors to decide who lives and who dies, hospitals and governments must work to increase efficiency in a fractured U.S. healthcare system.

They could free up beds by postponing certain surgeries, sharing transportation, allowing doctors to cross state lines and practice anywhere in an emergency, waiving patients’ treatment costs and allowing hospitals for the military and veterans to take on civilian patients.

“The most unethical thing you can do is ration when you could have prevented it if you had better sharing and cooperation between institutions,” Caplan said.

The public can prepare, too.

Anyone who feels strongly that they would choose to sacrifice themselves for a younger person, or one with fewer health complications, could update their advance healthcare directive now, before it’s too late.

“It’s one of the things that has not really been talked about,” Wynia said. “If you would say, ‘Give it to the young person, I’m OK,’ you should be saying that now, while you can still speak.”

### COVID-19, a pandemic or not?

Source: [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)30180-8/fulltext?dgcid=raven\\_jbs\\_etoc\\_email](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30180-8/fulltext?dgcid=raven_jbs_etoc_email)

Mar 13 – The current outbreak of coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), continues to spread, and as of March 11, 2020, it has reached 115 countries, with 119 239 cases and 4287 deaths. In January, WHO decided to define the outbreak of COVID-19 as a public health emergency of international concern, which triggered the release of funding and other resources. Despite SARS-CoV-2 now being present in every continent apart from Antarctica, WHO remains reluctant to make the next step and call the outbreak a pandemic. On March 5, Tedros Adhamon Ghebreyesus, director-general of WHO, stated that while the outbreak might be uncontrolled in some settings, it is not yet uncontrollable and that would be the threshold to pass for the definition of a pandemic. However, on March 8, Tedros admitted that the threat of a pandemic is becoming very real, and should WHO decide to call the outbreak a pandemic, it would be “the first pandemic that could be actually controlled”.

What are reasons behind WHO’s reluctance to define the outbreak of COVID-19 an pandemic and what difference would it make? There are mixed views about the impact that a declaration of a pandemic by WHO would have. On the one hand, a declaration of a pandemic would favor a change of strategy in managing COVID-19 with more focus on implementing social distancing measures and less emphasis on border closure, which might help to flatten the epidemic curve. Moreover, several insurance companies have policies that will pay claims only if a formal declaration of pandemic is made by WHO. On the other hand, senior WHO official Michael Ryan and others cautioned against “the dangers of using the pandemic word”. The main concern is that calling the outbreak of COVID-19 a pandemic might prompt governments to needlessly or prematurely change their strategies in ways that could undermine their efforts at containment.

These concerns stem from the fact that in outbreak management, two approaches for disease control can be considered: if a pathogen has slow transmission capacity, containment is the approach that permits adoption of measures that limit the spread of a pathogen within well-defined foci (e.g., identification and isolation of infected patients, contact tracing, and quarantine of small areas where cases have appeared); by contrast, when a pathogen starts to spread rapidly and there is sustained local transmission, rendering it impossible to isolate all cases, mitigation measures should



be put in place with aims such as slowing down the spread of a pathogen within a country or region. Mitigation measures, such as the closure of schools and banning of mass events, specifically aim at avoiding overburdening health systems with an escalation of cases in need of intensive care. The current lockdown of Italy in the face of the rapid increase of COVID-19 cases has this specific goal. The time gained through mitigation measures can potentially also allow the evaluation of new therapeutic options and in the long run the development of a vaccine. WHO's current position is that in most areas containment of COVID-19 is still possible, so a declaration of a pandemic would hamper the commitment of individual countries to put in place rapidly and effectively the required containment measures.

Independently from the potential definition of COVID-19 as a pandemic, the spread of SARS-CoV-2 around the world is putting into question the utility of travel bans, strongly opposed by WHO, that some countries have adopted to reduce the risk of introducing the virus in their territories. Banning incoming flights from countries with high numbers of cases of COVID-19 is not a watertight measure because it does not prevent infected individuals from arriving from countries with intermediate numbers where controls are less stringent. In addition, screening travelers for fever using infrared thermometers at airport customs and border checkpoints misses at least 25% of people with fever, making the measure suboptimal for stopping entry of the virus in a country. The fact that SARS-CoV-2 can be transmitted by asymptomatic infected people also puts in doubt the value of control measures such as screening at borders. For severe acute respiratory syndrome in 2003, despite extensive controls in airports, not a single case was detected before entering a country.

The uncertainty around COVID-19 being a pandemic is causing a disjointed response to the disease among different countries. Declaration of a pandemic, combined with clear and coordinated management guidelines, might help every country limit the impact of the disease and bring it more swiftly under control.

## **Did the hesitancy in declaring COVID-19 a pandemic reflect a need to redefine the term?**

**By Manfred S Green**

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30630-9/fulltext?dgcid=raven\\_jbs\\_etoc\\_email](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30630-9/fulltext?dgcid=raven_jbs_etoc_email)

Mar 28 – WHO's declaration that the global spread of coronavirus disease 2019 (COVID-19) is a pandemic has contributed greatly to clearing up confusion in the terminology in the professional literature and the media. Discussions on when wide geographical spread of a disease becomes a pandemic tend to recur when the world is confronted with an emerging infectious disease.

The debate around the terminology used for COVID-19 raises two important questions. The first question is why there was reluctance to call the COVID-19 outbreak a pandemic, and the second question is whether the terminology is of any practical importance.

In almost all good textbooks, an epidemic becomes a pandemic when there is widespread geographical distribution of the disease. For some weeks, the COVID-19 epidemic, which had spread to over 100 countries, seemed to fit the classical definition of a pandemic. One could reasonably ask whether the use of the term pandemic would change any of the actions necessary to control the spread of the virus.

There are several situations in which it could be helpful to use well defined terminology to control the spread of an infectious disease. The resources for controlling a pandemic are both different, substantially larger, and generally much more far-reaching than for a localized outbreak or epidemic.

Thus, the terms used for the different situations could be restricted according to the control measures that are necessary. Perhaps unique to pandemics, these include considerable international coordination and collaboration in providing aid to affected countries, recruiting the necessary resources for promoting research on medications and vaccines and developing complex risk communication. In particular, travel restrictions become a major issue and, although these are guided by the [International Health Regulations](#), countries have the option to adopt unilaterally their own barriers to international travel. This was clearly the case for COVID-19. If the term pandemic is clearly defined, it can communicate much more clearly the seriousness of the situation and help justify the extreme measures instituted. It can also provide the international health community with a common term to enlist the cooperation of the general public and convey the necessary sense of urgency to decision makers. This should stimulate rapid introduction of preventive measures such as social distancing to reduce the pace of the spread, providing valuable time for upgrading of the medical services, and preparing the community.

If the use of the term pandemic is delayed too long, the declaration of the pandemic could convey a message to the public that the authorities have lost control, generating irrational

*Oh Yes!*



panic reactions. Since it is expected, and even perhaps desirable, that the public experience some fear during a pandemic, an early declaration of a pandemic might be helpful in mitigating panic. Recruiting public cooperation is much more feasible when the society in general and the health services in particular are not yet under considerable pressure, and there is time for appropriate explanations to the public as to how the pandemic will be controlled. The question remains as to what is the optimal timing for declaring a pandemic. Following the 2009 H1N1 pandemic, Morens and colleagues provided useful criteria for defining a pandemic. They included the following components: the cause should be a new virus that has not circulated in humans previously, the disease should be widespread geographically, there should be clear person-to-person spread, and outbreaks should be explosive in nature, with a relatively high case-fatality rate. It seems to me that for some time, the COVID-19 outbreak met all these criteria.

Since there continues to be a lack of consensus about when it is appropriate to use the term pandemic, I suggest that a multi-disciplinary group of epidemiologists, infectious disease specialists, risk communicators and health administrators be convened to create new, clearer, expanded definitions of the terms outbreak, epidemic, and pandemic.

## 12 Experts Questioning the Coronavirus Panic

Source: <https://www.globalresearch.ca/12-experts-questioning-coronavirus-panic/5707532>

Mar 24 – *Below is our list of twelve medical experts whose opinions on the Coronavirus outbreak contradict the official narratives of the MSM, and the memes so prevalent on social media.*

[Dr Sucharit Bhakdi](#) is a specialist in microbiology. He was a professor at the Johannes Gutenberg University in Mainz and head of the Institute for Medical Microbiology and Hygiene and one of the most cited research scientists in German history.

What he says:

We are afraid that 1 million infections with the new virus will lead to 30 deaths per day over the next 100 days. But we do not realise that 20, 30, 40 or 100 patients positive for normal coronaviruses are already dying every day.

[The government's anti-COVID19 measures] are grotesque, absurd and very dangerous [...] The life expectancy of millions is being shortened. The horrifying impact on the world economy threatens the existence of countless people. The consequences on medical care are profound. Already services to patients in need are reduced, operations cancelled, practices empty, hospital personnel dwindling. All this will impact profoundly on our whole society.

All these measures are leading to self-destruction and collective suicide based on nothing but a spook.

\*

[Dr Wolfgang Wodarg](#) is a German physician specialising in Pulmonology, politician and former chairman of the Parliamentary Assembly of the Council of Europe. In 2009 he called for an inquiry into alleged conflicts of interest surrounding the EU response to the Swine Flu pandemic.

What he says:

Politicians are being courted by scientists...scientists who want to be important to get money for their institutions. Scientists who just swim along in the mainstream and want their part of it [...] And what is missing right now is a rational way of looking at things.

We should be asking questions like "How did you find out this virus was dangerous?", "How was it before?", "Didn't we have the same thing last year?", "Is it even something new?"

That's missing.

\*

[Dr Joel Kettner](#) is professor of Community Health Sciences and Surgery at Manitoba University, former Chief Public Health Officer for Manitoba province and Medical Director of the International Centre for Infectious Diseases.

What he says:

I have never seen anything like this, anything anywhere near like this. I'm not talking about the pandemic, because I've seen 30 of them, one every year. It is called influenza. And other respiratory illness viruses, we don't always know what they are. But I've never seen this reaction, and I'm trying to understand why.

[...]

I worry about the message to the public, about the fear of coming into contact with people, being in the same space as people, shaking their hands, having meetings with people. I worry about many, many consequences related to that.

[...]



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In Hubei, in the province of Hubei, where there has been the most cases and deaths by far, the actual number of cases reported is 1 per 1000 people and the actual rate of deaths reported is 1 per 20,000. So maybe that would help to put things into perspective.

\*

**Dr John Ioannidis** Professor of Medicine, of Health Research and Policy and of Biomedical Data Science, at Stanford University School of Medicine and a Professor of Statistics at Stanford University School of Humanities and Sciences. He is director of the Stanford Prevention Research Center, and co-director of the Meta-Research Innovation Center at Stanford (METRICS).

He is also the editor-in-chief of the European Journal of Clinical Investigation. He was chairman at the Department of Hygiene and Epidemiology, University of Ioannina School of Medicine as well as adjunct professor at Tufts University School of Medicine.

As a physician, scientist and author he has made contributions to evidence-based medicine, epidemiology, data science and clinical research. In addition, he pioneered the field of meta-research. He has shown that much of the published research does not meet good scientific standards of evidence.

What he [says](#):

Patients who have been tested for SARS-CoV-2 are disproportionately those with severe symptoms and bad outcomes. As most health systems have limited testing capacity, selection bias may even worsen in the near future.

The one situation where an entire, closed population was tested was the Diamond Princess cruise ship and its quarantine passengers. The case fatality rate there was 1.0%, but this was a largely elderly population, in which the death rate from Covid-19 is much higher.

[...]

Could the Covid-19 case fatality rate be that low? No, some say, pointing to the high rate in elderly people. However, even some so-called mild or common-cold-type coronaviruses that have been known for decades can have case fatality rates as high as 8% when they infect elderly people in nursing homes.

[...]

If we had not known about a new virus out there, and had not checked individuals with PCR tests, the number of total deaths due to “influenza-like illness” would not seem unusual this year. At most, we might have casually noted that flu this season seems to be a bit worse than average.

– *“A fiasco in the making? As the coronavirus pandemic takes hold, we are making decisions without reliable data”, Stat News, 17th March 2020*

\*

**Dr Yoram Lass** is an Israeli physician, politician and former Director General of the Health Ministry. He also worked as Associate Dean of the Tel Aviv University Medical School and during the 1980s presented the science-based television show Tatzpit.

What he [says](#):

Italy is known for its enormous morbidity in respiratory problems, more than three times any other European country. In the US about 40,000 people die in a regular flu season and so far 40-50 people have died of the coronavirus, most of them in a nursing home in Kirkland, Washington.

[...]

In every country, more people die from regular flu compared with those who die from the coronavirus.

[...]

...there is a very good example that we all forget: the swine flu in 2009. That was a virus that reached the world from Mexico and until today there is no vaccination against it. But what? At that time there was no Facebook or there maybe was but it was still in its infancy. The coronavirus, in contrast, is a virus with public relations.

Whoever thinks that governments end viruses is wrong.

– *Interview in Globes, March 22nd 2020*

\*

**Dr Pietro Vernazza** is a Swiss physician specialising Infectious Diseases at the Cantonal Hospital St. Gallen and Professor of Health Policy.

What he says:

We have reliable figures from Italy and a work by epidemiologists, which has been published in the renowned science journal (Science), which examined the spread in China. This makes it clear that around 85 percent of all infections have occurred without anyone noticing the infection. 90 percent of the deceased patients are verifiably over 70 years old, 50 percent over 80 years.

[...]



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In Italy, one in ten people diagnosed die, according to the findings of the *Science* publication, that is statistically one of every 1,000 people infected. Each individual case is tragic, but often – similar to the flu season – it affects people who are at the end of their lives.

[...]

If we close the schools, we will prevent the children from quickly becoming immune.

[...]

We should better integrate the scientific facts into the political decisions.

– *Interview in St. Galler Tagblatt, 22nd March 2020*

\*

[Frank Ulrich Montgomery](#) is German radiologist, former President of the German Medical Association and Deputy Chairman of the World Medical Association.

What he [says](#):

I'm not a fan of lockdown. Anyone who imposes something like this must also say when and how to pick it up again. Since we have to assume that the virus will be with us for a long time, I wonder when we will return to normal? You can't keep schools and daycare centers closed until the end of the year. Because it will take at least that long until we have a vaccine. Italy has imposed a lockdown and has the opposite effect. They quickly reached their capacity limits, but did not slow down the virus spread within the lockdown.

– *Interview in General Anzeiger, 18th March 2020*

\*

[Prof. Hendrik Streeck](#) is a German HIV researcher, epidemiologist and clinical trialist. He is professor of virology, and the director of the Institute of Virology and HIV Research, at Bonn University.

What he [says](#):

The new pathogen is not that dangerous, it is even less dangerous than Sars-1. The special thing is that Sars-CoV-2 replicates in the upper throat area and is therefore much more infectious because the virus jumps from throat to throat, so to speak. But that is also an advantage: Because Sars-1 replicates in the deep lungs, it is not so infectious, but it definitely gets on the lungs, which makes it more dangerous.

[...]

You also have to take into account that the Sars-CoV-2 deaths in Germany were exclusively old people. In Heinsberg, for example, a 78-year-old man with previous illnesses died of heart failure, and that without Sars-2 lung involvement. Since he was infected, he naturally appears in the Covid 19 statistics. But the question is whether he would not have died anyway, even without Sars-2.

– *Interview in Frankfurter Allgemeine, 16th March 2020*

\*

[Dr Yanis Rousel et. al.](#) – A team of researchers from the Institut Hospitalo-universitaire Méditerranée Infection, Marseille and the Institut de Recherche pour le Développement, Assistance Publique-Hôpitaux de Marseille, conducting a peer-reviewed study on Coronavirus mortality for the government of France under the 'Investments for the Future' programme.

What they [say](#):

The problem of SARS-CoV-2 is probably overestimated, as 2.6 million people die of respiratory infections each year compared with less than 4000 deaths for SARS-CoV-2 at the time of writing.

[...]

This study compared the mortality rate of SARS-CoV-2 in OECD countries (1.3%) with the mortality rate of common coronaviruses identified in AP-HM patients (0.8%) from 1 January 2013 to 2 March 2020. Chi-squared test was performed, and the P-value was 0.11 (not significant).

[...]

...it should be noted that systematic studies of other coronaviruses (but not yet for SARS-CoV-2) have found that the percentage of asymptomatic carriers is equal to or even higher than the percentage of symptomatic patients. The same data for SARS-CoV-2 may soon be available, which will further reduce the relative risk associated with this specific pathology.

– “SARS-CoV-2: fear versus data”, *International Journal of Antimicrobial Agents*, 19th March 2020

\*

[Dr. David Katz](#) is an American physician and founding director of the Yale University Prevention Research Center

What he [says](#):

I am deeply concerned that the social, economic and public health consequences of this near-total meltdown of normal life — schools and businesses closed, gatherings banned — will be long-lasting and calamitous, possibly graver than the direct toll of the virus itself. The



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stock market will bounce back in time, but many businesses never will. The unemployment, impoverishment and despair likely to result will be public health scourges of the first order.

– “Is Our Fight Against Coronavirus Worse Than the Disease?”, *New York Times* 20th March 2020

\*

[Michael T. Osterholm](#) is regents professor and director of the Center for Infectious Disease Research and Policy at the University of Minnesota.

What he [says](#):

Consider the effect of shutting down offices, schools, transportation systems, restaurants, hotels, stores, theaters, concert halls, sporting events and other venues indefinitely and leaving all of their workers unemployed and on the public dole. The likely result would be not just a depression but a complete economic breakdown, with countless permanently lost jobs, long before a vaccine is ready or natural immunity takes hold.

[...]

[T]he best alternative will probably entail letting those at low risk for serious disease continue to work, keep business and manufacturing operating, and “run” society, while at the same time advising higher-risk individuals to protect themselves through physical distancing and ramping up our health-care capacity as aggressively as possible. With this battle plan, we could gradually build up immunity without destroying the financial structure on which our lives are based.

– “Facing covid-19 reality: A national lockdown is no cure”, *Washington Post* 21st March 2020

\*

[Dr Peter Goetzsche](#) is Professor of Clinical Research Design and Analysis at the University of Copenhagen and founder of the Cochrane Medical Collaboration. He has written several books on corruption in the field of medicine and the power of big pharmaceutical companies.

What he [says](#):

Our main problem is that no one will ever get in trouble for measures that are too draconian. They will only get in trouble if they do too little. So, our politicians and those working with public health do much more than they should do.

No such draconian measures were applied during the 2009 influenza pandemic, and they obviously cannot be applied every winter, which is all year round, as it is always winter somewhere. We cannot close down the whole world permanently.

Should it turn out that the epidemic wanes before long, there will be a queue of people wanting to take credit for this. And we can be damned sure draconian measures will be applied again next time. But remember the joke about tigers. “Why do you blow the horn?” “To keep the tigers away.” “But there are no tigers here.” “There you see!”

– “Corona: an epidemic of mass panic”, *blog post on Deadly Medicines* 21st March 2020

## Coronavirus Treatment Could Lie in Existing Drugs

Source: [https://www.ijidonline.com/article/S1201-9712\(20\)30076-X/fulltext](https://www.ijidonline.com/article/S1201-9712(20)30076-X/fulltext)

Feb 27 – As the global number of COVID-19 cases passes 81,000, collaborating European scientists have identified **31 existing broad-spectrum antiviral agents (BSAAs)** that they say may represent candidates for repurposing against the infection. The researchers suggest that repositioning existing approved and investigational drugs may represent the key to future fights against viral infections — including the SARS-CoV-2 virus, and other emerging viruses — and they have compiled a database that summarizes the activity and development status of more than 100 safe-in-man BSAAs.

“Drug repurposing is a strategy for generating additional value from an existing drug by targeting diseases other than that for which it was originally intended,” said Denis Kainov, PhD, senior author on the paper and an associate professor at the Norwegian University of Science and Technology (NTNU). “For example, teicoplanin, oritavancin, dalbavancin, and monensin are approved antibiotics that have been shown to inhibit corona- and other viruses in the laboratory.” Kainov and his co-authors say that these and other already tested safe-in-man, broad-spectrum antiviral agents (BSAAs) are good starting candidates.

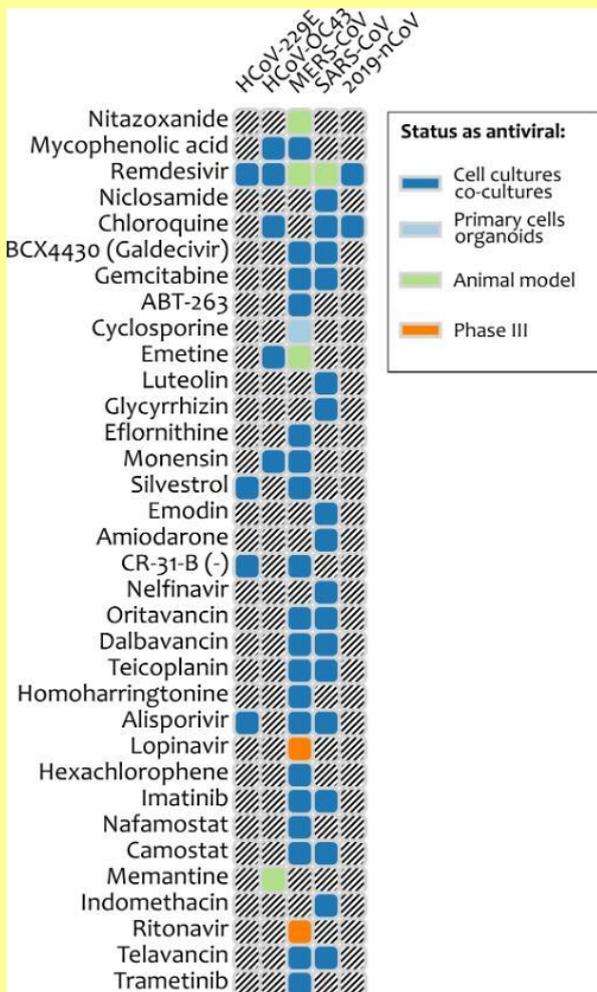
Safe-in-man broad-spectrum antiviral agents and coronaviruses they inhibit, from [drugvirus.info](http://drugvirus.info) website. Different shadings indicate different development status of BSAAs. Gray shading indicates that the antiviral activity has not been either studied or reported.

The researchers are making their database freely available, and report on their findings in the *International*

*Journal of Infectious Diseases*, in a paper titled “[Discovery and development of safe-in-man broad-spectrum antiviral agents](#).” Their report coincides with the start of U.S. trials with

Gilead Sciences’ antiviral drug, remdesivir, which was previously tested as a treatment for Ebola virus.





BSAAs are small-molecules that may inhibit different types of human viruses that exploit similar pathways and host factors to replicate inside cells, the authors explained. The advantage of repurposing a drug is that all of the details surrounding the drug development are already known, from the chemical synthesis steps and manufacturing processes to information regarding the different phases of clinical testing.

“Although the concept of BSAAs has been around for almost 50 years, the field received a new impetus with recent outbreaks of Ebola, Zika, Dengue, influenza and other viral infections, the discovery of novel host-directed agents as well as development of drug repositioning methodology,” the investigators noted. “Therefore, repositioning of launched or even failed drugs to viral diseases provides unique translational opportunities, including a substantially higher probability of success to market as compared with developing new virus-specific drugs and vaccines, and a significantly reduced cost and timeline to clinical availability.”

SBAAs could thus hold promise for treating infection with the SARS-CoV-2 virus. “No vaccines and drugs are available for prevention and treatment of coronavirus infections in humans,” they stated. “However, safe-in-man BSAAs could be effective against 2019-nCoV [SARS-CoV-2 virus] and other coronaviruses.” For example, they pointed out, chloroquine and remdesivir effectively inhibited infection by the SARS-CoV-2 virus in vitro. “Moreover, teicoplanin, oritavancin, dalbavancin, monensin, and emetine could be repurposed for treatment of 2019-nCoV infections,” the team noted. “Oritavancin, dalbavancin, and monensin are approved antibiotics, whereas emetine is an anti-protozoal drug. These drugs have been shown to inhibit several corona- as well as some other viral infections.”

The researchers reviewed information on the discovery and development of BSAAs, and summarized what they found for 120 approved, investigational and experimental drugs that had already been shown to be safe for humans use, and which inhibit 86 human viruses in 25 viral

families. “The BSAAs inhibit viral or host factors and block viral replication, reduce the viral burden to a level at which host immune responses can deal with it or facilitate apoptosis of infected cells,” the authors noted. They suggested that 31 of the SBAAs could represent possible candidates for prophylaxis and treatment of infection by SARS-CoV-2.

The team has compiled their findings into a BSAA database, which is freely available at [Drugvirus.info](http://Drugvirus.info). “The database allows interactive exploration of virus-BSAA interactions,” they stated. “It also includes information on BSA targets.”

The investigators also highlight the potential to combine drugs against viruses. “By contrast to individual drugs, combinations of 2-3 BSAAs could be used to target even broader range of viruses,” they noted. “Such combinations could serve as front line therapeutics against poorly characterized emerging viruses or re-emerging drug-resistant viral strains.” Kainov and colleagues further suggest that making the results of relevant clinical trials publicly available and standardizing data collection will aid prioritization and translation of emerging and existing BSAAs into clinical practice. “This would allow BSAAs to play a pivotal role in the battle against emerging and re-emerging viral diseases.”

## Ex-inmate Charged with Sending Poison to California Prison

Source: <https://www.nbcbayarea.com/news/california/ex-inmate-charged-with-sending-poison-to-california-prison/2239643/>

Feb 23 – An Eastern European man who authorities say sent a Christmas card to the Unabomber has been indicted on charges of mailing packages of a potentially deadly poison to a California state prison, officials said Friday.

A U.S. grand jury in San Francisco indicted Vladislav Victorvic Timoshchuk on Thursday on charges of mailing two envelopes containing ricin to Pelican Bay State Prison in July.



One was addressed to the warden and came with note warning in all capital letters that it was “laced with deadly ricin powder.” The other was sent to a purported prison gang member and called on officials to release that inmate.



Timoshchuk, 34, was once a California inmate and was deported to Belarus after his release. From 2016 into 2018, officials at Pelican Bay intercepted mail from Belarus to members of a prison gang, including to the inmate who recently was sent the ricin.

In 2017, the Anaheim Police Department investigated a threat demanding the release of that same inmate if authorities wanted to avoid the “execution” of a school student each day until he was released.

Last year the federal Bureau of Prisons intercepted a Christmas card from Belarus to Theodore Kaczynski, the Unabomber, in which authorities say Timoshchuk claimed responsibility for the threats to Anaheim schools and discussed his plan to mail ricin to the United States.

Kaczynski carried out a series of mail bombings that killed three people and injured 23 before his arrest in 1996, and is now serving a life sentence in Colorado.

Thursday’s indictment charges Timoshchuk only with the two mailings to Pelican Bay. He is not in custody and federal prosecutors would not say if they expect him to be taken into custody in Belarus or returned to the United States for prosecution. Belarus does not have an extradition treaty with the United States.

He could face up to life in prison if he is convicted of the attempted transfer of a toxin for use as a weapon.

Timoshchuk was sent to prison in 2006 on multiple charges from San Diego and Yolo counties for robbery, vehicle theft and battery on a peace officer. He was paroled in 2011. He was never housed at Pelican Bay.

## Israel DDR&D to Develop AI-Based Voice Test for Coronavirus

Source: <https://i-hls.com/archives/100028>

Mar 25 – The [National Emergency Team](#) led by the Director of the DDR&D, Brig. Gen. (Res.), Dr. Dani Gold, continues to identify and develop advanced technological solutions to help fight the spread of the COVID-19 virus.

According to IMoD spokesperson’s announcement, the team is currently conducting a trial with Israeli start-up Vocalis Health. The company is developing an artificial intelligence-based platform that tracks and monitors health issues through voice sampling in order to detect virus symptoms related to the patient’s respiratory system.

A test that will begin in the coming days will sample the voices of carriers and patients diagnosed with the COVID-19 virus, using a mobile application developed by the company. These voice samples will be analyzed using an AI-based algorithm in order to identify the unique vocal ‘fingerprint’ of carriers and patients. This information will be useful in both early diagnoses and in the monitoring of patients to detect the deterioration or improvement in their health.

This voice test is the result of a collaboration between the Directorate of Defense Research and Development (DDR&D), in the Ministry of Defense, and Vocalis Health.

Within the framework of the study, voice recordings will be collected from carriers, patients and the general public via a mobile application. These recordings will then undergo data analysis using neural networks. The purpose of this study is to develop a unique algorithm based on machine learning and sound characteristics in order to make initial medical assessments and in order to monitor the symptoms and conditions of patients.

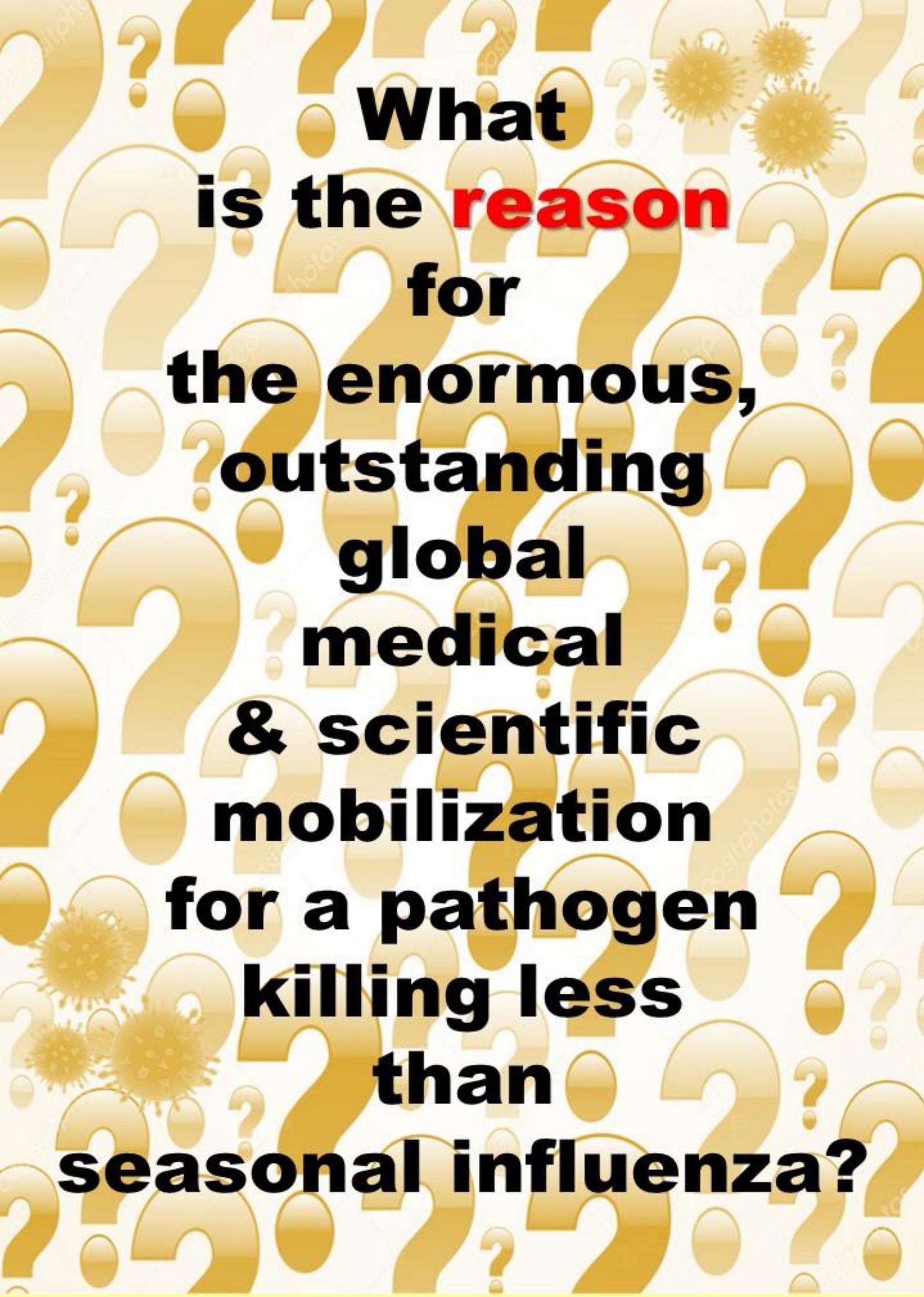
The advantage of this monitoring system is that it can be conducted from afar, in order to prevent the spread of the disease and overburdening of the national healthcare system.

The startup, founded by Tal Wendrow and Dr. Shady Hassan, is from aMoon venture fund, Rabin and Sheba Medical Centers, Afeka Academic Center and additional research groups from the academic community and the IDF.

The research is conducted in collaboration with medical institutions in Israel and abroad, including the Sheba and Rabin Medical Centers, Beilinson and Sharon hospitals, the Directorate of R&D in the DDR&D, led by Brig. Gen. Yaniv Rotem in IMoD, academic institutions such as the Afeka College of Engineering, and the IDF. The preliminary results of the study are expected within 4-6 weeks.

▶▶ Read another [Israeli voice technology](#) for Coronavirus diagnoses.



The background is a light yellow color with a pattern of semi-transparent, 3D-style question marks in various sizes and orientations. Scattered throughout are several stylized virus particles, depicted as spherical shapes with spiky protrusions, resembling coronaviruses. The text is centered and reads:

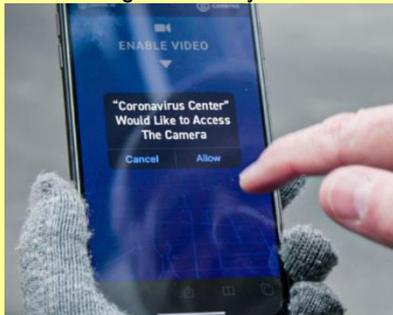
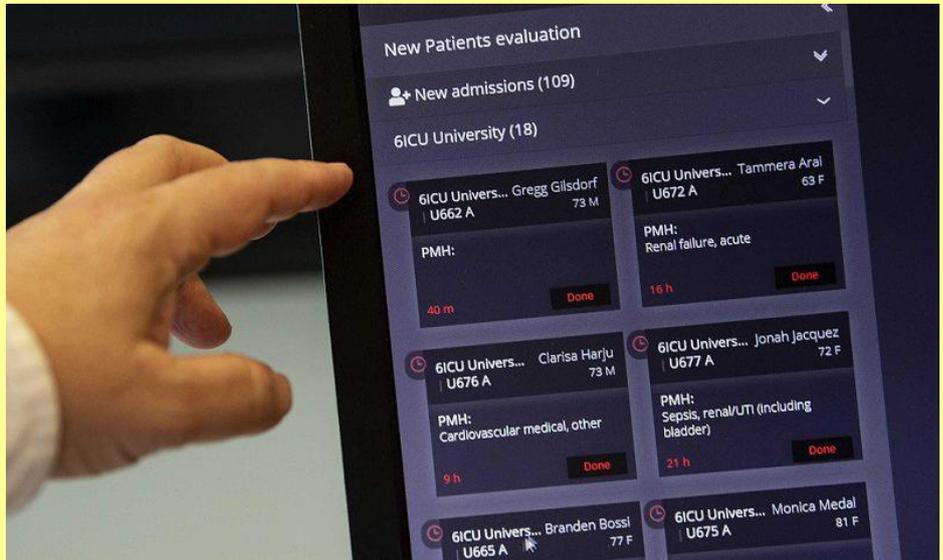
**What  
is the **reason**  
for  
the enormous,  
outstanding  
global  
medical  
& scientific  
mobilization  
for a pathogen  
killing less  
than  
seasonal influenza?**

## Israeli AI-Based Technology to Help Prepare for Overload in Coronavirus Patients Treatment

Source: <https://i-hls.com/archives/100052>

Mar 25 – Artificial intelligence and deep learning technologies serve as vital tools for prioritizing workload when dealing with a huge increase in the intensive care units workload as a result of the Coronavirus pandemic. An Israeli company has developed a groundbreaking, AI-based platform for patient monitoring and early detection of any deterioration in their medical condition.

The system provides the medical team the ability to detect dozens and hundreds of patients from a single control room and prioritize the treatment of patients whose condition is expected to deteriorate within the next 6-12 hours. This way, critical time would be gained allowing treatment interventions. In addition, the system provides medical doctors with remote monitoring in a way that minimizes their risk of being infected by the virus.



The technology developed by the digital health company CLEW will be integrated into the largest intensive care wards in Israel, at the Sheba and Ichilov hospitals, in order to help prepare for the possible treatment of hundreds of Corona patients. The system is already installed at some of the US leading hospitals as part of a pilot program.

According to the company's announcement, the technology helps hospitals to prepare for heavy workloads at the intensive care units. In cases where a relatively small medical team is required to treat a large number of patients simultaneously, the system increases the resources of the intensive care ward and enables the staff to manage the workload in real-time in order to save lives.

The AI system includes advanced algorithms for the early detection of patient deterioration at the intensive care unit by analyzing the data concerning each of the patients at any moment. The system converts data streamed in real-time from a vast array of information sources into life-saving medical information and transmits it to the control room. There, the medical team receives updated information about the situation of each patient, prioritize tasks, send directions to the staff treating the patients and even bring forward the treatment of patients whose condition is expected to deteriorate within hours.

In fact, the technology enables the prediction of life-threatening complications in real-time, thus helping the medical staff in making informed clinical decisions based on large amounts of data, while shortening the time required for collecting the relevant data from different information systems.

## Labs Are Experimenting with New – but Unproven – Methods to Create a Coronavirus Vaccine Fast

Source: <http://www.homelandsecuritynewswire.com/dr20200327-labs-are-experimenting-with-new-but-unproven-methods-to-create-a-coronavirus-vaccine-fast>

Mar 27 – This is the idea behind vaccines: give the body an opportunity to build defenses against a virus it may encounter in the future. Jean Peccoud writes in The Conversation that with the coronavirus literally making time a matter of life and death, [nearly 50 public and](#)



[private labs](#) are turning to newer, safer and faster methods to develop a coronavirus vaccine. There are three categories of vaccines:

- ❖ **Protein-based vaccines:** Rather than injecting the whole virus, it is possible to vaccinate a person with a single virus component. The pieces most commonly used are proteins from the surface of a virus. Two companies, [Sanofi](#) and [Novavax](#), are both developing [protein vaccines based on the SARS-CoV-2 spike](#) protein, the tower-shaped structures on the surface of the new coronavirus that causes COVID-19.
- ❖ **Gene-based vaccines:** Theoretically, the simplest and fastest way to make a vaccine would be to have a person's own cells produce minute quantities of the viral protein that trigger an immune response. To do that researchers are turning to genetics. As of yet, there are [no DNA vaccines currently approved by the FDA](#) for human use and the success of this method has been limited. But there is promise. In 2016, several groups developed candidate [Zika vaccines using this technology](#) and at least one company, [INOVIO Pharmaceuticals, Inc.](#) is developing [INO-4800](#), a DNA vaccine candidate for the coronavirus. [Notable in the U.S. is Moderna](#), and on March 16, the National Institutes of Health [started a clinical trial](#) of Moderna's lead coronavirus vaccine candidate, mRNA-1273.
- ❖ **Friendly virus vaccines:** The main issue with gene-based vaccines is getting the DNA or RNA to where it needs to be. One elegant way to solve this challenge is to use a harmless virus as a delivery system. This technique is being pursued by a few companies around the world. For example, Hong Kong-based [CanSino Biologics](#) is inserting the coronavirus gene that codes for the spike protein into an [adenovirus](#). They used this strategy to produce the [first government-approved Ebola vaccine](#), and clinical trials of an engineered adenovirus that would protect against the coronavirus have already started in China.

### WHO Launches Global Megatrial of the Four Most Promising Coronavirus Treatments

Mar 25 – Could any drugs already in use against various diseases hold the key to saving COVID-19 patients from serious harm or death? [Science reports](#) that on Friday, the World Health Organization (WHO) announced a large global trial, called SOLIDARITY, to test these drugs: A drug combo already used against HIV; a malaria treatment first tested during World War II; and a new antiviral whose promise against Ebola fizzled last year. **The drugs being tested are:** Remdesivir; Chloroquine and hydroxychloroquine; Ritonavir/lopinavir; and Ritonavir/lopinavir and interferon-beta.

### Master Question List for COVID-19 (caused by SARS-CoV-2)

Source: [https://www.dhs.gov/sites/default/files/publications/mql\\_sars-cov-2\\_cleared-for-public-release\\_2020\\_03\\_25.pdf](https://www.dhs.gov/sites/default/files/publications/mql_sars-cov-2_cleared-for-public-release_2020_03_25.pdf)



The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) developed the following “master question list” that quickly summarizes what is known, what additional information is needed, and who may be working to address such fundamental questions as, “What is the infectious dose?” and “How long does the virus persist in the environment?” The Master Question List (MQL) is intended to quickly present the current state of available information to government decision makers in the operational response to COVID-19 and allow structured and scientifically guided discussions across the federal government without burdening them with the need to review scientific reports, and to prevent duplication of efforts by highlighting and coordinating research.

### Mystery in Wuhan: Recovered Coronavirus Patients Test Negative ... Then Positive

By Emily Feng and Amy Cheng

Source: <https://www.npr.org/sections/goatsandsoda/2020/03/27/822407626/mystery-in-wuhan-recovered-coronavirus-patients-test-negative-then-positive>

Mar 27 – A spate of mysterious second-time infections is calling into question the accuracy of COVID-19 diagnostic tools even as China prepares to lift quarantine measures to allow residents to leave the epicenter of its outbreak next month. It's also raising concerns of a possible second wave of cases.

From March 18-22, the Chinese city of Wuhan reported no new cases of the virus through domestic transmission — that is, infection passed on from one person to another. The achievement was seen as a turning point in efforts to contain the virus, which has infected more than 80,000 people in China. Wuhan was particularly hard-hit, with more than half of all confirmed cases in the country.

But some Wuhan residents who had tested positive earlier and then recovered from the disease are testing positive for the virus a second time. Based on data from several



quarantine facilities in the city, which house patients for further observation after their discharge from hospitals, about 5%-10% of patients pronounced "recovered" have tested positive again.

Some of those who retested positive appear to be asymptomatic carriers — those who carry the virus and are possibly infectious but do not exhibit any of the illness's associated symptoms — suggesting that the outbreak in Wuhan is not close to being over.

NPR has spoken by phone or exchanged text messages with four individuals in Wuhan who are part of this group of individuals testing positive a second time in March. All four said they had been sickened with the virus and tested positive, then were released from medical care in recent weeks after their condition improved and they tested negative.

Two of them are front-line doctors who were sickened after treating patients in their Wuhan hospitals. The other two are Wuhan residents. They all requested anonymity when speaking with NPR because those who have challenged the government's handling of the outbreak have been detained.

One of the Wuhan residents who spoke to NPR exhibited severe symptoms during their first round of illness and was eventually hospitalized. The second resident displayed only mild symptoms at first and was quarantined in one of more than a dozen makeshift treatment centers [erected in Wuhan](#) during the peak of the outbreak.

But when both were tested a second time for the coronavirus on Sunday, March 22, as a precondition for seeking medical care for unrelated health issues, they tested positive for the coronavirus even though they exhibited none of the typical symptoms, such as a fever or dry cough. The time from their recovery and release to the retest ranged from a few days to a few weeks.

Could that second positive test mean a second round of infection? Virologists think it is unlikely that a COVID-19 patient could be re-infected so quickly after recovery but caution that it is too soon to know.

Under its newest COVID-19 prevention guidelines, China does not include in its overall daily count for total and for new cases those who retest positive after being released from medical care. China also does not include asymptomatic cases in case counts.

"I have no idea why the authorities choose not to count [asymptomatic] cases in the official case count. I am baffled," said one of the Wuhan doctors who had a second positive test after recovering.

These four people are now being isolated under medical observation. It is unclear whether they are infectious and why they tested positive after their earlier negative test.

It is possible they were first given a false negative test result, which can happen if the swab used to collect samples of the virus misses bits of the virus. Dr. Li Wenliang, a whistleblowing doctor who [later died](#) of the virus himself in February, tested negative for the coronavirus several times before being accurately diagnosed.

In February, Wang Chen, a director at the state-run Chinese Academy of Medical Sciences, [estimated](#) that the nucleic acid tests used in China were accurate at identifying positive cases of the coronavirus only 30%-50% of the time.

Another theory is that, because the test amplifies tiny bits of DNA, residual virus from the initial infection could have falsely resulted in that second positive reading.

"There are false positives with these types of tests," Dr. Jeffrey Shaman, a professor of environmental health sciences at Columbia University, told NPR by email. Shaman recently co-authored a modeling [study](#) showing that transmission by individuals who did not exhibit any symptoms was a driver of the Wuhan outbreak.

### How real is China's recovery?

On Tuesday, Hubei province, where Wuhan is the capital, said it would relax lockdown measures that have now been in place for more than two months and begin letting residents leave cities the following day. Wuhan said it would begin lifting its quarantine measures and letting residents leave two weeks later, on April 8.

To leave Wuhan, residents must first test negative for the coronavirus, according to municipal authorities. Such screenings will identify some remaining asymptomatic virus carriers. But the high rate of false negatives that Chinese doctors have cited means many with the virus could pass undetected.

Last Thursday, Wuhan reported for the first time since the outbreak began that it had no new cases of the virus from the day before — a milestone in China's virus containment efforts. The city reported a zero rise in new cases for the following four days.

### Assessing asymptomatic carriers

But Caixin, an independent Chinese news outlet, reported earlier this week that Wuhan hospitals were continuing to see new cases of asymptomatic virus carriers, citing a health official who said he had seen up to a dozen such cases a day.

Responding to inquiries about how the city was counting asymptomatic cases, Wuhan's health commission said Monday that it is quarantining new asymptomatic patients in



specialized wards for 14 days. Such patients would be included in new daily case counts if they develop symptoms during that time, authorities said.

"Based on available World Health Organization data, new infections are mainly transmitted by patients who have developed symptoms. Hence [asymptomatic cases] may not be the main source of transmission," the commission said.

A researcher at China's health commission told reporters Tuesday that asymptomatic carriers "would not cause the spread" of the virus. Zunyou Wu, the researcher, explained this was because the authorities were isolating people who had close contact with confirmed patients. Wu did not explain how they would identify asymptomatic carriers who had no close contact with confirmed patients.

Addressing growing public concern of asymptomatic patients, China's Premier Li Keqiang urged during Thursday's senior-level government meeting that "relevant departments must ... truthfully, timely, and openly" answer questions, such as whether these patients are infectious and how the course of the outbreak may change.

Research suggests that the spread can be caused by asymptomatic carriers. Studies of patients from Wuhan and [other Chinese cities](#) who were diagnosed [early in the outbreak](#) suggest that asymptomatic carriers of the virus [can infect](#) those they have close contact with, such as family members.

"In terms of those who retested positive, the official party line is that they have not been proven to be infectious. That is not the same as saying they are not infectious," one of the Wuhan doctors who tested positive twice told NPR. He is now isolated and under medical observation. "If they really are not infectious," the doctor said, "then there would be no need to take them back to the hospitals again."

## Coronavirus: France moves patients from swamped hospitals as death toll climbs

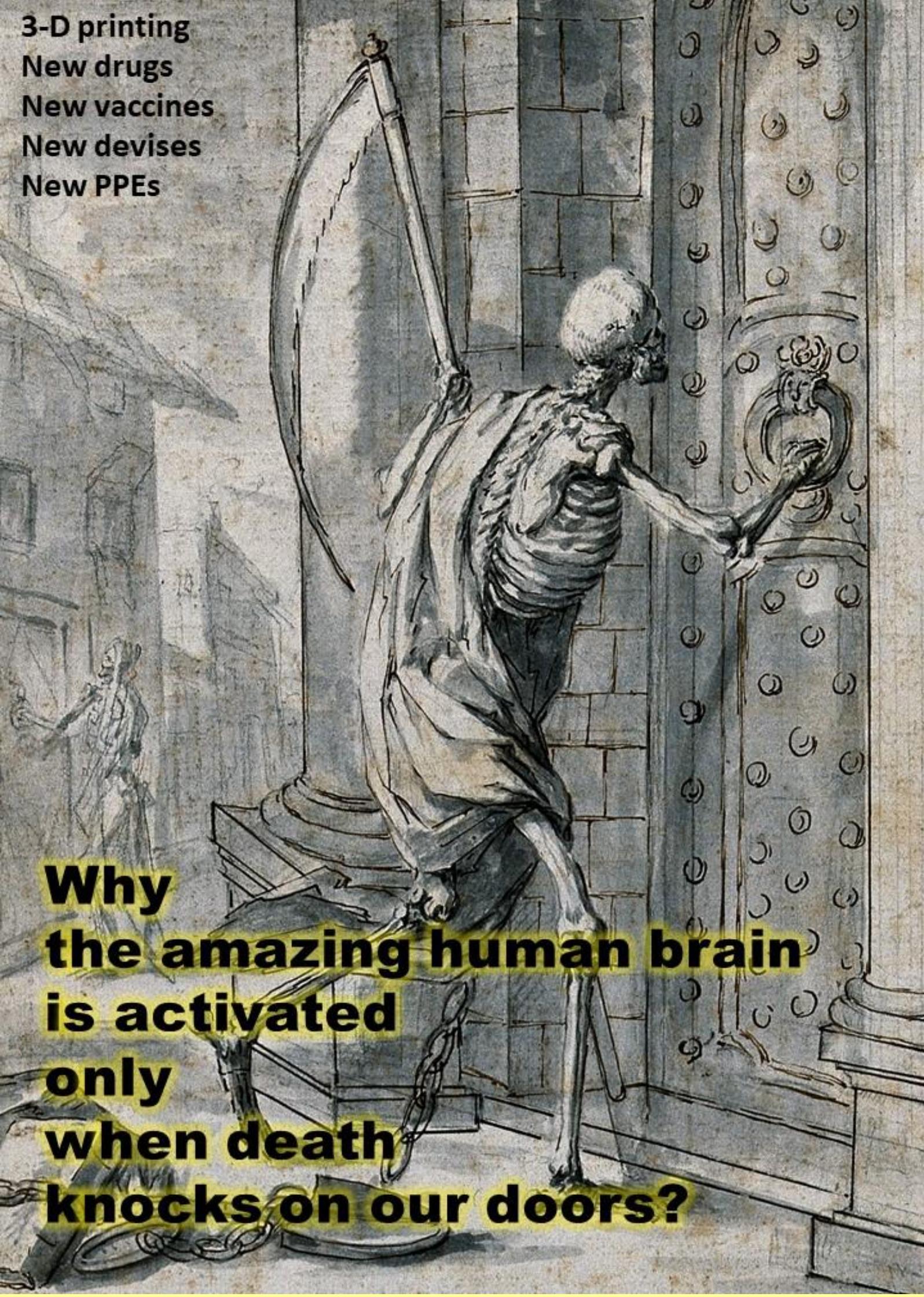


Military exercises before receiving coronavirus patients at a military field hospital at the Emile Muller Hospital in Mulhouse, France, 24 March 2020, on the fifth day of a strict lockdown in France to stop the spread of coronavirus and COVID-19 disease. EPA

**EDITOR'S COMMENT:** A wise man – the Editor of CBRNe World – said once that “if you cannot do it right during exercises, you will not do it right when the real thing comes”; and this photo is NOT right! I only hope, that real life already taught some lessons to the military as well! Covid-19 infection is not just another flu!



3-D printing  
New drugs  
New vaccines  
New devices  
New PPEs



**Why  
the amazing human brain  
is activated  
only  
when death  
knocks on our doors?**

## The Spread of Coronavirus in the Gaza Strip (Updated to March 29, 2020)

Source: <https://www.terrorism-info.org.il/en/spread-coronavirus-qaza-strip-updated-march-29-2020/>

## The Palestinian Authority (PA) Deals with COVID-19 (Overview updated to March 29, 2020)

Source: <https://www.terrorism-info.org.il/en/palestinian-authority-pa-deals-covid-19-overview-updated-march-29-2020/>

## Honor Culture Prevents Corona Treatment, Quarantine

Source: <https://clarionproject.org/honor-culture-preventing-treatment-quarantine-corona/>

Mar 29 – Due to a distorted view of honor, women and girls are being denied treatment for coronavirus (Illustrative photo: Reuters) Due to the pervasive honor culture in Iraq, large numbers of Iraqi women and girls who have come down with COVID-19 (coronavirus) have [not been transferred](#) to medical centers for quarantine or able to receive treatment, according to *Yasour.org*.

An anonymous source told the Arabic news outlet about a typical case in Baghdad, “We were not allowed to transfer a woman that tested positive for the coronavirus to a medical quarantine facility because her family wouldn’t allow it.

“They said isolation is something shameful and contradicts their traditions and customs that don’t allow women to stay at other places [outside the home] without a chaperone.”

When a medical team came to take the woman to quarantine, her clan blocked the transfer.

Some cases have been reported where infected girls were transferred to quarantine facilities by medical teams against the families’ wishes.

Dr. Ali Al-Bayati, the high commission for human rights in Iraq said there are now cases of families gathering outside hospitals demanding their daughters back.

Al-Bayati blamed the problem on lack of awareness as well as the weakness of the Iraqi government. He also noted that, in general, many people infected with the virus ran away before they were to be transferred to quarantine facilities.

The problem is apparently so rampant in Iraq that activists on Twitter have started the hashtag #EpidemicofIgnorance.

At press time, the [number of infected people in Iraq](#) has been reported to be 574, with the number of deaths 42.

However, experts warn that Iraq has passed the stage where all new cases of infected people come from outside the country. Now people within the country are infecting each other.

Currently, the number of infected people in Iraq is still low, prompting Health Minister [Jaafar Allawi to say](#), “We are still the best country in the world in terms of preventive measures against the coronavirus.”

However, Allawi acknowledged that “in the event of the high spread of the disease, as in other countries, we do not have the means to face it.”

## When Religion and Culture Kill: COVID-19 in the Somali Diaspora Communities in Sweden

By Anne Speckhard, Othman Mahamud and Molly Ellenberg

Source: <https://www.hstoday.us/subject-matter-areas/counterterrorism/when-religion-and-culture-kill-covid-19-in-the-somali-diaspora-communities-in-sweden/>

Apr 03 – In Sweden there is a small diaspora community of Somali immigrants who fled war and poverty who make up just .69 percent of the total population.<sup>[1]</sup> Normally, this diaspora group fades into the background, but now, suddenly, a chilling new statistic brings them to the fore, as 40 percent of the reported COVID-19 related deaths occurring in Stockholm involve the Somali diaspora communities. Other Swedish medical experts estimate 18 percent of the COVID-19 deaths country-wide are from the Somali community.<sup>[2]</sup> This disproportionately high representation of deaths occurring among only one subsection of society is unusual. Therefore, the International Center for Violent Extremism’s [ICSVE] Junior Research Fellow, Othman A. Mahamud, a Somali who lives in Australia, conducted an Internet research foray into the Somali Facebook global diaspora and Somali communities to explore the possible explanations for this disturbing phenomenon. This article details the explanations he



received in Facebook discussions over the last week of March 2020 when reaching out in Somali on Facebook, asking the Somali global community for their opinions regarding this startling and grim statistic.



### Stubborn Disregard for Health Warnings

45-year-old Ahmed Farah<sup>[3]</sup> from Stockholm blames the community for failing to heed health warnings as well as misinformation from religious scholars,

“Somalis are stubborn people who do not listen to the messages of health and institutions of health and government institutions. They also listen to wrong information with extremist ideas from religion scholars. This is not a people who read and learn about health awareness and who are careful. Somalis are not the ones who take what is going to be taken as history and learn from it.”

37-year-old Somali Mohamed Omar who lives in Garowe, Somalia agrees on the stubborn and resistant nature of Somali diaspora populations stating, “The main reason is that they have not followed the health instructions given to them. Everywhere Somalis have that problem.”

31-year-old Abdulahi Said, who is part of the Somali diaspora in Melbourne, Australia, jumped into the conversation astutely suggesting that the winter cold in Scandinavia likely causes too many Somalis to crowd indoors together:

“Somalis have their own restaurants. They kill time there. They play cards, and pool, and hands are exchanged. In addition, Somalis are not afraid from disease. This is not braveness; it is stupidity, since they have been told that the disease transmits through physical contact and sitting close to each other. Most of those people who got affected by COVID-19 mostly were unemployed and are now trapped in the queue of death.”

39-year-old Samatar Hassan, a Somali living in Ethiopia, agrees, stating, “I think the biggest issue is that they don’t realize the seriousness of this illness and that is why they ignored it.”

### Language Barriers Causing Ignorance

While stubborn unwillingness to heed health advice is certainly cause for concern, not being informed and aware of health advice is also consequential. In that regard, some blamed language barriers as being part of the problem. University educated, 25-year-old Swedish Somali Abdirahman Sayid states, “I think the best way to spread the health messages and the best ways that everyone remains protected is that public health agencies spread the information through local Somali radio and social media.” He goes on to explain that there are also gender differences in who becomes most at risk from either ignorance or wilful disregard of health messages. “Mostly, men are less informed, and they are those who do more socializing, meet in cafeterias, mosques, soccer fields, as well as those who are taxi and bus drivers.” In this regard, 23-year-old Faduma Ahmed, one of the two females who participated in this discussion, who is of Somali origin and lives in Gothenburg, Sweden comments, “They had



## HZS C<sup>2</sup>BRNE DIARY – April 2020

no information about this disease, as they have a language barrier for news (Swedish newspapers and TV) and most of them they do not listen.”

To this, Othman asks if new immigrants are not required to learn Swedish upon arrival, if language incompetence is a major factor, and if men and women have the same difficulties.

Faduma from Gothenburg, Sweden replies, “They are taught, and it is important that you learn the language, but our Somali people are not as committed as other ethnic groups.” She adds as a caveat, however, “Now many multilingual publications for awareness are available, which will make it easier for everyone to understand health information and guidelines in the future.”

25-year-old Somali Swedish Abdirahman Sayid echoes others’ comments about language barriers in the Somali diaspora community, “They do not know the language and most of them are able to read in the Somali language only.” Likewise, he points out that, “The Somali person prefers to be told information, not to read information.” He also references an observation that Somalis have apparently continued to ignore or are unaware of quarantine restrictions.

“Yesterday a former colleague called me, who had a cold and flu and COVID-19 symptoms. He was told to remain in the house, but yet went out and visited restaurants in Bellevue, Gothenburg to relax and socialize. My friend said, the Somalis were still there. He took no advice, and the health prevention measures of the restaurants are also still the same; no precautions at all. After the Somali death toll reached disproportionate to the percentage number of those living in Sweden, the authorities decided to interpret all useful information into Somali language.”

Abdirahman Sayid explains. “But it’s up to the people, whether they follow or not. People cannot be forced. Here it’s a free country you know.”

### Large Families, Overcrowding, Economic Factors and a Culture of Social Gathering

22-year-old, Somali Swedish Mustaf Salah from the small town of Falköping, Sweden lists stubborn disregard, large families living in close quarters and frequent social gatherings as the problems to which he attributes the high COVID-19 death rate in the Swedish Somali community:

“First, we refused to follow the guidelines and the awareness to remain home and not to meet with a large number of people in restaurants, community centers, mosques, barbershops. Often Somalis are gathering socially. Every single weekend there is a meeting or wedding going on and sometimes people are not obligated to follow preventative procedures. Second, people who succumb to the flu and pass it on to at-risk groups often happens while a person with symptoms has a family number of 4, 6, 7, up to 12 people in the area. They are not separated from one another because they are a big family unit. Lastly, the quarantine aim was for everyone to stay at home, but Somalis invite each other over to their homes and they play all night play-station games and so forth. Most of the time that is how they contracted the COVID-19 from each other.”

29-year-old Somali Nur Abdi, who lives in London and belongs to the large Somali diaspora in the United Kingdom, comments about economic factors saying, “Somalis live in large overcrowded housing units and most of them are likely to be out engaging on the doorstep.” [The Independent newspaper](#) also references the difference in housing between mainstream society and the Somali minority group, stating that more than half of Swedes live one per household, compared to the Somalis typically living in large family units.

Nur also comments about the health situation and lowered immune system in the aged saying, “People are living with three generations in the same house, since using a nursing home is not part of our culture.” Likewise, Nur explains that he has observed a poor diet among many Somalis, possibly contributing to increased susceptibility to the virus, and that Somali culture is very social, that, “If someone only lives by his or herself, Somalis see that as someone who is actually crazy.” He also comments on the issue of the language barrier, “The unknown language and the radio stations in Sweden are not working for them.”

30-year-old British Somali Deeqa, who lives in London and is the other female Somali to respond in these Facebook discussions, blames ignorance, ill-health in the elders in the community and that Somalis are concentrated and like to gather socially. She states, “Even



if the person is COVID-19 positive, he or she believes that it is normal flu and they don't self-isolate. Second, the Somalis in Sweden are concentrated in community center areas, where older people know each other and frequently visit one another. Likewise, the mosques and restaurants are not yet closed. Lastly, most of the Somali people over 50 have diabetes or high blood pressure." Although this observation is anecdotal, the United States Centers for Disease Control and Prevention reports that Somali refugees in the U.S. indeed have higher rates of hypertension and diabetes than the general population, and other studies have found [PTSD in Somali first-generation immigrants](#) to the U.S. who were tortured at home with one center finding men having unexplained heart attacks at relatively young ages. [\[4\]](#) 40-year-old Ibrahim Guled who lives in Stockholm, Sweden also asserts, "Somalis in Sweden are the least educated community among the Somali diaspora in the world, so a lack of low awareness and self-correction happened to them." [\[5\]](#) In addition to that, Ibrahim Guled states. "Somalis are unpopular in this country and therefore, are unlikely to receive real health care service. Beside the foods they eat do not have enough nutrition to defend their health and immune system." In reference to unpopularity, Ibrahim Guled is likely referencing prejudice and the fact that Somalis have also been overrepresented in Swedish statistics for those who joined ISIS and the fact that Swedish international workers have been killed by extremists in Somalia.

### Religious Misdirection

There are reports from all over the world of fanatical religious preachers representing fringe elements of most of the major faiths telling their communities to continue coming to worship, even to take religious pilgrimages, that God will not allow them to fall ill. A Christian preacher of a mega-church in the United States, for instance, was arrested after holding large church services repeatedly during the U.S. quarantine. [\[6\]](#) Similarly, ultra-Orthodox Haredim in Israel have disregarded quarantine orders broadcast largely through the secular media, with leaders encouraging the community to continue attending large gatherings such as weddings and funerals. [\[7\]](#) In Israel, the ultra-orthodox are estimated to make up 12 percent of the population but are now turning up as 60 percent of the COVID-19 deaths, showing a similar trend to the Swedish Somali population. [\[8\]](#)

Extremist Muslim religious leaders around the world have also advised their followers to continue going on religious pilgrimages and to ignore health warnings from the authorities, stating that COVID-19 is a punishment for the unbelievers and will not touch Muslims. [\[9\]](#) For instance during March when Shia visit shrines in Iraq, controversial [Iraqi Shia cleric Muqtada al-Sadr opposed closing the shrines](#), and Sheikh Ali al-Samawi promised believers they would [not be infected](#) by the virus under any circumstances while encouraging them to attend. "Bring any infected person to me and let me kiss them and I'm quite sure that I [won't contract the virus](#), if he is a true follower of Imam Hussein [the third Shiite Imam and grandson of the Prophet Muhammad], [Samawi announced in one of his sermons](#). An uptick of COVID-19 cases was therefore expected in Iraq during the Shia feast s as a result of Iranian pilgrims crossing the border without medical health checks and believers flocking together believing that they cannot be infected while on a religious pilgrimage. [\[10\]](#)

Othman queried about this as well: "Is there any public confidence that this disease would not occur to them, because they are Muslims?"

Somali Swedish Mustaf Salah answers, "Very much so. Many people said that this disease is only meant to kill for non-Muslims thus, it cannot affect Muslims. Until today many people believe that myth. I've watched shows from Somali National TV televised where the reporter asked people playing and socialising at Lido beach in Mogadishu [Somalia] if they are unaware of corona virus. So many of those people answered, 'We are Muslims! This disease will only kill non-believers.' But they are wrong. If you are not careful COVID-19 will not differentiate between anyone based on their religion."

25-year-old Somali Swedish Abdirahman Sayid, who is university educated, refers to the widespread Islamic belief in God-ordained fate:

"In my view, the reason why they did not take the government's advice was that they intuitively listen to Somali clerics when it comes this intense wide spread of sickness and they say, 'What is meant to happen to my health, it's already ordained by Allah.' But, the Quran never said, 'Don't look after yourself.' They are misinterpreting the Quran."

Abdirahman goes on to state, "A man we used to pray together with at the mosque called me and told me that the mosque is still open and that the café in the mosque is still working as well!!! It was amazing!"

In Iraq, doctors reported that some Iraqis who were diagnosed with COVID-19 took it as a social and religious disgrace, mixing the contagious aspects of COVID-19 with former ideas about the sexual spread of AIDs. As a result, Iraqi doctors found that patients who had COVID-19 responded to their health care workers with threats about their honor, and fled the hospital, refusing to be quarantined. [\[11\]](#) In this vein, 22-year-old Somali Towfiq Shire Muse, who lives in Amsterdam, remarks about the general Somali ignorance of the Swedish quarantine but adds that social gathering seems to be preventing this type of stigmatization in the community:



**“The Swedish government has ordered closures of businesses and mosques, but it appears that some Somalis are still going to mosques and making social gatherings. On the other hand, Somalis visit each other and share the pain with the sufferer so they avoid the patient feeling discriminated against or to feel that they are not to blame later on.”**

Of course, this can have dire results if those transmitting the illness do not take responsibility for infecting others in their communities.

One Somali sheikh listened to by some in the global diaspora, of particular concern for giving bad advice over the Internet, is Mohamud Abdi Umal. He [broadcast in a YouTube video](#) on February 28, 2020 the following message, translated below in its key points, to his followers throughout the world:

“The world today is in a state of panic, fear, shock, and despair, because today Allah sent a small army of His troops into the world called corona virus. The men who made the missile and made the navy, went to the moon, and reached the medical sciences very advanced levels in the world. [But.] in that world there was an invasion of a virus that the eye didn’t catch. Where is the Chinese power? Where is the power of the USA? Why don’t you get rid of the small virus? If you were arrogant yesterday, feel the pain today, which, you have made in your own hand.”

Mohamed Abdi also references religious faith, “Somalis pride themselves, and believe if they read some Quranic verses, they can avoid this disease, which is also told to them by the clerics who prevent community integration.” These clerics, according to Mohamed Abdi, encourage separation through business and schooling in Islamic madrasas. Mohamed Abdi says, “They encourage people not to hear the infidel statements—guidelines, which they say could lead Muslims astray.” These clerics, also according to Mohamed Abdi, encourage people to doubt all the government advisory measures about hand washing and other methods of prevention.

### Summary

From this small informal polling in the Somali language on Facebook of the Somali global community and diaspora, it appears that there are four main factors to which the over-representation of the Somali Swedish community in COVID deaths in Sweden can be attributed. These include: 1) a culture of stubborn disregard of advice from authorities; 2) ignorance due to language barriers when that advice comes in languages other than Somali. Likewise, 3) the Somali diaspora’s tendency for large multi-generational families living in close quarters in a cold climate where some may wish to escape to cafes, outdoor stoops, mosques or other places to gather, or have to work. Thus, the community finds it harder to practice the necessary social distancing to protect from COVID-19. Moreover, some note that elders are nearly always cared for at home and that many Somalis over the age of 50 have significant pre-existing health conditions including diabetes and high blood pressure. Somalis also have a strong tradition for social gathering and a vibrant culture of mosque going; near constant family celebrations, especially weddings where large groups gather; and a strong belief in God. In this last regard, 4) extremist preachers on the Internet and on the ground have unfortunately encouraged disregard for Swedish prevention recommendations and social distancing, saying instead that one’s fate is ordained by Allah and that only non-Muslims will contract COVID-19.

Most of these issues are likely also active in other Muslim diaspora communities that have not integrated well across Europe and elsewhere, particularly those who may be religiously conservative and have members who follow religious preaching advising them to ignore government health advisories in relation to COVID-19. These likely can be addressed with good public policy measures that can first reach their target audiences by appealing to the diaspora communities in their own language. Likewise, they can gain better traction by educating and motivating religious influencers to speak up against extremists who wrongfully preach that Muslims (and other “true believers” in the cases of other religious groups) will not be harmed by COVID-19. Likewise, as the death-toll mounts, using multiple channels of communication, even Facebook and other social media platforms, to spread this news among the various age groups in the community, in their own language, can help a community that is very socially oriented, but also cherishes their elderly enough to refrain from social gathering for a time and to use hand-washing, masks and social distancing to better protect the vulnerable among them. This case example in Sweden teaches an important lesson that diaspora and religious communities may need special attention in times of pandemics. Furthermore, when religious extremists preach against government health advisories, measures need to be taken to counter their detrimental influence, before it is too late to prevent severe damage both to the diaspora community and the wider society.

*Anne Speckhard, Ph.D., is Director of the International Center for the Study of Violent Extremism (ICSVE) and serves as an Adjunct Associate Professor of Psychiatry at Georgetown University School of Medicine. She has interviewed over 700 terrorists, their family members and supporters in various parts of the world including in Western Europe, the Balkans, Central Asia, the Former Soviet Union and the Middle East.*

*Othman Mahamud, B.S. is a Somali Australian who has a BS in Security and Counter Terrorism from Swinburne University in Melbourne, Australia and is embarking now on a*



Master's degree in Psychology at Monash University, Melbourne. Othman works as a Junior Research Fellow with the International Center for the Study of Violent Extremism (ICSVE) helping to produce the *Breaking the ISIS Brand Counter Narratives in Somali* and to campaign with them on Facebook to fight ISIS's and al Shabaab's online and face-to-face recruitment. He has worked at the AMNI Centre providing analysis and advice on issues pertaining to security and stability in Somali and the surrounding region as well as a security consultant to the Puntland Ministry of Security. Othman also has worked as a Public Relations Officer for the Australian Federal Police in community engagement to prevent and recognize radicalization in the Somali Australian community. He is fluent in English, Arabic and Somali.

**Molly Ellenberg, M.A.** is a research fellow at ICSVE. Molly Ellenberg holds an M.A. in Forensic Psychology from The George Washington University and a B.S. in Psychology with a Specialization in Clinical Psychology from UC San Diego. At ICSVE, she is working on coding and analyzing the data from ICSVE's qualitative research interviews of ISIS and al Shabaab terrorists, running Facebook campaigns to disrupt ISIS's and al Shabaab's online and face-to-face recruitment, and developing and giving trainings for use with the Breaking the ISIS Brand Counter Narrative Project videos. Molly has presented original research at the International Summit on Violence, Abuse, and Trauma and UC San Diego Research Conferences. Her research has also been published in the *Journal of Child and Adolescent Trauma*. Her previous research experiences include positions at Stanford University, UC San Diego, and the National Consortium for the Study of Terrorism and Responses to Terrorism at the University of Maryland.

## Coronavirus: This Is the Conversation We Need to Have with Loved Ones Now, Says Medic

By Dominic Wilkinson

Source: <https://www.sciencealert.com/oxford-medic-explains-the-conversations-we-should-have-with-our-loved-ones-right-now>

Mar 29 – Waiting is never easy. Sometimes the period when you know that something bad is coming is almost harder than when it finally arrives.

Across the health service, there is [an enormous and unprecedented](#) effort underway to prepare for the coming surge of patients needing hospital treatment for coronavirus. Looking across to the experience in Italy, Spain and Germany, we know that there is a tsunami coming – a tidal wave of medical need that will swamp us, test us, sweep some of us away.

The analogy with a tsunami is apt because we are at the moment when the waters pull back before the great wave arrives. Some hospitals are eerily quiet; [elective surgery has stopped](#), and some wards have been emptied. Our healthcare workers are anxiously waiting and preparing for what is coming.

Of course, many ordinary people are also waiting, not knowing exactly what lies ahead and fearing the worst. How can they, how can we – all of us – prepare?

The answer is not to panic. But nor should we ignore or downplay the seriousness of the situation. And certainly, it is not to [stockpile pasta or loo paper](#).

One obvious and widely publicised step is to take simple practical measures to reduce the spread of the virus, to protect ourselves and our family – [washing hands](#), [reducing social contact](#), self-isolating if symptoms develop.

However, I am going to suggest something that is perhaps equally important. In the coming week, [we need to have conversations with our loved ones](#) about our preferences and values around treatment if we become seriously ill.

That is particularly important for patients who are at highest risk from this virus. Of course, hopefully these conversations won't end up being necessary, because we and they will avoid the virus, or have a mild illness.

These conversations are to support our families and the doctors looking after us. They are crucial for people who are at higher risk of becoming unwell with the virus, for example, those who have a chronic illness or are older.

They are also relevant for those who are middle aged and otherwise healthy, since the simple fact is that some of us will become life-threateningly ill.

### What I will say to my family this week

Here, modified from US surgeon Atul Gawande's inspirational book [Being Mortal](#), are three things that I will talk about with my family this week.

First, if you were to become seriously ill with coronavirus, what would be most important?

What would be your top priority? (And your second priority, if the first isn't possible?)

Second, what is concerning you the most about becoming seriously ill? What are you most worried about?



And, third, if you became seriously ill, what outcomes would be unacceptable to you, what would you be willing to sacrifice – and not sacrifice?

It may also be helpful as part of those conversations to talk openly about what we can and cannot expect from our healthcare system. In the face of this crisis, doctors and nurses and healthcare teams in the NHS should and will do their utmost. Every patient will be cared for. But some treatments may have no chance of helping, they may be highly burdensome, unpleasant and invasive.

Or even if they could be helpful, they simply may not be available. It is important to understand that in the coming weeks some treatments will be in critically short supply.

### Treatment on trial

One basic principle that applies to many medical treatments is that when we are not sure if it is the right thing, we start it for a trial period. For example, patients might try a new medicine to see if it lowers their blood pressure, or try a cancer drug and see if it shrinks their tumour without severe side-effects. (Outside medicine, we might trial a subscription to a magazine or television channel, or a new position at work, or even trial a new relationship).

After the trial period we may keep going, but sometimes we will stop.

It is going to be particularly important for patients who end up in hospital to understand the concept of a ["trial period" of treatment](#). Treatment, whether that is medicine, or oxygen, or a breathing machine, will often be provided for a period and then reviewed.

If it is working, that will be fantastic. But if the person is not getting better or is getting worse, it will be very important to recognise that and to stop the treatment.

The concept of a "trial period" is so important right now because when treatment is in short supply, the duration of treatment is directly related to how many patients can be treated.

Imagine that a hospital has only ten of a particular piece of medical treatment. If patients use that equipment for two weeks each, ten people will benefit. But if they use that equipment for only one week each, 20 people will have a chance to be treated.

We can and should hope that treatments will be available for us when we need them. But we cannot take more than our fair share. If our health service has provided a "trial period" of treatment for us and the treatment isn't working, the treatment may need to stop so that someone else can benefit from it.

These are intensely worrying times. It is hard to know what lies ahead for any of us. We should definitely hope for the best, but it is also important to have some conversations with our families now – so that we may all plan for the worst. Just in case.

*Dominic Wilkinson, Consultant Neonatologist and Professor of Ethics, University of Oxford.*

## The COVID-19 Virus May Have Been in Humans for Years, Study Suggests

By Jacinta Bowler

Source: <https://www.sciencealert.com/the-new-coronavirus-could-have-been-percolating-innocently-in-humans-for-years>

Mar 30 – As COVID-19 has hitchhiked around the globe, [causing lockdowns](#), pneumonia and fear, scientists have been racing to determine where the SARS-CoV-2 coronavirus has come from.

While we don't have all the answers yet - including whether it came from an [animal reservoir](#) - a new analysis has definitively put to rest the conspiracies that claim it's [a lab-made disease](#).

**The study raises some interesting possibilities regarding the origin of the new coronavirus.** **One of the scenarios** suggests the virus may have been circulating harmlessly in human populations for quite a while before it became the pandemic that's now stopped the world in its tracks.

"It is possible that a progenitor of SARS-CoV-2 jumped into humans, acquiring [new genomic features] through adaptation during undetected human-to-human transmission," [the team from the US, UK and Australia writes in the study](#).

"Once acquired, these adaptations would enable the pandemic to take off and produce a sufficiently large cluster of cases."

The researchers analysed genomic data available from SARS-CoV-2 and other similar coronaviruses, showing that the receptor-binding domain (RBD) sections of SARS-CoV-2 spike proteins were so effective at binding to human cells, they had to be caused by natural selection.

"By comparing the available genome sequence data for known coronavirus strains, we can firmly determine that SARS-CoV-2 originated through natural processes," [said one of the researchers](#), immunologist Kristian Andersen at Scripps Research.



"Two features of the virus, the mutations in the RBD portion of the spike protein and its distinct backbone, rules out laboratory manipulation as a potential origin for SARS-CoV-2."

With 'laboratory experiment gone wrong' out of the way, the team explored two viable hypotheses. **First**, that the natural selection occurred in an animal host *before* the virus was transmitted to humans. The team explains that although samples of coronaviruses in bats and pangolins have shown similar genomes, none of them fit perfectly just yet.

"Although no animal coronavirus has been identified that is sufficiently similar to have served as the direct progenitor of SARS-CoV-2, the diversity of coronaviruses in bats and other species is massively undersampled," [the researchers write](#).

The **second** hypothesis is that the natural selection happened in humans - *after* the virus was transmitted from an animal host.

"The **second scenario** is that the new coronavirus crossed from animals into humans before it became capable of causing human disease," [director of the National Institute of Health, Francis Collins explains on the NIH blog](#).

"Then, as a result of gradual evolutionary changes over years or perhaps decades, the virus eventually gained the ability to spread from human-to-human and cause serious, often life-threatening disease."

Although we don't yet know which of the two hypotheses is correct, the researchers think that more evidence might tip the scales in favour of one or the other - but we'll have to wait for that research to be done.

In the meantime, [wash your hands](#), stay home, and [help with the effort if you can](#).

►► The correspondence has been published in [Nature Medicine](#).

## CERN – Particle physicists propose stripped-down ventilator to help combat COVID-19

Source: <https://cerncourier.com/a/particle-physicists-propose-stripped-down-ventilator-to-help-combat-covid-19/>

Apr 03 – As part of the global response to the COVID-19 pandemic, a team led by physicists and engineers from the LHCb collaboration has proposed a design for a novel ventilator. The **High Energy Ventilator (HEV)** is based on components which are



simple and cheap to source, complies with hospital standards, and supports the most requested ventilator-operation modes, [writes](#) the newly formed HEV collaboration. Though the system needs to be verified by medical experts before it can enter use, in the interests of rapid development the HEV team has presented the design to generate feedback, corrections and support as the project progresses. The proposal is one of several recent and rapidly developing efforts launched by high-energy physicists to help combat COVID-19.

[A preliminary CAD model of the HEV unit. Credit: HEV Collaboration.](#)

The majority of people who contract COVID-19 suffer mild symptoms, but in some cases the disease can cause severe breathing difficulties and pneumonia. For such patients, the availability of ventilators that deliver oxygen to the lungs while removing carbon dioxide could be the difference between life and death. Even with existing ventilator suppliers ramping up production, the rapid rise in COVID-19 infections is causing a global shortage of devices. Multiple

efforts are therefore being mounted by governments, industry and academia to meet the demand, with firms which normally operate in completely different sectors – such as Dyson and General Motors – diverting resources to the task.



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HEV was born out of discussions in the LHCb VELO group, when lead-designer Jan Buytaert (CERN) realised that the systems which are routinely used to supply and control gas at desired temperatures and pressures in particle-physics detectors are well matched to the techniques required to build and operate a ventilator. The team started from a set of [guidelines](#) recently drawn up by the UK government's Medicines and Healthcare products Regulatory Agency regarding rapidly manufactured ventilator systems, and was encouraged by a 3D-printed prototype constructed at the University of Liverpool in response to these guidelines. The driving pressure of ventilators — which must be able to handle situations of rapidly changing lung compliance, and potential collapse and consolidation — is a crucial factor for patient outcomes. The HEV team therefore aimed to produce a patient-safety-first design with a gentle and precise pressure control that is responsive to the needs of the patient, and which offers internationally recommended operation modes.

As the HEV team comprises physicists, not medics, explains HEV collaborator Paula Collins of CERN, it was vital to get the relevant input from the very start. "Here we have benefitted enormously from the experience and knowledge of CERN's HSE [occupational health & safety and environmental protection] group for medical advice, conformity with applicable legislation and health-and-safety requirements, and the working relationship with local hospitals. The team is also greatly supported from other CERN departments, in particular for electronic design and the selection of the best components for gas manipulation. During lockdown, the world is turning

to remote connection, and we were very encouraged to find that it was possible in a short space of time to set up an online chat group of experienced anesthesiologists and respiratory experts from Australia, Belgium, Switzerland and Germany, which sped up the design considerably."

Prototyping the HEV buffer-concept at CERN to demonstrate "breathing" and flow capabilities of the device. The demonstrator is built with in-house parts and looks mechanically very different to the final system. Control is provided via LabView, whereas the final system will use an embedded controller. Credit: HEV Collaboration. Conceptual design of the HEV ventilator. Credit: HEV Collaboration.

### Stripped-down approach

The HEV concept relies on easy-to-source components, which include electro-valves, a two-litre buffer container, a pressure regulator and several pressure sensors. Embedded components — currently Arduino and Raspberry Pi — are being used to address portability requirements. The unit's functionality will be comprehensive enough to provide long-term support to patients in the initial or recovery phases, or with more mild symptoms, freeing up high-end machines for the most serious intensive care, explains Collins: "It will incorporate touchscreen control intuitive to use for qualified medical personnel, even if they are not specialists in ventilator use, and it will include extensive monitoring and failsafe mechanisms based on CERN's long experience in this area, with online training to be developed."

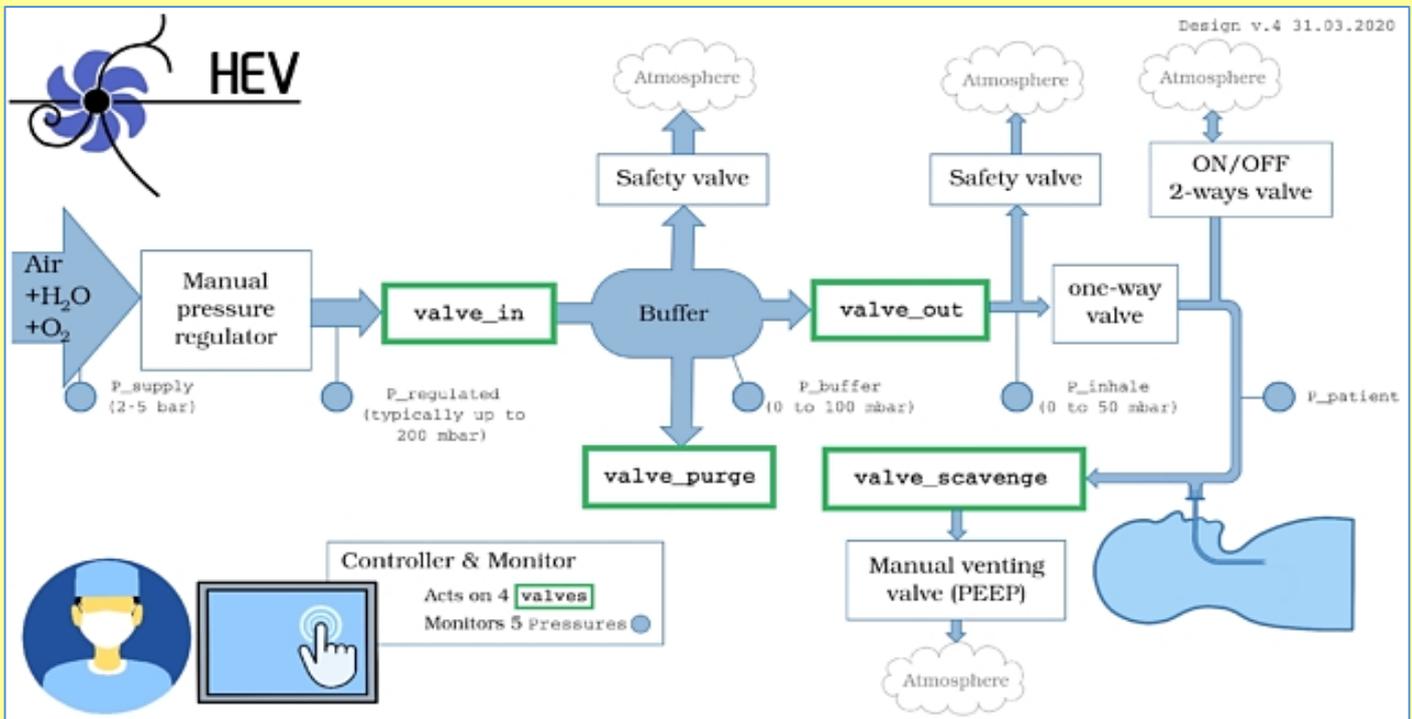
The first stage of prototyping, which was achieved at CERN on 27 March, was to demonstrate that the HEV working principle is sound and allows the ventilator to operate within the required ranges of pressure and time. The desired physical

characteristics of the pressure regulators, valves and pressure sensors are now being refined, and the support of clinicians and international organisations is being harnessed for further prototyping and deployment stages. "This is a device which has patient safety as a major priority," says HEV collaborator Themis Bowcock of the University of Liverpool. "It is aimed at deployment round the world, also in places that do not necessarily have state-of-the-art facilities."



### Complementary designs

The HEV concept complements another recent ventilator [proposal](#), initiated by physicists in the [Global Argon Dark Matter Collaboration](#). The Mechanical Ventilator Milano (MVM) is optimised to permit large-scale production in a short amount of time and at a limited cost, also relying on off-the-shelf components that are readily available. In contrast to the HEV design, which aims to control pressure by alternately filling and emptying a buffer, the MVM project regulates the flow of the incoming mixture of oxygen and air via electrically controlled valves. The proposal stems from a cooperation of particle- and nuclear-physics laboratories and universities in Canada, Italy and the US, with an initial goal to produce up to 1000 units in each of the three countries while the interim



certification process is ongoing. Clinical requirements are being developed with medical experts, and detailed testing and qualification of the first prototype is presently underway with a breathing simulator at Ospedale San Gerardo in Monza, Italy.

Sharing several common ideas with the MVM principle, but with emphasis on further reducing the number and specificity of components to make construction possible during times of logistical disruption, a team led by particle physicists at the Laboratory of Instrumentation and Experimental Particles Physics in Portugal has also [posted](#) a proof-of-concept study for a ventilator on arXiv. All ventilator designs are evolving quickly and require further development before they can be deployed in hospitals.

“It is difficult to conceive a project which goes all the way and includes all the bells and whistles needed to get it into the hospital, but this is our firm goal,” says Collins. “After one week we had a functioning demonstrator, after two weeks we aim to test on a medical mechanical lung and to start prototyping in the hospital context. We find ourselves in a unique and urgent situation where there are many proposals on the market, but we don’t know now which ones will in the end make a difference, so everything which could be viable should be pursued.”

## Sweden under Fire for “Relaxed” Coronavirus Approach – Here’s the Science Behind It

By Paul W Franks and Peter M Nilsson

Source: <http://www.homelandsecuritynewswire.com/dr20200330-sweden-under-fire-for-relaxed-coronavirus-approach-here-s-the-science-behind-it>

Mar 30 – A growing number of Swedish doctors and scientists are [raising alarm](#) over the Swedish government’s approach to COVID-19. Unlike its Nordic neighbors, Sweden has adopted a relatively relaxed strategy, seemingly assuming that overreaction is more harmful than under-reaction.



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Although the government has now banned [gatherings of more than 50 people](#), this excludes places like schools, restaurants and gyms which remain open. That's despite the fact that 3,046 people have tested positive. Although Norway has the most confirmed cases (3,066) in Scandinavia, COVID-19 fatalities in Sweden are highest by far (92), compared with Norway (15) and Denmark (41).

<a href="#">Norway</a>	4,462	+17	32
<a href="#">Sweden</a>	4,028		146
<a href="#">Czechia</a>	3,001		23
<a href="#">Ireland</a>	2,910		54
<a href="#">Malaysia</a>	2,626		37
<a href="#">Denmark</a>	2,577		77

Data: March 31, 2020

People now are taking sides, with some arguing that publicly criticizing the authorities only serves to undermine public trust at a time when this is so badly needed. Others are convinced that Sweden is hurtling toward a disaster of biblical proportions and that the direction of travel must change. The truth is that of all these opinions, none is derived from direct experience of a global pandemic. No one knows for sure what lies ahead.

In epidemics, prediction models [help guide the choice of interventions](#), assess likely social and economic impacts, and estimate hospital surge capacity requirements. All prediction models require input data, ideally derived from past experience in comparable scenarios. And we know the quality of such input data is poor.

Most current COVID-19 prediction models use data gathered from the COVID-19 epidemics in China and Italy and from past outbreaks of other infectious diseases such as Ebola, influenza and other coronaviruses (SARS and MERS). But demographics and patterns of social interactions differ from country to country. Sweden has a small population and only one real metropolitan area. Ideally, we'd need data from Sweden on the community spread of COVID-19, but this requires screening programs that do not currently exist.

The little reliable data on COVID-19 in Sweden concerns hospital admissions and fatalities. This latter can be used to get a "poor man's estimate" of community transmission, providing approximately how many fatalities occur among those infected. But with a two-week lag between diagnosis and death, this a very blunt instrument with which to guide decision making.

In Sweden, the public health authorities [have released simulations](#) to guide "surge requirements". This is the extent to which hospitals will need to boost their capacity to deal with the high number of very ill COVID-19 patients that are likely to need specialist care in the coming weeks. From these simulations, it is clear that the Swedish government anticipates [far fewer hospitalizations per 100,000](#) of the population than predicted in other countries, including Norway, Denmark and the United Kingdom.

The corresponding number of deaths in Sweden predicted using the U.K. simulations are much higher than the Swedish government's simulations suggest. The reason appears to be that Swedish authorities believe there are many infected people without symptoms and that, of those who come to clinical attention, only one in five will require hospitalization. At this point, it is hard to know how many people are asymptomatic as there is no structured screening in Sweden and no antibody test to check who has actually had COVID-19 and recovered from it. But substantially underestimating hospital surge requirements would nevertheless be devastating.

### Uneven Spread

Like in many other countries, the spread of COVID-19 is quite uneven in Sweden. Most cases have been diagnosed and treated in the [greater Stockholm area](#), and lately also in the northern county of Jämtland – a popular destination for skiers. On the other hand, some other geographical areas are relatively spared, at least for the moment. In the third largest Swedish city, Malmö, still only a few cases have been hospitalized at the time of writing.

There is no doubt that the epidemic will spread, but the speed of this is disputed. The national Public Health authorities are also [skeptical about the need for lock-down](#) in most of the country, but [discussions are now ongoing](#) to enforce such an intervention in the capital area.

There are several arguments supporting the current official Swedish strategy. These include the need to keep schools open in order to allow parents who work in key jobs in health care, transportation and food supply lines to remain at work. Despite other infectious diseases spreading rapidly among children, COVID-19 complications [are relatively rare](#) in children. A long-term lockdown is also likely to have major economic implications that in the future may harm healthcare due to lack of resources. This may eventually [cause even more deaths and suffering](#) than the COVID-19 pandemic will bring in the near term.

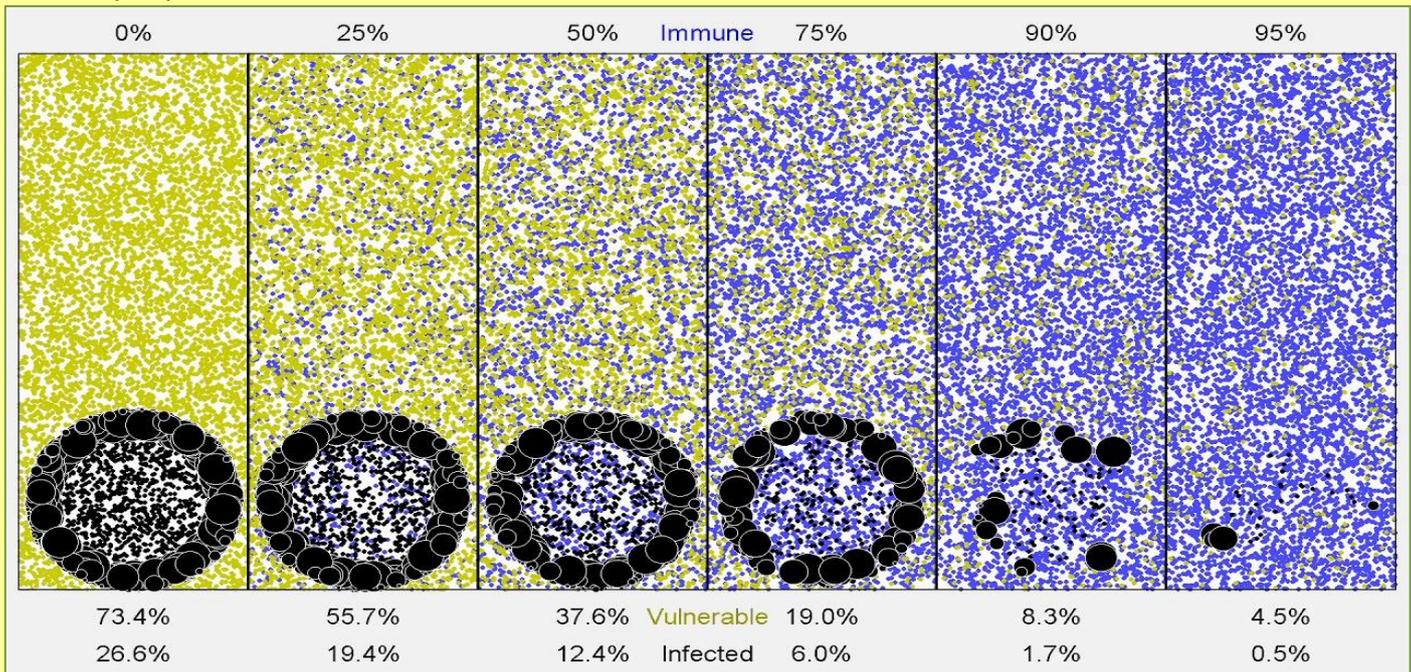
### Herd Immunity

The best estimates of the COVID-19 case-fatality ratio (CFR) – the proportion of those infected who die – is currently [0.5-1.0 percent](#). By comparison, the 1918-1919 Spanish flu



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had a 3 percent CFR in some parts of northern Sweden. A century ago, Sweden was recovering from the first world war, even though the country stayed neutral.



Internal transportation and communication systems were less developed than in many other countries at the time, which helped slow the spread of the epidemic. In the short term, this was perceived to be a good thing, but because herd immunity – whereby enough people have been infected to become immune to the virus – had not been initially achieved, there were [at least two additional epidemics](#) of the Spanish flu virus within a year. The second wave of infections had a higher mortality rate than the first wave.

Learning the lesson from this, many people in Sweden are now optimistic that it can achieve herd immunity. Compared with the Spanish flu, COVID-19 is less severe, with many infected people believed to be asymptomatic. While this contributes to a more rapid spread, it also means that the threshold for ["herd immunity" is about 60%](#). This may be quickly achieved in countries that do not have intensive mitigation or suppression strategies.

This may also lower the risk of further waves of the epidemic. So when we probe the lessons learned from the COVID-19 pandemic in the future, there will likely be a lot of focus on the success or failure of Sweden's relatively relaxed initial approach. This would take into account not just the loss of lives from the pandemic, but also longer term social and economic negative consequences and the deaths they may cause.

Ultimately, given the uneven and relatively modest spread of the virus in Sweden at the moment, its initial strategy may not turn out to be reckless. But going forward, Sweden is likely to have to impose stricter restrictions depending on how the virus spreads, especially in metropolitan areas or when the healthcare system is under severe strain.

*Paul W Franks is Professor of Genetic Epidemiology, Lund University.*

*Peter M Nilsson is Professor of Internal Medicine - Epidemiology, Lund University.*

## A fiasco in the making? As the coronavirus pandemic takes hold, we are making decisions without reliable data

By John P.A. Ioannidis

Source: <https://www.statnews.com/2020/03/17/a-fiasco-in-the-making-as-the-coronavirus-pandemic-takes-hold-we-are-making-decisions-without-reliable-data/>

Mar 17 – The current coronavirus disease, Covid-19, has been called a once-in-a-century [pandemic](#). But it may also be a once-in-a-century evidence fiasco.



At a time when everyone needs better information, from disease modelers and governments to people quarantined or just social distancing, we lack reliable evidence on how many people have been infected with SARS-CoV-2 or who continue to become infected. Better information is needed to guide decisions and actions of monumental significance and to monitor their impact.

Draconian countermeasures have been adopted in many countries. If the pandemic dissipates — either on its own or because of these measures — short-term extreme social distancing and lockdowns may be bearable. How long, though, should measures like these be continued if the pandemic churns across the globe unabated? How can policymakers tell if they are doing more good than harm?

Vaccines or affordable treatments take many months (or even years) to develop and test properly. Given such timelines, the consequences of long-term lockdowns are entirely unknown.

The data collected so far on how many people are infected and how the epidemic is evolving are utterly unreliable. Given the limited testing to date, some deaths and probably the vast majority of infections due to SARS-CoV-2 are being missed. We don't know if we are failing to capture infections by a factor of three or 300. Three months after the outbreak emerged, most countries, including the U.S., lack the ability to test a large number of people and no countries have reliable data on the prevalence of the virus in a representative random sample of the general population.

This evidence fiasco creates tremendous uncertainty about the risk of dying from Covid-19. Reported case fatality rates, like the official 3.4% rate from the World Health Organization, cause horror — and are meaningless. Patients who have been tested for SARS-CoV-2 are disproportionately those with severe symptoms and bad outcomes. As most health systems have limited testing capacity, selection bias may even worsen in the near future.

The one situation where an entire, closed population was tested was the Diamond Princess cruise ship and its quarantine passengers. The case fatality rate there was 1.0%, but this was a largely elderly population, in which the death rate from Covid-19 is much higher.

Projecting the Diamond Princess mortality rate onto the age structure of the U.S. population, the death rate among people infected with Covid-19 would be 0.125%. But since this estimate is based on extremely thin data — there were just seven deaths among the 700 infected passengers and crew — the real death rate could stretch from five times lower (0.025%) to five times higher (0.625%). It is also possible that some of the passengers who were infected might die later, and that tourists may have different frequencies of chronic diseases — a risk factor for worse outcomes with SARS-CoV-2 infection — than the general population. Adding these extra sources of uncertainty, reasonable estimates for the case fatality ratio in the general U.S. population vary from 0.05% to 1%.

That huge range markedly affects how severe the pandemic is and what should be done. A population-wide case fatality rate of 0.05% is lower than seasonal influenza. If that is the true rate, locking down the world with potentially tremendous social and financial consequences may be totally irrational. It's like an elephant being attacked by a house cat. Frustrated and trying to avoid the cat, the elephant accidentally jumps off a cliff and dies.

Could the Covid-19 case fatality rate be that low? No, some say, pointing to the high rate in elderly people. However, even some so-called mild or common-cold-type coronaviruses that have been known for decades can have case fatality rates [as high as 8%](#) when they infect elderly people in nursing homes. In fact, such "mild" coronaviruses infect tens of millions of people every year, and account for [3% to 11%](#) of those hospitalized in the U.S. with lower respiratory infections each winter.

These "mild" coronaviruses may be implicated in several thousands of deaths every year worldwide, though the vast majority of them are not documented with precise testing. Instead, they are lost as noise among 60 million deaths from various causes every year.

Although successful surveillance systems have long existed for influenza, the disease is confirmed by a laboratory in a tiny minority of cases. In the U.S., for example, so far this season [1,073,976 specimens have been tested](#) and 222,552 (20.7%) have tested positive for influenza. In the same period, the estimated number of influenza-like illnesses is between 36,000,000 and 51,000,000, with an estimated 22,000 to 55,000 flu deaths.

Note the uncertainty about influenza-like illness deaths: a 2.5-fold range, corresponding to tens of thousands of deaths. Every year, some of these deaths are due to influenza and some to other viruses, like common-cold coronaviruses.

In [an autopsy series](#) that tested for respiratory viruses in specimens from 57 elderly persons who died during the 2016 to 2017 influenza season, influenza viruses were detected in 18% of the specimens, while any kind of respiratory virus was found in 47%. In some people who die from viral respiratory pathogens, more than one virus is found upon autopsy and bacteria are often superimposed. A positive test for coronavirus does not mean necessarily that this virus is always primarily responsible for a patient's demise.

If we assume that case fatality rate among individuals infected by SARS-CoV-2 is 0.3% in the general population — a mid-range guess from my Diamond Princess analysis — and that 1% of the U.S. population gets infected (about 3.3 million people), this would translate to about 10,000 deaths. This sounds like a huge number, but it is buried within the noise of



the estimate of deaths from “influenza-like illness.” If we had not known about a new virus out there, and had not checked individuals with PCR tests, the number of total deaths due to “influenza-like illness” would not seem unusual this year. At most, we might have casually noted that flu this season seems to be a bit worse than average. The media coverage would have been less than for an NBA game between the two most indifferent teams.

Some worry that the 68 deaths from Covid-19 in the U.S. [as of March 16](#) will increase exponentially to 680, 6,800, 68,000, 680,000 ... along with similar catastrophic patterns around the globe. Is that a realistic scenario, or bad science fiction? How can we tell at what point such a curve might stop?

The most valuable piece of information for answering those questions would be to know the current prevalence of the infection in a random sample of a population and to repeat this exercise at regular time intervals to estimate the incidence of new infections. Sadly, that's information we don't have.

In the absence of data, prepare-for-the-worst reasoning leads to extreme measures of social distancing and lockdowns. Unfortunately, [we do not know](#) if these measures work. School closures, for example, may reduce transmission rates. But they may also backfire if children socialize anyhow, if school closure leads children to spend more time with susceptible elderly family members, if children at home disrupt their parents ability to work, and more. School closures may also diminish the chances of developing herd immunity in an age group that is spared serious disease.

This has been the perspective behind the different stance of the United Kingdom [keeping schools open](#), at least until as I write this. In the absence of data on the real course of the epidemic, we don't know whether this perspective was brilliant or catastrophic.

[Flattening the curve](#) to avoid overwhelming the health system is conceptually sound — in theory. A visual that has become viral in media and social media shows how flattening the curve reduces the volume of the epidemic that is above the threshold of what the health system can handle at any moment.

Yet if the health system does become overwhelmed, the majority of the extra deaths may not be due to coronavirus but to other common diseases and conditions such as heart attacks, strokes, trauma, bleeding, and the like that are not adequately treated. If the level of the epidemic does overwhelm the health system and extreme measures have only modest effectiveness, then flattening the curve may make things worse: Instead of being overwhelmed during a short, acute phase, the health system will remain overwhelmed for a more protracted period. That's another reason we need data about the exact level of the epidemic activity.

One of the bottom lines is that we don't know how long social distancing measures and lockdowns can be maintained without major consequences to the economy, society, and mental health. Unpredictable evolutions may ensue, including financial crisis, unrest, civil strife, war, and a meltdown of the social fabric. At a minimum, we need unbiased prevalence and incidence data for the evolving infectious load to guide decision-making.

In the most pessimistic scenario, which I do not espouse, if the new coronavirus infects 60% of the global population and 1% of the infected people die, that will translate into more than 40 million deaths globally, matching the 1918 influenza pandemic.

The vast majority of this hecatomb would be people with limited life expectancies. That's in contrast to 1918, when many young people died.

One can only hope that, much like in 1918, life will continue. Conversely, with lockdowns of months, if not years, life largely stops, short-term and long-term consequences are entirely unknown, and billions, not just millions, of lives may be eventually at stake.

If we decide to jump off the cliff, we need some data to inform us about the rationale of such an action and the chances of landing somewhere safe.

*John P.A. Ioannidis is professor of medicine and professor of epidemiology and population health, as well as professor by courtesy of biomedical data science at Stanford University School of Medicine, professor by courtesy of statistics at Stanford University School of Humanities and Sciences, and co-director of the Meta-Research Innovation Center at Stanford (METRICS) at Stanford University.*

## **New Plastic Surface to Repel Bacteria and Viruses**

Source: <https://www.asme.org/topics-resources/content/new-plastic-surface-to-repel-bacteria-viruses>

Mar 13 – The problem with viruses—like the novel coronavirus that causes the disease covid-19—and bacteria is that they cling on just about any surface. Take a child at school who wipes their nose, then gets up to sharpen a pencil. When the next child touches the same sharpener handle and then fingers their face, the bacteria—streptococcus maybe—or a coronavirus complete their journey from child to child.



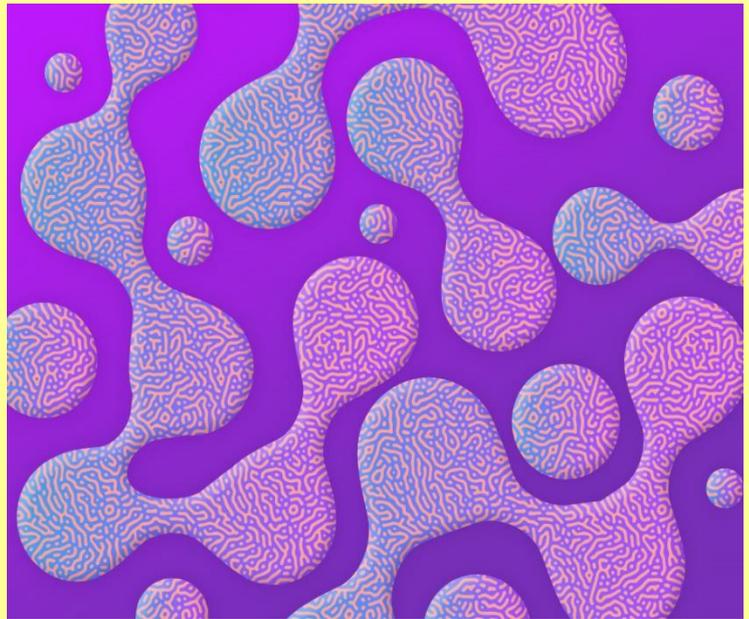
But if those pathogens had no way of sticking to the sharpener's handle, their journey from nose to mouth would be halted midcourse. Infectious diseases would be easier to control and epidemics would be thwarted.



Graduate student Roderick MacLachlan, Canada Research Chair in miniaturized biomedical devices Leyla Soleymani, assistant professor of mechanical engineering Tohid Didar, and graduate student Sara Imani, all worked on the self-cleaning plastic wrap. Photo: Georgia Kirkos, McMaster University, Canada

Scientists have been trying to bring about this utopia. For instance, [researchers at Ontario's McMaster University](#) have created a new polymer surface that repels blood, microbes, water, and just about any other liquid that comes in contact with it.

To make this protective plastic, they turned to the lotus plant, whose superhydrophobic leaves cause water to bead right up and roll right off. "What it has, when you look at it with electron microscopy, is scales of texture from nano to micrometer," said Sara Imani, a PhD student at McMaster's School of Biomedical Engineering.



Imani and her colleagues set out to imitate the architecture of the lotus leaf. Counter-intuitively, it's the wrinkles and textures created by the nano-to-micro pattern that create the hydrophobia. Usually, a smooth surface sheds microbes and liquids better than a surface with crevices. But in this case, the geometry traps pockets of air, and it's the air that does the repelling.

In addition to this "hierarchical structuring" the material is chemically treated to increase the hydrophobia. Without the texture this chemical is far less hydrophobic. When the two are combined, liquid that comes in contact with the polymer seems to literally flee the surface, and the surface "self-cleans."

The polymer is produced in a thin film, like plastic wrap. But it's stronger than plastic wrap and stands up to bleach and alcohol exposure. To apply it to a surface—say a door knob, or the handle of a pencil sharpener—the material has to be heated. The heat will fuse the plastic to whatever surface it's on, as well as bring out the nano-to-micro structure of the plastic that makes it work. Thankfully, this near miraculous material is not pricey. "It is a relatively inexpensive chemistry to put together right now," Imani said. "But I think scaling it up will eventually make it really inexpensive."

The potential applications for such a polymer are enormous: Just about anything that might come in contact with a sick person or food makes for a good candidate for a coat of the self-cleaning anti-microbial plastic. Medical tools, kitchen counters, food packaging, conveyors belts, and pretty much every surface in an elementary school, public transport, or a hospital, will slough off any antibiotic-resistant bacteria or other pathogens they come in contact with once they've donned the new polymer. "Basically, for any surface that has a risk of contamination, this could be applied to minimize that risk," Imani said.

Imani and her team did not yet test the polymer with fungi, but there's no reason to think that this life form will do any better holding on to the material than pathogens or blood. "It's universally repellent, so I assume this would repel fungi as well," she said. If so, the polymer will be a boon in the fight against antibiotic-resistant fungi. In the future anyone would be able to use the product in their homes. All they would need is a sheet of this polymer and a heat gun.

The polymer is ready to go and just needs some financial backing to become a purchasable product. "We've had a lot of industrial interest," Imani said. "Now, we're looking to commercialize it, to make it at a larger scale, and to put it into use."



## 6,694 people subjected to hotel quarantine in Qatar; 28 hotels used for quarantine; 3,488 people leave hotel quarantine

Source: <https://www.qatarday.com/coronavirus/local/6694-people-subjected-to-hotel-quarantine-in-qatar-28-hotels-used-for-quarantine-3488-people-leave-hotel-quarantine/71548>

Apr 11 – Spokesperson for the Supreme Committee for Crisis Management HE Lolwah bint Rashid bin Mohammed al Khater said on Thursday that as many as **3,488 have left hotel quarantine. A total of 6,694 people has been subjected to hotel quarantine until now in 28 hotels allocated for this purpose.**

Concerning the number of reports related to violations, especially those related to quarantine, Khater indicated that during the period from March 31 to April 4, such reports reached 3,775 and were all dealt with. Several calls related to gatherings were also received on the number 999, and all were dealt with.



Reviewing figures related to electronic infrastructure, including those related to e-government and its activation and the percentage of electronic connectivity, she said electronic connectivity between government agencies increased 83 percent. She noted that during the period, more than 1,600 cases of cyber attacks were addressed in the field of cybersecurity, while about 34 terabytes of data were received on government portals and various

electronic entities. The communication rate between different entities increased by 20 percent as well, she said.

Her Excellency pointed out that the government call centers including three different government sites and a fourth site to be added currently comprises about 300 employees and **providing 70 active electronic services in nine different languages around the clock with a link to 34 Government entities. She noted that the number of calls exceeded 340,000 with an average response speed of about 11 seconds, and an average satisfaction with the service of about 90 percent.**

She stressed that the efforts of the ministries and other institutions are in full swing, including the campaigns carried out by the Ministry of Commerce and Industry and the Ministry of Municipality and Environment, where 378 violations have been detected since March until today, as well setting fix prices to sell sterilisers, disinfectants and other goods, in addition to conducting inspection campaigns for factories to ensure their compliance with the conditions and establishing a hotline to receive complaints.

Her Excellency praised the awareness efforts of a number of media institutions, including Qatar Media Corporation, and its tremendous efforts, as it published about 645 awareness videos in different languages, and broadcasting daily TV programs related to the Coronavirus crisis.

With regard to citizens abroad, including Qatari citizens, children, wives, and husbands of Qataris, Her Excellency called on them to contact the embassies in the countries where they are located on the numbers announced at the dedicated website.

Her Excellency stressed the need to communicate with embassies in the countries in which they stay if they want to return to Qatar. Her Excellency spoke at the press conference about food security in Qatar and said that the experience of Qatar in 2017 has benefited the country a lot.

Her Excellency pointed out that Qatar is ranked first in the Arab world in food security and 13th in the world. She stressed that supplies and strategic food stocks exist and there is a relentless endeavour to enhance this strategic stock, whether by importing goods or through achieving self-sufficiency in some sectors.

With regard to the various efforts of all those living in Qatar, including expats, she said that a "conscious" campaign was launched by the Ministry of Administrative Development, Labour and Social Affairs on April 5 to educate employers as well as expatriate workers on various procedures in different languages.

She drew attention to some examples that are taken in this framework, including continuous communication with labour representatives of different communities and with different embassies in Qatar, and the adoption of a policy to protect workers and reduce the spread of the Coronavirus.





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## Collecting the Sounds of COVID-19

Source: <http://www.homelandsecuritynewswire.com/dr20200409-collecting-the-sounds-of-covid19>

Apr 09 – A new app, which will be used to collect data to develop machine learning algorithms that could automatically detect whether a person is suffering from COVID-19 based on the sound of their voice, their breathing and coughing, has been launched by researchers at the University of Cambridge.



The [COVID-19 Sounds App](#) is now available as a web app for Chrome and Firefox browsers. Versions for Android and iOS will be available soon.

As COVID-19 is a respiratory condition, the sounds made by people with the condition – including voice, breathing and cough sounds – are very specific. A large, crowdsourced data set will be useful in developing machine learning algorithms that could be used for automatic detection of the condition.

“There’s still so much we don’t know about this virus and the illness it causes, and in a pandemic situation like the one we’re currently in, the more reliable information you can get, the better,” said Professor Cecilia Mascolo from Cambridge’s Department of Computer Science and Technology, who led the development of the app.

“I am amazed at the speed that we managed to connect across the University to conceive this project, and how Cecilia’s team of developers came together to respond to the urgency of the situation,” said Professor Pietro Cicuta from Cambridge’s Cavendish Laboratory, a member of the team behind the app’s development. Professor Andres Floto, Professor of Respiratory

Biology at the University, and Research Director of the Cambridge Centre for Lung Infection at Papworth Hospital, Cambridge, has also advised on the clinical aspects of the app.

Cambridge [says](#) that the COVID-19 Sounds App collects basic demographic and medical information from users, as well as spoken voice samples, breathing and coughing samples through the phone’s microphone. The app will also ask users if they have tested positive for the coronavirus.

In addition, the app will collect one coarse grain location sample. The app will not track users, and will only collect location data once when users are actively using it. The data will be stored on University servers and be used solely for research purposes. The app will not provide any medical advice.

Once they have completed their initial analysis of the data collected by the app, the team will release the dataset to other researchers. The dataset could help shed light on disease progression, further relationship of the respiratory complication with medical history, for example.

“Having spoken to doctors, one of the most common things they have noticed about patients with the virus is the way they catch their breath when they’re speaking, as well as a dry cough, and the intervals of their breathing patterns,” said Mascolo. “There are very few large datasets of respiratory sounds, so to make better algorithms that could be used for early detection, we need as many samples from as many participants as we can get. Even if we don’t get many positive cases of coronavirus, we could find links with other health conditions.”

Cambridge notes that the study has been approved by the Ethics Committee of the Department of Computer Science and Technology, and is partly funded by the European Research Council through Project EAR.

## Terrorism, bio-warfare and Covid-19

By Senator Rehman Malik

Source: <https://nation.com.pk/11-Apr-2020/terrorism-bio-warfare-and-covid-19>

Apr 11 – The title is dreadful and looking at it one feels that all the three bring death and misery to humanity. People have turned their houses into trenches as it is the only way to protect themselves to go into self-isolation. The fear of Coronavirus has forced all ages of people to be locked in the houses - some are in self-isolation while others are blocked through the lockdown. This deadly virus has at least given us the option to protect ourselves inside four walls of the house. It has created a fear of biowarfare and bioterrorism across the world.

Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and their Destruction – came into force on March 26, 1975, and currently has 182 states as signatories. BWC discourages any



## HZS C<sup>2</sup>BRNE DIARY – April 2020

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country's hostile intentions to adopt biological warfare and the deliberate use of disease as a weapon through the development, production and stockpiling of biological agents. The convention complements the Geneva Protocol, which banned biological warfare methods in 1925.

When a load of evil viruses or chemicals are launched together in a city or country, there are some options that could be chosen to avoid the spread and ensure protection. Confine yourself inside the house for protection which is, in other words, isolation and social distancing. The government has to take into action and all the arrangements into account. Panic surely creates unrest so measures must be taken to counter such unrest and chaos. The fear of bioterrorism is being expressed by states and other independent scientists and many producers have made movies on bioterrorism.

We have to understand the difference between biowarfare and bioterrorism. The definition of biowarfare is "the use of toxins of biological origin or microorganisms as weapons of war". Biological warfare can be thought of as intentionally using toxins like poison or microbial organisms like the Bubonic plague whose prime target is a military army that consists of a homogeneous population of fit and healthy soldiers who have possibly undergone appropriate pre-attack vaccination.

During the 18th century AD war between French and Indian forces, British forces under the direction of Sir Jeffrey Amherst gave blankets to Native Americans that had been used by smallpox victims following a plan to spread the disease.

During the 90's biological warfare became more sophisticated except for when during World War I, the German Army developed anthrax, glanders, cholera, and a wheat fungus as biological weapons to spread the plague in St Petersburg, Russia, Mesopotamia, and attempted to do the same with the horses of the French Cavalry.

On the other hand, the purpose of bioterrorism does not necessarily aim to cause mass casualties but to spread mass terror, confusion and community disruption. The target is mainly a diverse civilian population which includes people of all age groups including the young, elderly, and immune-compromised and healthy.

The most famous example of bio-terrorism is the 1984 Oregon outbreak of Salmonella enterica Typhimurium that sickened 751 people and sent 45 to hospitals. It was the largest foodborne illness outbreak in the USA in 1984.

Bioterrorism exists as found during the Iraq war where several pathogenic organisms were intentionally released. Even letters carrying Anthrax and Yersinia pasties (causing plague) spores were sent to USA senators and media outlets in 2001 to spread fear and terror through deadly diseases which killed five and made 17 ill.

As time is passing, we are getting clear indications of entering into the 5th generation of warfare, which is different from former generations in terms of weaponry and tactics used in it against the enemy.

If you're a military man or a terrorist looking to defeat the enemy by sowing fear and confusion among your target nation or group, you need to disrupt supply chains, ruin crucial industries and destabilise the economy. You can't do much better than to work some biological mischief on food or pharmaceutical networks. The assumption that people are afraid of radiation (dirty nukes, nuclear bombings, etc.), that's nothing compared to their fear of tainted food or contaminated air.

The international establishment and the world have entered into a very dangerous zone which is highly perilous for various nations. We all know science has progressed so much that a little virus can be modified and converted into a dangerous small creature that will find its growth in the victim.

Genetically modified viruses are developed through genetic modification, which involves directed insertion, deletion, artificial synthesis, or change of nucleotide sequences in viral genomes using biotechnological methods and reverse genetics. To modify the viral genome, corresponding DNA sequences need to be modified, without bothering or modifying the viral DNA/RNA. Because viruses are very tiny, it's much easier to manipulate the plasmids than viral genomes. We conclude that bioterrorism is not new but an old method to destroy one's enemies. Osama Bin Laden tried it in 2011, and as Minister of Interior, I dealt with it by arresting his accomplices and the plot was foiled. Biowarfare is too dangerous as this is likely to be developed by states though it could be termed as state terrorism. Yet it can be developed undercover and can be launched by ageists in a hostile country.

If any individual or group is found involved in its proliferation, for themselves of a state, then he/they should be liable for the death penalty through an emergency trial. The world can only survive with stringent laws and with major penalties.

I know some friends may not like my harsh proposal but, those who do not care for others' rights and are criminals have no right to ask for relief.

**Note:** the opinions expressed are solely my own and do not necessarily reflect the views of my party.



## How to Keep the New Coronavirus from Being Used as a Terrorist Weapon

Source: <http://www.homelandsecuritynewswire.com/dr20200330-how-to-keep-the-new-coronavirus-from-being-used-as-a-terrorist-weapon>

Mar 30 – On 26 March, CNN reported that U.S. agencies now consider the intentional spread by extremist groups of the coronavirus causing the current pandemic, SARS-CoV-2, to be a growing threat in the United States. Richard Pilch writes in the [Bulletin of the Atomic Scientists](#) that the referenced agency documents have not been made public; however, one such [Department of Homeland Security \(DHS\) document](#) is quoted as saying: “Members of extremist groups are encouraging one another to spread the virus, if contracted, to targeted groups through bodily fluids and personal interactions.”

Pilch adds:

The CNN report seems to contemplate the possibility of U.S. domestic terrorism and “the threat from white supremacist and other extremist groups related to the Covid-19 pandemic.”

Last year, the James Martin Center for Nonproliferation Studies completed a detailed assessment of the risk that Islamist terrorists might use infected humans to spread a contagious disease. Our experts found that Islamist terrorists, and extremist groups more generally, are not bound by ideological or psychosocial norms that prohibit such behavior. In addition, the use of infected humans to spread a contagious disease requires comparatively limited technical know-how. Our experts concluded that such an attack “could prove to be highly lethal to the targeted population(s), provide a low cost weapon, have a traumatic psychological shock value ... undermine a country’s public health and medical infrastructure’s ability to respond, and erode faith in the government’s ability to protect the public.”

In view of this assessment, I believe the possibility that extremist groups may attempt to deliberately spread SARS-CoV-2—the virus causing the current pandemic—should not be ignored. In fact, one of the primary limiting factors to such an attack—recruiting humans willing to infect themselves—does not apply in this case; potential perpetrators would come from the ranks of those already infected with the virus. So, we are faced with a genuinely challenging task: preemption.

## Scientists prepare sewage sensors to help track outbreaks of COVID-19

Source: <https://newatlas.com/medical/paper-based-sewage-sensors-track-community-outbreaks-covid-19/>

Mar 30 – There is an arm of science focused on revealing insights about human behavior and public health by analyzing the contents



of our sewage. Known as [wastewater-based epidemiology \(WBE\)](#), this technology has become a very valuable tool widely employed by authorities around the world, and now one of the scientists on its cutting edge wants to use it to help monitor outbreaks of COVID-19. In essence, WBE is a process whereby scientists conduct chemical analyses on samples taken from sewage plants to find out what’s inside. The presence of certain metabolites could indicate the prevalence of illicit substance use in communities, for example, helping governments better understand the drug usage habits of a population.

This remains the primary way WBE is used around the globe, but it could offer far more than that. Scientists hope that rather than the

laborious process of analyzing samples in the lab, remote sensors could be installed at treatment plants that reveal the contents of samples for more efficiently.

Leading the charge in this area is Dr Zhugen Yang, a lecturer in sensor technology at Cranfield University’s Water Science Institute. Yang leads a team that is bringing together cutting-edge biomedical and chemistry techniques to build cheap, paper-based sensors that



can detect antibiotic-resistant genes to track the rise of superbugs, bacteria that can indicate community obesity levels, and pathogens that can cause outbreaks of diseases, early on in the piece. Like many scientists around the world, he and the team are now turning their attention to COVID-19.

“In the case of asymptomatic infections in the community or when people are not sure whether they are infected or not, real-time community sewage detection through paper analytical devices could determine whether there are COVID-19 carriers in an area to enable rapid screening, quarantine and prevention,” says Yang. “If COVID-19 can be monitored in a community at an early stage through WBE, effective intervention can be taken as early as possible to restrict the movements of that local population, working to minimize the pathogen spread and threat to public health.”

The paper-based sensors Zang and his team are working on would be used at treatment plants to pick up biomarkers of COVID-19 in feces and urine that make their way into the sewerage system. As it is folded and unfolded, the sensor filters the nucleic acids of pathogens, which then react with preloaded reagents to reveal the presence of certain infections. The results can be seen with the naked eye, presenting as a green circle when positive. The team imagines it could be tweaked to detect COVID-19 without too much trouble, with other research showing that the virus can be isolated from the feces and urine of infected people and survive for days in the right environment.

“We have already developed a paper device for testing genetic material in wastewater for proof-of-concept, and this provides clear potential to test for infection with adaption,” added Dr Yang. “This device is cheap (costing less than £1 (US\$1.25)) and will be easy to use for non-experts after further improvement. We foresee that the device will be able to offer a complete and immediate picture of population health once this sensor can be deployed in the near future.”

## Here's Why You Don't Need to Freak Out About Cats Getting COVID-19

By Sarah L. Caddy

Source: <https://www.sciencealert.com/can-cats-get-or-pass-on-covid-19>

Mar 30 - After reports of [two dogs testing positive for SARS-CoV-2](#) in Hong Kong, the most recent news to cause alarm among animal owners is that of a cat in Belgium with apparent symptoms of the virus that causes COVID-19.

The owner of the cat had recently tested positive for the virus. It is reported that the cat developed breathing difficulties and diarrhoea one week later. Vets at the University of Liège, Belgium then [tested the cat](#) for SARS-CoV-2 and subsequently detected the viral genome in vomit and a stool sample.

Should we now be concerned about the virus spreading to cats?

To be succinct – not yet. Several key questions need to be answered before any conclusions can be drawn from this case.

Many people are asking if the coronavirus detected in the cat really is SARS-CoV-2 or whether it could be the completely different cat-only coronavirus, which has been infecting cats worldwide for decades.

The feline coronavirus exists in two forms: one causes mild gastrointestinal disease and the other causes a highly fatal disease known as [feline infectious peritonitis \(FIP\)](#).

Feline coronaviruses look very different to SARS-CoV-2 at the genetic level. This means that as long as the correct test was run for the cat in question, it should be easy to differentiate between the two viruses.

The [standard test](#) for SARS-CoV-2 only detects the viral genome. It is very important to bear in mind that this test does not detect infectious or “live” virus particles, so it is impossible to tell whether the viral genome found in the cat was from a particle that could replicate.

To demonstrate infectivity, many more tests are needed. It is possible that the cat ate contaminated food and the virus simply passed through its gut. This explanation is less likely if large quantities of genetic material were detected in the cat, but this data has not been released.

Whereas the two canine SARS-CoV-2 cases had no obvious clinical signs relating to COVID-9, the cat at the centre of the latest media attention did have respiratory symptoms.

But as every vet knows, cats can have breathing difficulties for many reasons, from feline asthma to heart disease. Similarly, there is a long list of causes of diarrhoea in cats.

Without knowing any clinical details of this case, we can't tell whether COVID-19 was responsible for the disease or if this was just an upsetting coincidence.

Thankfully, there is still zero evidence of pets transmitting the virus to humans. It is also reassuring that a large veterinary diagnostic lab recently stated they have now [tested thousands of cat and dog samples for SARS-CoV-2](#) with no positive cases.



Also, given that as of March 30 there are [over 720,000 human cases worldwide](#), it is safe to assume that if this virus readily caused disease in pets, we would know by now.

*Sarah L Caddy, Clinical Research Fellow in Viral Immunology and Veterinary Surgeon, University of Cambridge.*

## **Hong Kong dog causes panic – but here's why you needn't worry about pets spreading COVID-19**

By Sarah L. Caddy

Source: <https://theconversation.com/hong-kong-dog-causes-panic-but-heres-why-you-neednt-worry-about-pets-spreading-covid-19-133304>

Mar 11 – A Pomeranian dog in Hong Kong grabbed the [international media's attention](#) this week after scientists found traces of coronavirus in the canine. Following confirmation that the dog's owner was positive for the virus causing COVID-19, the dog was taken from Hong Kong Island to a nearby animal quarantine facility. Subsequent [tests](#) performed on swabs collected from the dog's nose and throat unexpectedly revealed coronavirus.

These results have raised many questions and concerns. Can our dogs really catch the virus? Should we be worried about our pets getting sick? Could dogs spread coronavirus between people?

A positive test for coronavirus in this dog simply means that a small piece of viral genome was detected in a sample. PCR (a test used to detect genetic material) is a highly sensitive method of testing but is unable to tell whether coronavirus was replicating in the dog or whether the dog had simply licked contaminated surfaces in the home.

It is unknown exactly how long the virus causing COVID-19 disease, called SARS-CoV-2, can survive in the environment. A [study](#) of other coronaviruses suggests they can remain infectious for several days if the temperature and humidity are right. Given that we don't even know if the virus detected was infectious or not, we have no idea whether virus replication occurred in this particular dog. We know that SARS-CoV-2 is transmitted by droplets, so it's possible that dogs could act as dirty tissues, or "fomites", that walk the virus around if adequate hygiene is not maintained.

Whereas SARS-CoV-2 has the limelight at present, there are actually many different types of coronaviruses, and coronaviruses infecting dogs is nothing new. The first coronavirus to be reported in dogs was back in [1974](#). More recently in 2003, a [novel canine coronavirus causing respiratory disease](#) was identified in dogs in an animal shelter in the UK. This virus has since been reported worldwide.

Although canine coronaviruses are distinct from SARS-CoV-2, dogs are clearly susceptible to this family of viruses. Despite this, there are no previous instances of human coronaviruses infecting dogs or vice versa. For a virus to jump species, there are several hurdles they must overcome.

The major barrier that stops a virus infecting a new type of animal is the host-cell surface. To infect canine cells, SARS-CoV-2 must be able to bind (attach) to canine receptors. Thanks to rapid research, we now know that SARS-CoV-2 uses the proteins [ACE2](#) and [TMPRSS2](#) to gain entry into cells. Dogs have both these proteins, but they are not identical to the human versions, so the virus may not be able to use them as efficiently.

If we assume that the virus can bind, enter and replicate within canine cells (this is still a big if), then it is reasonable for dog owners to be worried about whether their dogs will become sick following infection. It is reassuring that the Pomeranian at the centre of this media attention has not shown any signs of illness. Though this is a single case study, there is no reason to believe that the human virus should cause disease in dogs at this stage.

### **Could dogs transmit SARS-CoV-2 to humans?**

To pass on coronavirus, the virus must replicate in dogs at high enough levels to be released from the body. Reports state that only low levels of the virus could be detected in the Pomeranian. How much virus does it take to infect a person? Again, we don't yet know.

We do know for a number of different viruses that, although human-to-dog transmission is theoretically possible, human-to-human spread is much more efficient. We and others have shown that dogs can be susceptible to [human norovirus](#), a major cause of vomiting and diarrhea worldwide. Yet despite millions of cases of this virus each year, only a [single definitive instance](#) of human-to-dog transmission has been reported. Full genome sequencing was instrumental in that particular case, and



will also be required to conclusively prove a role for dogs in the current SARS-CoV-2 outbreak.

Even in the worst-case scenario of coronavirus being able to replicate in dogs at reasonable levels, it is safe to assume that you are much more likely to be infected by your neighbor than your dog. However, it is essential to practice good hygiene around any pets. This will prevent them from inadvertently carrying viruses on their coats and spreading it from person to person. Please cough into your elbow, not on to your dog.

*Sarah L. Caddy is a Clinical Research Fellow in Viral Immunology and Veterinary Surgeon, University of Cambridge.*

## CBRN tests for Covid-19

By the Editor

### Covid-19

Anosmia, hyposmia and dysgeusia are recognized as – sometimes preliminary – symptoms of covid-19 infection.

### CBRN

We test CBRN gas mask seal with a variety of substances in order to assure that the mask is perfectly fit. In that respect, we use:

(1) *Isoamyl acetate* (banana oil) around the contour of the mask. It should be noted that a small percentage of people cannot smell "banana".

(2) *Bitrex spray* (denatonium benzoate – the Guinness World Records lists Bitrex as 'the most bitter substance in the world'). This test is a bit more complex and requires some simple equipment provided with the product.

(3) *Mercaptan* - also known as methanethiol; it is a harmless but pungent-smelling gas which has been described as having the stench of rotting cabbages or smelly socks. It is often added to natural gas, which is colorless and odorless, to make it easier to detect.

### CBRN testing for Covid-19

Two of the tests mentioned above (banana oil and Bitrex) could be used a simple/fast screening tool at hospital's emergency department or for suspicious cases or even if the related lab (molecular or IgG/IgM rapid) test are negative. Both products are available on the Internet. **NOTE:** Consider also "sniff tests" for Parkinson's and Alzheimer's disease; even "ketchup" will work!

## A New Way of Developing Vaccines for COVID-19 Could Help the World to Prepare for Future Outbreaks

Source: <http://www.homelandsecuritynewswire.com/dr20200331-a-new-way-of-developing-vaccines-for-covid19-could-help-the-world-to-prepare-for-future-outbreaks>

Mar 31 – Vaccines are one of our greatest tools to protect against infectious diseases and the world waits with bated breath for a vaccine against coronavirus (COVID-19). The wait might be much shorter if we can hone new methods of vaccine development. Charlie Weller writes for [Wellcome Trust](#) that although it has been just nine weeks since scientists around the world received the genetic code for COVID-19, a [phase 1 clinical trial for a vaccine \(mRNA-1273\)\(opens in a new tab\)](#) has already begun. This timescale from genomic sequence to clinical trial is unprecedented in vaccine development.

This vaccine, unlike traditional vaccines, has been developed using ribonucleic acid (RNA) technology. If successful, the cutting-edge method could revolutionize vaccine development for future disease outbreaks.

## Uncertainty about Facts Can Be Reported Without Damaging Public Trust in News: Study

Source: <http://www.homelandsecuritynewswire.com/dr20200331-uncertainty-about-facts-can-be-reported-without-damaging-public-trust-in-news-study>

Mar 31 – The numbers that drive headlines – those on Covid-19 infections, for example – contain significant levels of uncertainty: assumptions, limitations, extrapolations, and so on.



Experts and journalists have long assumed that revealing the ‘noise’ inherent in data confuses audiences and undermines trust, say University of Cambridge researchers, despite this being little studied.

Now, new research has found that uncertainty around key facts and figures can be communicated in a way that maintains public trust in information and its source, even on contentious issues such as immigration and climate change.

Researchers say they hope the work, funded by the Nuffield Foundation, will encourage scientists and media to be bolder in reporting statistical uncertainties.

“Estimated numbers with major uncertainties get reported as absolutes,” said Dr Anne Marthe van der Bles, who led the new study while at Cambridge’s Winton Centre for Risk and Evidence Communication.

“This can affect how the public views risk and human expertise, and it may produce negative sentiment if people end up feeling misled,” she said.

Co-author Sander van der Linden, director of the Cambridge Social Decision-Making Lab, said: “Increasing accuracy when reporting a number by including an indication of its uncertainty provides the public with better information. In an era of fake news that might help foster trust.”

The team of psychologists and mathematicians set out to see if they could get people much closer to the statistical ‘truth’ in a news-style online report without denting perceived trustworthiness.

Cambridge [says](#) that they conducted five experiments involving a total of 5,780 participants, including a unique field experiment hosted by BBC News online, which displayed the uncertainty around a headline figure in different ways.

The researchers got the best results when a figure was flagged as an estimate, and accompanied by the numerical range from which it had been derived, for example: ‘...the unemployment rate rose to an estimated 3.9 percent (between 3.7 percent–4.1 percent)’.

This format saw a marked increase in the feeling and understanding that the data held uncertainty, but little to no negative effect on levels of trust in the data itself, those who provided it (e.g. civil servants) or those reporting it (e.g. journalists).

“We hope these results help to reassure all communicators of facts and science that they can be more open and transparent about the limits of human knowledge,” said co-author Prof Sir David Spiegelhalter, Chair of the Winton Centre at the University of Cambridge.

Catherine Dennison, Welfare Program Head at the Nuffield Foundation, said: “We are committed to building trust in evidence at a time when it is frequently called into question. This study provides helpful guidance on ensuring informative statistics are credibly communicated to the public.”

The findings are published today in the journal [Proceedings of the National Academy of Sciences](#).

Most experiment participants were recruited through the online crowdsourcing platform Prolific. They were given short, news-style texts on one of four topics: U.K. unemployment, U.K. immigration, Indian tiger populations, or climate change.

Uncertainty was presented as a single added word (e.g. ‘estimated’), a numerical range, a longer verbal caveat – ‘there is uncertainty around this figure: it could be somewhat higher or lower’ – or combination of these, as well as the ‘control’ of a standalone figure without uncertainty, typical of most news reporting.

They found that the added word did not register with people, and the longer caveat registered but significantly diminished trust – the researchers believe it was too ambiguous. Presenting the numerical range (from minimum to maximum) had the right balance of signaling uncertainty with little evidence for loss of trust.

Prior views on contested topics within news reports, such as migration, were included in the analysis. Although attitudes towards the issue mattered for how facts were viewed, when openness about data uncertainty was added it did not substantially reduce trust in either the numbers or the source.

The team worked with the BBC to conduct a field experiment in October 2019, when figures were released about the U.K. labor market.

In the BBC’s online story, figures were either presented as usual, a ‘control’, or with some uncertainty – a verbal caveat or a numerical range – and a link to a brief survey. Findings from this ‘real world’ experiment matched those from the study’s other ‘lab conditions’ experiments.

“We recommend that journalists and those producing data give people the fuller picture,” said co-author Dr Alexandra Freeman, Executive Director of the Winton Centre.

“If a number is an estimate, let them know how precise that estimate is by putting a minimum and maximum in brackets afterwards.”

Sander van der Linden added: “Ultimately we’d like to see the cultivation of psychological comfort around the fact that knowledge and data always contain uncertainty.”

“Disinformation often appears definitive, and fake news plays on a sense of certainty,” he said.



“One way to help people navigate today’s post-truth news environment is by being honest about what we don’t know, such as the exact number of confirmed coronavirus cases in the UK. Our work suggests people can handle the truth.”

Last month, David Spiegelhalter launched a podcast about statistics, ‘[Risky Talk](#)’. In the first episode he discusses communicating climate change data with Sander van der Linden and Dr Emily Shuckburgh, leader of the University’s new climate initiative Cambridge Zero.

## Israel’s DDR&D Adapting Military Technology for Fight Against COVID-19

Source: <https://i-hls.com/archives/100157>



Mar 30 – A unique sticker, developed for military purposes, will upgrade face masks and protect medical staff. The [National Emergency Team](#) in the Directorate of Defense Research and Development (DDR&D), headed by Brig. Gen. (Res.), Dr. Dani Gold, has decided to adopt the development made by Prof. Eyal Zussman of the Technion’s Faculty of Mechanical Engineering – a unique sticker that may be attached to a face mask, in order to increase its protective capabilities.

The adaptation of this tool, dubbed “Maya”, for current needs, was made in collaboration with the Galilee Medical Center in Nahariya (northern Israel). This advanced addition will render masks more effective and reduce the risk of contagion among medical staff.

According to the Ministry of Defense Spokesperson’s statement, the Head of the Nanoengineering Lab at the Technion’s Faculty of Mechanical Engineering, Prof. Eyal Zussman, and his team have developed a unique sticker, which may be attached to a standard surgical mask in order to improve its effectiveness.

**The sticker is produced using a 3D printer, and is**



**composed of nanoscale fibers coated with disinfectants – a mechanism that enhances the capture and neutralization of nanoscale particles.** The sticker was developed in collaboration with the scientists of the Department of Chemistry and Biological Infrastructure in the DDR&D, led by the department’s head Dr. Dan Greenstein, and accompanied by Prof. Samer Srouji, Director of the Oral Surgery Institute at the Galilee Medical Center in Nahariya.

The Ministry of Health has given its initial approval of the sticker and in the coming days, a pilot will begin at the Galilee Medical Center to assess the medical staff’s implementation of the new tool.

The “**Maya**” sticker joins a comprehensive set of tools developed and adapted by the DDR&D to combat the COVID-19 virus on every level: rapid diagnosis and early detection of virus carriers, curbing the spread of the virus, monitoring patients and preventing the infection of medical professionals.

The National Emergency Team led by the Director of the DDR&D, Brig. Gen. (Res.), Dr. Dani Gold, continues to identify and develop advanced technological solutions to help fight the spread of the COVID-19 virus. The DDR&D staff and their partners are working in all areas of research and development to adapt technology developed for military/defense purposes, for civilian needs in light of the global pandemic.

The work is done around the clock and in shifts,

in order to quickly reach the implementation stage in hospitals.



## Study Identifies Medications Safe to Use in COVID-19 Treatment

Source: <http://www.homelandsecuritynewswire.com/dr20200402-study-identifies-medications-safe-to-use-in-covid19-treatment>

Apr 02 – A recent study has found that there is no evidence for or against the use of non-steroidal anti-inflammatory drugs such as ibuprofen for patients with COVID-19. The study, led by researchers at King's College London, also found other types of drugs, such as TNF blockers and JAK inhibitors safe to use.

89 existing studies on other coronavirus strains such as MERS and SARS, as well as the limited literature on COVID-19, were analyzed to find out if certain pain medications, steroids, and other drugs used in people already suffering from diseases should be avoided if they catch COVID-19.

Kings College [notes](#) that there had been some speculation that non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen might make things worse for some COVID-19 patients, but the researchers did not find evidence to support this statement. Other types of drugs such as TNF blockers and JAK inhibitors, used to treat arthritis or other forms of inflammation, were also found to be safe to use. Another class of drug known as anti-interleukin-6 agents is being investigated for helping to fight COVID-19, although there is no conclusive proof yet.

The researchers found that low amounts of prednisolone or tacrolimus therapy may be helpful in treating COVID-19.

## Antibodies in the Blood of COVID-19 Survivors Know How to Beat Coronavirus – and Researchers Are Already Testing New Treatments that Harness Them

Source: <http://www.homelandsecuritynewswire.com/dr20200402-antibodies-in-the-blood-of-covid19-survivors-know-how-to-beat-coronavirus-and-researchers-are-already-testing-new-tre>

Apr 02 – Amid the chaos of an epidemic, those who survive a disease like COVID-19 carry within their bodies the secrets of an effective immune response. “[Virologists like me](#) look to survivors for molecular clues that can provide a blueprint for the design of future treatments or even a vaccine,” Ann Sheehy writes in [The Conversation](#).

Researchers are [launching trials now](#) that involve the transfusion of blood components from people who have recovered from COVID-19 to those who are sick or at high risk. Called “[convalescent-plasma therapy](#),” this technique can work even without doctors knowing exactly what component of the blood may be beneficial.

The extraordinary power of this passive immunization has traditionally been challenging to harness, primarily due to the difficulty of obtaining significant amounts of [plasma](#) from survivors. “Fast forward to the 21st century, and the passive immunization picture changes considerably, thanks to steady advances in molecular medicine and new technologies that allow scientists to quickly characterize and scale up the production of the protective molecules,” she writes.

## British American Tobacco Working on Plant-Based Coronavirus Vaccine

Source: <http://www.homelandsecuritynewswire.com/dr20200402-british-american-tobacco-working-on-plantbased-coronavirus-vaccine>

Apr 02 – [British American Tobacco](#), the maker of brands including Lucky Strike, Dunhill, Rothmans and Benson & Hedges, has said it has a potential coronavirus vaccine in development [using tobacco plants](#). Mark Sweney writes in the [Guardian](#) that BAT has turned the vast resources usually focused on creating products that pose health risks to millions of smokers worldwide to battling the global pandemic.

BAT [said](#) its US biotech subsidiary, Kentucky BioProcessing (KBP), has moved to pre-clinical testing and that it will work on the vaccine on a not-for-profit basis.

BAT said it had cloned a portion of the genetic sequence of the coronavirus and developed a potential antigen. The antigen was then inserted into tobacco plants for reproduction and, once the plants were harvested, the antigen was purified. It is now undergoing pre-clinical testing.



## InflaRx Starts Dosing COVID-19 Patients in Europe

Source: <http://www.homelandsecuritynewswire.com/dr20200402-inflarx-starts-dosing-covid19-patients-in-europe>

Apr 02 – German biopharmaceutical firm [InflaRx](#) has enrolled and dosed the first patient in a clinical study of IFX-1 in Covid-19 patients with severe pneumonia in the Netherlands.

[Clinical Trials Arena](#) reports that IFX-1 is **a monoclonal anti-human complement factor C5a antibody designed to inhibit the biological activity of C5a**. The drug is not believed to impact the formation of the membrane attack complex (C5b-9).

According to preclinical data, IFX-1 showed ability to control the inflammatory response-related tissue and organ damage via a selective blockade of C5a in the adaptive, randomized, controlled trial.

The drug was found to be well tolerated in around 300 clinical trial participants, according to the company.

IFX-1 is currently in development to treat inflammatory conditions such as hidradenitis suppurativa, ANCA-associated vasculitis, and pyoderma gangraenosum.

## A Corona Test that Can Be Done Over the Phone

Source: <http://www.homelandsecuritynewswire.com/dr20200402-a-corona-test-that-can-be-done-over-the-phone>

Apr 02 – Voice analysis can achieve amazing results, such as accurately guessing the shape of a speaker's face, accurately guessing whether the speaker has been drinking tea or coffee, or diagnosing a variety of different diseases. While new, this field has already drawn the interest of academics, Israeli startups, and companies around the world.

Shem Ur, a [professional inventor](#), writes in the [Times of Israel](#) that he has decided to develop an over-the-phone coronavirus phone test. He writes:

Right now, we are working to create software that can detect the coronavirus infection using only a person's voice. For this, we need voice data from as many people as possible. Please help us by completing our voice questionnaire at [Corona Voice Detect](#).

If you know anybody who has tested positive, please ask them to complete the questionnaire as well. Their voice data is especially necessary for creating a program that can identify infections. If you think your friends, relatives, or anyone else might want to do this, please share it with them. The ability to identify infections is key to managing the situation and every piece of data will help us do this more effectively.

## The UK plans to issue coronavirus 'immunity passports' so people can leave the lockdown early

Source: <https://www.businessinsider.com/uk-plans-coronavirus-immunity-passports-so-brits-can-leave-lockdown-2020-4>

Apr 02 – The UK plans to roll out "immunity passports" to people who have already contracted COVID-19 to allow them to return to "normal life," the Health Secretary Matt Hancock said on Thursday.

"We are looking at an immunity certificate," Hancock said at a Downing Street press conference. "People who have had the disease have got the antibodies and then have immunity can show that and therefore get back as much as possible to normal life."

He added: "That is something we will be doing and will look at, but it is too early in the science ... to be able to put clarity around that."

The UK has already ordered millions of antibody tests. However, the tests have so far proven ineffective, and the government has yet to approve them for use.

"The early results of some of them have not performed well," Hancock said. "But we hope the later tests we have got are reliable enough for people to be confident in using."

Hancock said hundreds of thousands of tests could take place every day once an antibody test is identified.

However, coronavirus testing has so far had mixed success around the world. Spain was recently [forced to return tens of thousands of rapid coronavirus tests](#) from a Chinese company after they were found to provide inconsistent results.

Some tests have [demonstrated false positives](#), detecting antibodies to much more common coronaviruses, Quartz reported.

Scientists also remain unsure about the extent to which a past infection could prevent reinfection [and how long an immunity would remain](#).

Germany is also examining the [possibility of issuing immunity passports](#).



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Researchers at the Helmholtz Centre for Infection Research in Germany plan to send out hundreds of thousands of antibody tests over the coming weeks that could allow people to break free of their lockdowns, [Der Spiegel reported on Friday](#).

If the project is approved, the researchers will test 100,000 people at a time starting this month, Der Spiegel said.

The tests are designed to detect whether a person has developed antibodies to the COVID-19 virus. The antibodies indicate that the tested person was at one time a carrier and may have built up immunity.

A positive test could allow the person to leave the lockdown while many positive tests could allow governments to ease restrictions in areas with "[herd immunity](#)."

Gerard Krause, the epidemiologist leading the project, told the magazine that people who are immune "could be given a type of vaccination card that, for example, allows them to be exempted" from "restrictions on their work."

Germany has one of the lowest COVID-19 death rates, which some experts and commentators have [said is a result of the extensive testing](#) rolled out by Chancellor Angela Merkel's government.

## Interactive Stanford website models various COVID-19 containment methods

Source: <https://newatlas.com/science/interactive-stanford-model-covid19-coronavirus-social-distancing/>

Apr 02 – A team of researchers from Stanford University has developed an interactive website that allows users to create their own custom model estimating how different social distancing interventions affect the spread of COVID-19 over time. The primary goal of the website is to highlight how the length of a first social lockdown, and the specific measures that follow, influence the degree of a viral resurgence later in the year.

### Predicting the effects of COVID intervention strategies

Starting parameter values have been gathered from previous work. However, because parameter values are likely to be variable across space and time, do not interpret our results as quantitative predictions for any specific location. Our goal is to show, qualitatively, the robust result that a second peak arises under a wide variety of intervention scenarios. Our ability to make quantitative predictions will improve as more data becomes available; parameter values will continue to be updated.

**Starting population size**

**FIRST intervention strategy**

Social Distancing

Threshold Based ('Lightswitch Method')

**SECOND intervention strategy**

Social Distancing

Threshold Based ('Lightswitch Method')

**Isolation of symptomatic infected individuals?**

No

Yes

**Number of simulations**

 (range: 5 to 200)

**Class to plot:**

Total Infected

Wait 3 seconds after the application loads before clicking simulate to avoid an error

SIMULATE

**First Intervention**

Start date of intervention (days since first case)

 (range: 0 to 100)

Length of intervention (number of days)

 (range: 0 to 200)

Proportion of baseline contact rate (0 - 1)

 (range: 0 to 1)

**Second Intervention**

Start date of intervention (days since first case)

 (range: 100 to 550)

Length of intervention (number of days)

 (range: 0 to 450)

Proportion of baseline contact rate (0 - 1)

 (range: 0 to 1)

Threshold quantity: number of daily hospitalized cases before intervention STARTS

 (range: 0 to 100)

Threshold quantity: number of daily hospitalized cases before intervention ENDS

 (range: 0 to 100)

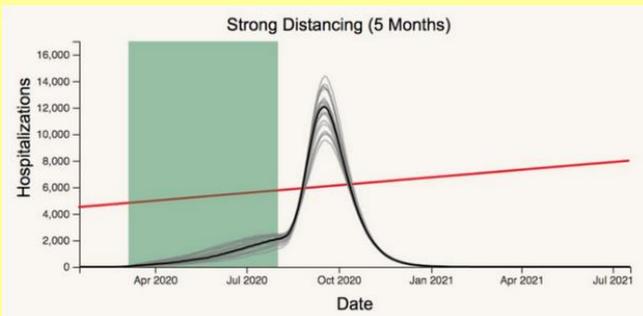
"Our models explore interventions that change over time," explains Erin Mordecai, a Stanford biologist working on the project. "For example: What happens if we wait one week longer before issuing a shelter in place order? How long do we expect a given percent reduction in social contacts to need to be sustained before we start to see a decline in cases? How can we use adaptive strategies that actively turn off and on interventions as we track the number of hospitalized cases?"

The interactive model presented by the researchers is not designed to present specific location-based predictions, but instead offers general results based on a staged intervention



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strategy. Users can input their own data, plotting the start dates for two interventions and overall lengths of social distancing periods. The model offers linear and logarithmic scale outputs, plotting everything from the total number of people infected and hospitalized, to total recoveries or fatalities.



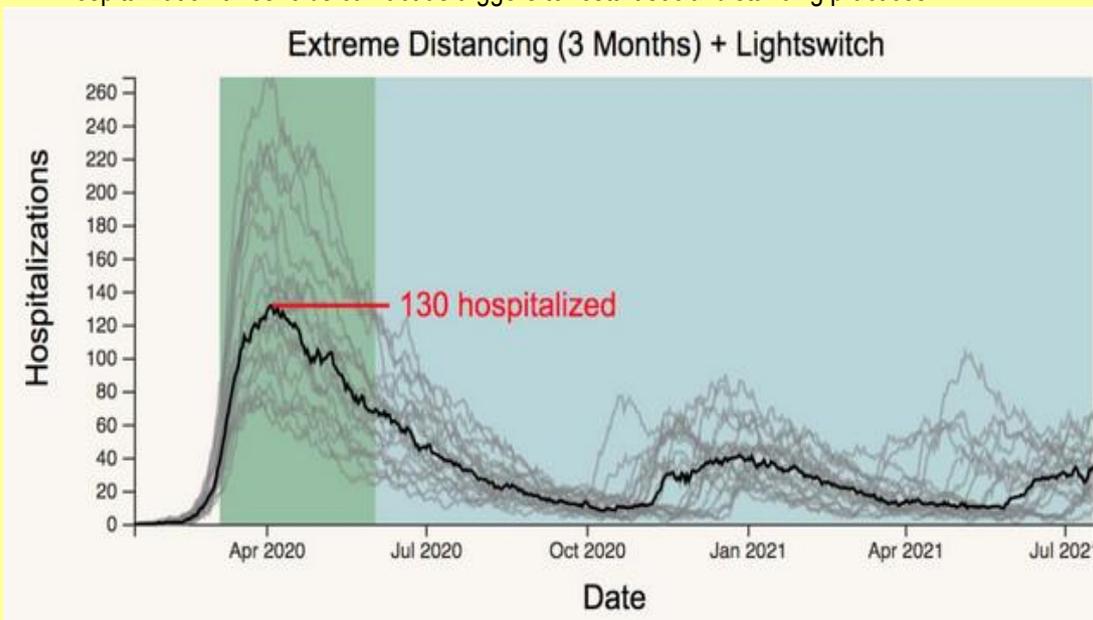
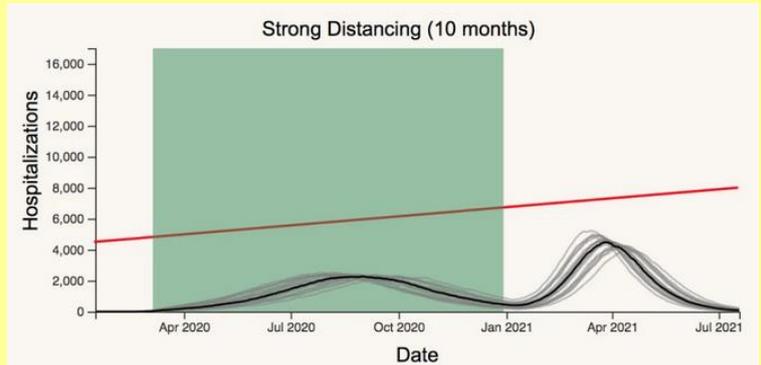
One of the big takeaways from the model is how dangerous a second wave of the disease could be if initial social distancing measures are lifted without active measures being put in place. Mordecai uses a light-switch analogy to describe how social distancing measures may have to be switched on and off to keep the local community spread of COVID-19 at a level that doesn't overwhelm local hospitals.

"We don't need to be totally locked down for a year or more," Mordecai says. "Adaptive strategies that actively turn on and off interventions – like a light-switch – can allow for periods of greater mobility while still keeping the

epidemic at levels our healthcare system can manage. Improved testing capacity will allow us to use more targeted approaches to identify and isolate infected people and their social contacts."

The above image is a model showing how a single strong bout of social distancing will effectively flatten the curve, as long as everyone remains isolating. However, as soon as those measures are relaxed the spread will peak above levels manageable by health care systems. Only the unrealistic proposition of at least 10 straight months of strong social distancing could prevent a dangerous second peak.

The model of the light-switch method (seen below) offers an indication of how, following a strong first wave of social distancing, the spread of COVID-19 may be kept under control. Certain local hospitalization thresholds can act as triggers to restart social distancing practices.



Mordecai suggests this interactive website will be updated over time as new data offers greater predictive modeling. As countries such as China and South Korea begin to lift initial lockdown measures it will become clearer what subsequent mitigation strategies will be necessary to avoid a second transmission peak.

"At a minimum, we plan to update parameters as more data become available and other scientists continue to make better estimates," says Mordecai. "We will update our baseline intervention scenarios

to reflect those that are actually implemented, and may expand the interventions we consider if new plans are proposed. Ideally, we would eventually be able to fit our model to infection dynamics in specific locations so that user-chosen scenarios better reflect the future of COVID-19 in those areas."

►► Take a look at the interactive model, and plot [your own scenarios here](#).



## Britain's burial crisis – and how to solve it

Source: <https://www.ft.com/content/88bdc01c-29a0-11e9-a5ab-ff8ef2b976c7>



Feb 08 – The debate about solving cemetery overcrowding taps into deep-seated fears about life and death [Share on Twitter \(opens new window\)](#) [Share on Facebook \(opens new window\)](#) [Share on LinkedIn \(opens new window\)](#) Daniel Cohen February 8 2019 Print this page On a wet, windy Thursday in December, Bicester Village swarms with shoppers. The Oxfordshire retail complex receives about seven million visitors a year, lured by designer clothes at discount prices. Across the road, there's a sports field. Beyond that, in view of the shopping centre, is Bicester's cemetery. It's a pleasant, simple space: a long path runs through it, flanked by lines of trees. The oldest of the weathered gravestones I saw dated back to 1865. Above ground, at least, the cemetery doesn't look particularly crowded. But almost all the 5,000-plus plots are occupied. When it ran out of space in the past, it just kept growing. It took over one field, then another. To clear space for more graves, workers removed benches and dug up trees — a practice known in the burial industry as cramming.

Now, however, the cemetery has expanded as far as it can. As of last April — the most recent date for which Bicester council provides figures — it only has 36 unreserved burial plots left, and another 23 for cremated remains. In a town of 30,000-plus, that's enough to get it through the next couple of years, provided there aren't any severe flu outbreaks. Bicester is not alone. At a time when, each year, 140,000 people in the UK still choose to be buried, cemeteries around the country are running out of space. In 2013, a BBC study found that a quarter of England's local authorities — which oversee the overwhelming majority of cemeteries — expected those they managed to be full by 2023. Two London boroughs, Hackney and Tower Hamlets, have already stopped providing burials in their boroughs altogether. Meanwhile, there have been deep cuts to local authorities' budgets, forcing them to spend less on cemetery services; as a result, burial has become increasingly expensive. Just as the housing crisis has put home ownership out of the reach of growing numbers of people, so too burial plots risk becoming unaffordable.

For the living, cemeteries are sites of remembrance and mourning. They can be places to wander, or even to jog through. But most of the time, we prefer not to think about what actually happens there. That has allowed escalating problems to go unaddressed; it means that possible solutions have been overlooked, or dismissed as too controversial. Getting to grips with the lack of burial space requires weighing the rights of the dead, as well as of the living that they leave behind, and asking how far society should go to accommodate the minority of people who still want to be buried. When I asked Julie Rugg, who leads the University of York's Cemetery Research Group, whether the country was experiencing a burial crisis, she sounded exasperated. "The crisis is built into our system. We've always been at crisis levels," she said. "There's a red light that's been shining for decades."

A cemetery doesn't suddenly find itself full. Managers know how many plots are left; how many burials take place a year. That gives a sense of how many years it has left. Somehow, more space has to be found — or created — before time runs out. For local councils,



cemeteries are just another logistical matter, alongside rubbish collection and street lights. In Bicester, the town council started looking for a new site in the 1990s. It quickly came up against a number of problems. One, distinctive to the region, was geological. The water table in the surrounding area is unusually high, so it's hard to find ground where burial plots can be dug without hitting water. Another challenge, familiar elsewhere, was the price of land. A plan to build more than 10,000 new homes in Bicester between 2013 and 2031 has pushed up the cost of development land to about £1m per acre. Farmers wanted to sell it for its full value, rather than to the council at a discount.

The council resorted to temporary solutions. In 2006, it stopped letting people reserve burial plots in advance; from then on, they became available only when someone died. Underground, meanwhile, it made the most of whatever space it could find. Many of the graves had originally been used to bury just one person, even though they were often so deep that there was enough room above for another. So, where possible, new plots were created by opening one of those graves and burying someone else on top. "It's like using the top half of a bunk bed if nobody's sleeping in it," says Rugg. This technique, known as reclaiming, accounts for about 30 per cent of burials in England and Wales today. Without it, Bicester's cemetery would already be full. After years of looking for a new site, Bicester may have finally found one. One of its new developments, an "eco town" made up of energy-efficient homes, has to dedicate 40 per cent of its land to green space — and some of that has been earmarked for a cemetery, subject to planning permission. If that goes ahead, it will, the council hopes, provide the town with enough burial space to get through the next 200 years. In other parts of the country, however, establishing a new cemetery simply isn't an option. Southwark, a borough in south London, realised at the start of the decade that it would soon run out of new plots. But Richard Livingstone, a local councillor who is the cabinet member for environment, told me that the council quickly ruled out the possibility of finding a new site within Southwark. "We're an intensely built inner-London borough," he says. "There really wasn't the opportunity to find new land for burials." Instead, Southwark decided to try to eke out space within two of its existing cemeteries, Camberwell Old Cemetery and Camberwell New Cemetery, and the council land surrounding them. At Camberwell Old, it turned its attention to an overgrown section of public graves — common graves, at least 100 years old, that didn't have any memorials commemorating those buried there. The council raised the land by 8ft, creating space for new burials, while leaving the bodies below.

At Camberwell New, a small space is being used for the first time. When I visited, it had only been taking burials for a couple of weeks, and there were already several graves. Nearby, just next to the cemetery, the council has converted a former plant nursery, which will come into use later this year. But in a local authority that handles about 400 burials a year, those new areas are expected to fill up within a decade. Southwark's decision to develop the land at the cemeteries has met resistance from some local residents, who don't want to lose woodland to new graves. This points to the dilemmas councils face when they seek to create burial space in already crowded areas. Burial is an essential service, but it may not feel quite so essential to those who don't plan to be buried. "We certainly have some key groups in our borough for whom burial is an absolute must," says Livingstone. "There are other groups that very much value the green space that the cemeteries offer to them."

As burial space becomes scarcer, burials themselves are becoming more expensive. Unsurprisingly, the cost is highest in London: according to a study by Beyond, a funeral advice website, Highgate Cemetery, a private cemetery in London, is the country's most expensive. It charges £19,940 for the right to a grave, with machine digging adding a further £2,035. But prices have risen across the country. A study by insurance company Sun Life found that the average cost of a basic burial in the UK increased 70 per cent between 2008 and 2018, to almost £4,800. Historically, local authorities have tended to subsidise the cost of burial. "There are very few cemeteries that run at a profit, let alone break even," says Alan Fairchild, from the Society for Local and Council Clerks. But since the introduction of austerity, which halved the funding that local authorities receive from the government in real terms between 2010/11 and 2017/18, councils have had to cut costs — including cutting subsidies for burial. "Local authorities now are looking to ensure that services like burial provision do at least pay their way," says Fairchild.

Varela If cemeteries do have to pay their own way, then they are ever more dependent on income from the sale of burial rights. As the number of burial plots falls, they have to charge more in order to generate that income. And when local authorities do manage to buy sites for new cemeteries, they have to pass on the cost of the land, in the form of burial fees. After years of searching for a site, Cardiff council has approved plans for a cemetery that is budgeted to cost £3m. "The council borrows the money on my behalf, and I have to pay back a loan, if you like, over the life of that cemetery," Martin Birch, the head of Cardiff's bereavement services, tells me. "So fees have to go up to make those payments." Half a century has passed since cremation became a more popular option than burial. But today, the demand for burial shows no signs of dwindling: the proportion of people choosing it remains steady, at about a quarter. For some, there's simply no alternative. In Islam, and most forms of Judaism, cremation is prohibited. There are more than three million Muslims — about 5 per cent of the UK population — and the numbers are growing. Traditionally, Muslims in the UK preferred to be buried in their ancestral countries; today they are more often buried here. Gardens of Peace, the largest dedicated Muslim cemetery in the country, opened its first site



in east London in 2002. Within 15 years, all of its 10,000 graves were occupied. A second site nearby opened last year and a third has already been purchased. “Certainly, it won’t be enough, in terms of longevity,” says Mohamed Omer, a member of the cemetery’s board. The Muslim communities in Manchester and Birmingham have the same problem, he says: “Wherever there is a higher Muslim population, there is an issue in terms of land.”

You don’t have to be religious, of course, to want to be buried. For Darren Hancock, a funeral director in Bicester, the decision is a matter of taste: “It’s whether you like chocolate or Marmite or what.” Yet such preferences can have deep roots. “When people think about their funerals, in one sense it is their imagination playing with their own death — with identity,” says Douglas Davies, the director of Durham University’s Centre of Death and Life Studies. That sense of identity can depend on the idea of remaining whole and recognisable in death, even if everything will eventually decompose. It’s a hangover, Davies suggests, from folk beliefs that we will need our bodies in the afterlife. And it can make cremation a terrifying prospect. “Some people really do have very, very strong objections,” says Rugg. “It would cause them an awful lot of anxiety to think that they themselves, or their loved ones, were cremated.” Local authorities aren’t legally obliged to provide burial space for their residents — and Fairchild warns that as they continue to face financial pressures, more will cease to offer burials. That could force people to bury their relatives far from their homes, as the remaining graves nearby become increasingly expensive. “There’ll be a situation where burial will start to become a kind of luxury product,” Rugg says. “You can buy it if you can afford it.” The parallels with housing are obvious. In this scenario, burial space in cities will only be within the means of the wealthy; everyone else will be forced further out. Fairchild fears we could even see a trade in burial plots: people who purchased a burial right in advance, years ago, may be tempted to sell it on now it’s worth far more. Then there’s the question of tenure. In Britain, graves themselves aren’t purchased; you buy a burial right. When cemeteries were first established, these rights lasted “in perpetuity”. But today, they are more likely to be for 50 years — or even half that. Once that period is up, the family of the deceased can pay to extend the lease, up to a maximum of 99 years. Rising prices might mean that a family can afford a grave only for a shorter period. An extreme example of such time limits can already be seen in Dhaka, the capital of Bangladesh: burial space is in such short supply that many people get a plot only for two years. Once that time is up, another body is added.

Everyone I have spoken to in the burial industry agrees that the pressure on cemeteries has to be eased. Proposed solutions include making it easier to open a cemetery by relaxing planning restrictions or requiring property developers to provide land or funding for cemeteries, as part of new developments. The rise of natural burials, in woodland and meadows, has been welcomed in some quarters as a form of burial that can take place outside cemeteries. Another possibility is that new alternatives may, in time, reduce the demand for burial. “There are other technologies that are emerging,” says Julie Dunk, chief executive of the Institute of Cemetery and Crematorium Management. “But they’re in the early stages at the moment.”

One process, resomation (also known as water cremation), is already available in Canada and the US. The body is first dissolved in an alkaline solution, which reduces it to a skeleton; afterwards, the bones are crushed, producing a coarse powder. © Lucas Varela But what if the solution is something that’s been happening for centuries? Britain’s churchyards, for which the earliest records date back to the eighth century, long ago found a way to keep creating more space: a process called grave reuse, which, unlike reclamation, allows remains to be disturbed. After a body has spent a few decades in the ground, it has decomposed; only fragments of bone and coffin material are left. With the “lift and deepen” method, those remains are put in a container and interred deeper in that grave. The space above can then be used again, for new burials — and once enough time has elapsed, the process can be repeated. Grave reuse is common across Europe and much of the world. But while it is permitted in Britain’s churchyards, the municipal and private cemeteries where most people are buried are covered by different sets of laws, which don’t, for the most part, allow reuse. “So, whenever we use space, we can’t go back and use it again,” says Rugg. “It’s like almost any house you build, nobody can ever live in it again — one family, forever.”

### London is an exception

Since 2007, the city’s municipal cemeteries have been permitted to reuse graves that are at least 75 years old. So far, however, the only one to take it up is City of London cemetery, in the east London neighborhood of Manor Park. It opened in 1856, when concerns over public health led to the closure of the Square Mile’s churchyards; their contents were dug up and interred at the new site. Between the remains that were moved and the burials and cremations since then, the cemetery houses the remains of about a million people. Covering 200 acres, it’s the largest cemetery in the country. It feels like a small town in its own right: the roads running through it have names. City of London cemetery is run by Gary Burks, a broad, softly spoken man who has worked there for 34 years. Like other people I have met in the industry, he comes across as caring, but in a restrained way. He explains that, at City of London, appropriate graves for reuse are identified by going through the cemetery’s records. The cemetery then tries to contact relatives of the deceased; it puts ads in local newspapers,



announcing which graves it plans to reuse, and puts up posters around the cemetery. If, after six months, no one has got in touch to voice their objections — and the cemetery rarely hears back — the grave is reused. The headstone is reversed, to ensure that the old inscription is preserved, and a new inscription is engraved on the other side. So far, about 1,500 graves have been reused. It allows City of London to cope with the 1,000 burials that take place there every year, without worrying about filling up. “This cemetery has the ability to keep providing for our local areas indefinitely,” says Burks. And by creating more space, reuse enables the cemetery to charge less for plots. The reused graves are far cheaper than the equivalents on City of London’s virgin land: they start at £2,685 for a 30-year lease, an unusually low price for London. City residents are given a discount, as is customary at municipal cemeteries. At City of London, Burks says, grave reuse has been introduced without controversy. When Southwark said it was considering it, though, campaigners expressed misgivings. The experts I spoke to attribute such reactions to a misunderstanding of what reuse actually involves — as if it means corpses will be dug up and dumped elsewhere. “When someone is informed of the issue, then the sensibleness of it increases in their mind,” says Douglas Davies. For reuse to be introduced in municipal cemeteries across England and Wales, legislation must be passed. “A lot of politicians are scared of addressing the point because they see it as being so sensitive,” says Martin Birch in Cardiff. When I approached the Ministry of Justice about its plans, a government spokesperson said: “We are currently considering whether action is required in order to address issues such as limited burial space in some areas and rising costs.” Like many of the people I spoke to, Birch is frustrated by politicians’ inaction, because he feels reuse could make a huge difference. “It would save us,” he says. “We wouldn’t have to keep looking for new space. Because at the moment, the only option I have, when a cemetery is full, is to open up a new cemetery.” We expect cemeteries to remain the same kinds of place they have always been. But to do that — to keep burying the dead — they have to adapt, as they have throughout their history. Sometimes that means expanding or converting space. And sometimes that comes from work underground, out of sight, while above ground everything goes on as before. Burks tells me that City of London Cemetery looks just as it did when he first visited it as a child, in the 1970s. “One of the beauties of this place,” he says, “is that things change, the cemetery doesn’t.”

## **Critical Shortage of Ventilators and Protective Gear Persists**

*By Stephen Lendman, April 03, 2020*

Governor of hard-hit NY state Anthony Cuomo stressed that if a patient “needs a ventilator” and they’re all in use because of an insufficient supply, “the person dies” from suffocation. That’s the disturbing reality of a critical national shortage at a time when they’re vitally needed. As daily COVID-19 infections increase exponentially in the US, numbers on Friday will way exceed 250,000 by day’s end.

## **Can We Trust the WHO?**

*By F. William Engdahl, April 03, 2020*

The most influential organization in the world with nominal responsibility for global health and epidemic issues is the United Nations’ World Health Organization, WHO, based in Geneva. What few know is the actual mechanisms of its political control, the shocking conflicts of interest, corruption and lack of transparency that permeate the agency that is supposed to be the impartial guide for getting through the current COVID-19 pandemic. The following is only part of what has come to public light.

## **COVID-19: Cover for Military Attack on Iran and Iraq?**

*By Kurt Nimmo, April 03, 2020*

Now that the American people are consumed with fear and loathing of an overblown virus “pandemic,” the neocons around Trump see a chance to finally and decisively deal with Iran—not simply by blocking humanitarian aid but also piling on more sanctions and, possibly within a matter of days or weeks, attacking Shi’a militias in Iraq and possibly launching a long-promised direct military attack on Iran proper.

## **The Bigger Picture Is Hiding Behind a Virus**

*By Jonathan Cook, April 03, 2020*

Under cover of the public’s fear, and of justified concerns about the state of the economy and future employment, countries like the US are transferring huge sums of public money to the biggest corporations. Politicians controlled by big business and media owned by big business are pushing through this corporate robbery without scrutiny – and for reasons that



should be self-explanatory. They know our attention is too overwhelmed by the virus for us to assess intentionally mystifying arguments about the supposed economic benefits, about yet more illusory trickle-down.

## I-TEAM: Is the coronavirus a form of bio-terrorism? Doctors put the rumors to rest

Source: <https://www.wrdw.com/content/news/I-TEAM--569371191.html>

Apr 03 – There is new information that could shed some light on how the coronavirus pandemic got out of hand, and it all has to do with a classified White House Intelligence report.

Multiple sources say the report shows how China greatly under-reported the number of positive coronavirus cases and deaths in the country.

Our I-TEAM has also been asking questions, and according to local experts, bio-terrorism can be ruled out.

There are many theories about how the virus spread, some of the craziest found on social media and now an infectious disease expert at AU Health can put those rumors to rest.

	CRITERIA	EXAMPLES
Category A	High mortality, disseminate easily, needs special action	<i>Bacillus anthracis</i> , <i>Yersinia pestis</i> , <i>Variola major</i> , <i>Francisella tularensis</i> , Filoviruses & Arenaviruses family
Category B	Moderately easy to disseminate, moderate morbidity	<i>Brucella</i> species, <i>Salmonella</i> species, <i>Escherichia coli</i> O157:H7, <i>Vibrio cholerae</i> , Alphaviruses family
Category C	Easily produced, potential for high morbidity and mortality	<i>Mycobacterium tuberculosis</i> *, Nipah virus, Hantavirus,

The entire planet is at war with the same enemy -- an army of microscopic parasites. Once they invade, they move to take over the bodies of those they infected.

"It's a moving target. And it's a moving target because every week we learn something different, something new," Dr. Jose Vazquez of AU Health said.

The coronavirus is a powerful weapon, seemingly attacked thousands of people, one after another. But at least researchers can say, it's not an actual weapon.

"We now know it was not created, humans. Remember that was a theory that was tossed out there for a while here by

some politicians, okay," Vazquez said. "We know that was about because it's not a great virus. It's not. A researcher would have done a better job creating a more deadly virus and a virus that infects better."

That news can be both comforting and alarming if you think about it.

[The CDC breaks bioterrorism agents into three categories](#) -- A, B, and C-- with A being the highest priority.

### For viruses to be an A:

- Pose a risk to national security because they can be easily disseminated or transmitted from person to person.
- Result in high mortality rates and have the potential for major public health impact
- Cause public panic and social disruption, and require special action for public health preparedness

Coronavirus definitely checks all these boxes, even though Dr. Vazquez says it's not a great virus. However, it's for certain that this virus isn't the work of a terrorist in a lab, but some still might find what he says terrifying.

"We think the bulk of the virus actually comes from bats," Vazquez said.

That might not be a surprise, but the spikes on the virus?

"So those apparently, probably came from pangolins," he added.

If you're not familiar with that animal -- it's a scaly anteater.

But wait -- According to Dr. Vazquez, there's more.

"And then another part of it looks like it came from snakes - don't know what snake it is -- but it looks like it's a merger of these viruses," he said.

From these three animals, in a perfect storm to create this new contagious cocktail: the coronavirus.



"Obviously, somebody ate that virus, or somebody touched the animal that had the virus, touch their eyes touched your nose. And that's how it happens, and that probably what happened," Vaquez said.

And from there, it spread person to person -- from continent to continent. And now the virus is present on every continent in the world except for Antarctica.

And if the world is going to beat this thing, doctors say it's important to take our marching orders seriously -- and stay home.

## There Are Many COVID-19 Tests in the U.S. – How Are They Being Regulated?

By David Pride

Source: <http://www.homelandsecuritynewswire.com/dr20200403-there-are-many-covid19-tests-in-the-u-s-how-are-they-being-regulated>

Apr 03 – When it comes to COVID-19 testing in the United States, the situation is about as messy as it gets.

The U.S. went from having no tests, or assays, available for COVID-19 diagnostics to having multiple different tests available in a span of just a few weeks. Today more than [230 test developers have alerted the Food and Drug Administration](#) that they are requesting emergency authorization for their tests; 20 have been granted. And [110 laboratories around the country, including my own](#), are also using their own tests. Having this number of diagnostic tests available to detect a single virus in such a short time frame is unprecedented.

Which tests are good and which tests are bad isn't immediately apparent. According to a March 30 press release from the FDA, "[The FDA revised the process to allow labs](#) to begin testing prior to FDA review of their validation data. This policy change was an unprecedented action to expand access to testing." The guidance the FDA provides to test makers requires laboratories provide some evidence of their assay's performance and consistency in results. It also ensures that reasonable thought is put into assay design. Assays meeting these requirements may then be permitted for clinical use prior to receiving approval by the FDA.

[I am a physician scientist](#) who studies viruses in my research laboratory and directs a clinical microbiology facility for a large hospital system. Since COVID-19 made it to the U.S., laboratory directors like me haven't had a spare moment [to focus on anything other than developing tests](#) to respond to this pandemic.

### There's Still a Lot to Learn

SARS-CoV-2 is the virus that causes the disease. It is a novel virus from the coronavirus family that was [first identified in November 2019 in Wuhan](#), China. Like other viruses, this one is believed to have first infected animals and then [jumped over to humans](#). Because of their [zoonotic origins](#), these viruses are often ill-suited to spread from person to person. What makes COVID-19 so different is it's readily spread between people, which lies at the heart of the current pandemic.

There is a lot that we just don't yet know about COVID-19.

For example, for most respiratory viruses we develop antibodies that protect us from getting infected by them again. This is referred to as immunity. [We assume that we'll develop immunity](#) from having been exposed to COVID-19 infections, but it hasn't exactly been around long enough for us to know this for certain. Will this virus mutate so that our immunity won't work? [Will this virus become seasonal](#), much like the flu? Only time will tell.

Developing a test to detect this novel virus has been at the center of the efforts in the U.S. to combat its spread. If [infected people can be quarantined early](#), they are much less likely to transmit it to others.

[But right now there are at least 22](#) different COVID-19 tests on the U.S. market, [not including at least 110 developed by individual laboratories](#) across the country. So, you may be wondering: Why do we need so many?

### Why So Many Different tests?

Most of the available tests are based on collecting the virus's RNA (ribonucleic acid) and converting it to DNA (deoxyribonucleic acid). This is the easy part of test development because all these tests use the same basic methods. The next step is making many millions or billions of copies of the DNA so that it can be detected. This is where most tests differ. COVID-19 is a large virus with [many different genes that can be used to detect it](#). While one test may target one or more virus genes, another test may target a completely different set of genes.

The [World Health Organization developed testing specifications](#) for COVID-19 in January 2020. The U.S., led by the [Centers for Disease Control and Prevention, developed separate testing specifications](#) in early February 2020. The CDC started off as the single testing center for the U.S., but as demand rose, they distributed their test to public health laboratories across the country. This first CDC test probed the sample for [three short sections of the virus's genetic material](#).



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Within days, testing kits manufactured and [distributed by the CDC were proven to be problematic](#), likely from impurities in the testing materials that caused them to provide faulty results.

Despite increasing testing demand and problems with the CDC assay, the FDA remained steadfast that hospitals, academic centers and companies [were not to develop their own COVID-19 tests](#).

These regulations were lifted at the end of February 2020, and centers across the U.S. were finally free to develop their own tests. There was so much pent-up energy to develop COVID-19 tests that the country rapidly ended up with a surplus of different tests. Because the U.S. never settled upon a single standard for detecting the virus, companies, hospitals and academic centers were left to their own devices to forge their own paths forward.

### Who's Right, Who's Wrong?

So which test is the best available right now in the U.S.? There's no certain answer. None of these tests from different manufacturers have been around long enough to know which is best at detecting the virus.

The most common question I get asked is, "What is the accuracy of my institution's COVID-19 test?" It's impossible to answer because my institution uses five different tests, each of which will likely have different performance characteristics. These tests generally differ in the virus's genes they target and the laboratory instrumentation on which they are performed. We have tests that can detect as few as 100 copies of a virus gene and tests that require as many as 400 copies for detection. We have chosen to use so many tests because testing kits to detect the virus are so limited that when we run out of kits from one manufacturer, we switch to another.

It is inevitable that we will learn that some tests are better than others. They were all developed so quickly that it's unlikely they'll have the same performance characteristics. We can only hope that none of the assays currently in use performs poorly.

### The FDA Regulates COVID-19 Testing

Many of us laboratory directors in the U.S. have a love-hate relationship with the FDA. We love the FDA because their stringent oversight helps to protect us from using products that don't work well. The hate stems from their standards being so high that [products often come to market in Europe and Canada before](#) they make it to the U.S.

The FDA took a decidedly different approach to regulating COVID-19 diagnostics. Due to the dearth of available testing in the U.S., they allowed hospitals, academic centers and [companies to develop their own tests](#) and begin using them if they could meet minimal standards.

The FDA will eventually do their due diligence in evaluating the COVID-19 tests that are available. Until that happens, we may have tests in use in the U.S. that don't live up to their normal high standards.

*David Pride is Associate Director of Microbiology, University of California San Diego.*



## Coronavirus: China Floods Europe With Defective Medical Equipment

By Soeren Kern

Source: <https://www.gatestoneinstitute.org/15840/china-defective-medical-equipment>

Apr 03 – As the coronavirus rages across Europe, a growing number of countries are reporting that millions of pieces of medical equipment donated by, or purchased from, China to defeat the pandemic are defective and unusable.

The revelations are fueling distrust of a public relations effort by Chinese President Xi Jinping and his Communist Party to [portray](#) China as the world's new humanitarian superpower.

On March 28, the Netherlands was forced to [recall](#) 1.3 million face masks produced in China because they did not meet the minimum safety standards for medical personnel. The so-called KN95 masks are a less expensive Chinese alternative to the American-standard N95 mask, which currently is in short supply around the world. The KN95 does not fit on the face as tightly as the N95, thus potentially exposing medical personnel to the coronavirus.

More than 500,000 of the KN95 masks had already been distributed to Dutch hospitals before the recall was enacted. "When the masks were delivered to our hospital, I immediately rejected them," a hospital worker [told](#) the Dutch public broadcaster NOS. "If those masks do not seal properly, the virus particles can simply pass through. We cannot use them. They are unsafe for our people."

In a written statement, the Dutch Ministry of Health [explained](#):



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"A first shipment from a Chinese manufacturer was partly delivered last Saturday. These are masks with a KN95 quality certificate. During an inspection this shipment was found not to meet our quality standard. Part of this shipment had already been delivered to healthcare providers; the rest of the cargo was immediately withheld and not further distributed.

"A second test also showed that the masks did not meet our quality standard. It has now been decided that this entire shipment will not be used. New shipments will undergo additional tests."

The Dutch newspaper *NRC Handelsblad* [reported](#) on March 17 that the Netherlands had only a few days' supply of masks: "All hope is now for that one cargo plane from China on Wednesday." The substandard quality of the masks delivered by China has left the Netherlands shattered. A spokesperson for a hospital in Dutch city of Eindhoven [said](#) that Chinese suppliers were selling "a lot of junk...at high prices."

In Spain, meanwhile, the Ministry of Health on March 26 [revealed](#) that 640,000 coronavirus tests that it had purchased from a Chinese vendor were defective. The tests, manufactured by Shenzhen Bioeasy Biotechnology Company in Guangdong province, had an accurate detection rate of less than 30%.

On April 2, the Spanish newspaper *El Mundo* [reported](#) that it had been presented with leaked documents which [showed](#) that Bioeasy had lied to the Spanish government about the accuracy of the tests. Bioeasy had claimed, in writing, that its tests had an accurate detection rate of 92%.

Also on April 2, the Spanish government [revealed](#) that a further million coronavirus tests delivered to Spain on March 30 by another Chinese manufacturer were also defective. The tests apparently required between five and six days to detect whether a patient is infected with coronavirus and were therefore useless to diagnose the disease in a timely manner.

On March 25, the Spanish government [announced](#) that it had purchased medical supplies from China in the amount of €432 million (\$470 million), and that Chinese vendors demanded that they be paid up front before the deliveries were made. Spanish Health Minister Salvador Illa [explained](#):

"We have bought and paid for 550 million masks, which will start arriving now and will continue to arrive for the next eight weeks. 11 million gloves will arrive in the next five weeks. As for rapid tests, we have acquired 5.5 million for the months of March and April. In addition, we will receive 950 respirators during the months of April to June. We are managing the purchase of more equipment."

It is not at all clear how the Spanish government will be able to guarantee the quality of these new mass purchases, or how it would obtain compensation if the products from China were again substandard.

On March 28, the French government, which apparently has only a few weeks' worth of supplies, [announced](#) that it had ordered more than one billion face masks from China. It is unclear whether the quality control problems experienced by other European countries would affect France's purchasing plans.

Other countries — in Europe and beyond — have also criticized the quality of Chinese medical supplies:

- **Slovakia.** On April 1, Prime Minister Igor Matovič [said](#) that more than a million coronavirus tests supplied by China for a cash payment of €15 million (\$16 million) were inaccurate and unable to detect COVID-19. "We have a ton of tests and no use for them," he [said](#). "They should just be thrown straight into the Danube." China [accused](#) Slovakian medical personnel of using the tests incorrectly.
- **Malaysia.** On March 28, Malaysia [received](#) a consignment of medical equipment donated by China, consisting of test kits, medical face masks, surgical masks and other personal protective equipment. A senior official in the Ministry of Health, Noor Hisham Abdullah, [said](#) that the test kits would be evaluated for accuracy after previous test kits from China were found to be defective: "This is a different brand from the one we tested earlier. We will assess the new test kit which is FDA-approved. I was assured by the Chinese ambassador that this is more accurate than the other one we tested." Abdullah previously [stated](#) that the accuracy of the Chinese tests was "not very good."
- **Turkey.** On March 27, Turkish Health Minister Fahrettin Koca [said](#) that Turkey had tried some Chinese-made coronavirus tests but authorities "weren't happy about them." Professor Ateş Kara, a member of the Turkish Health Ministry's coronavirus task force, [added](#) that the batch of testing kits were only 30 to 35% accurate: "We have tried them. They don't work. Spain has made a huge mistake by using them."
- **Czech Republic.** On March 23, the Czech news site *iRozhlas* [reported](#) that 300,000 coronavirus test kits delivered by China had an error rate of 80%. The Czech Ministry of Interior had paid \$2.1 million for the kits. On March 15, Czech media [revealed](#) that Chinese suppliers had swindled the Czech government after it paid upfront for the supply of five million face masks, which were supposed to have been delivered on March 16.

On March 30, China [urged](#) European countries not to "politicize" concerns about the quality of medical supplies from China. "Problems should be properly solved based on facts, not political interpretations," Foreign Ministry spokeswoman Hua Chunying said.



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On April 1, the Chinese government reversed course and [announced](#) that it was increasing its oversight of exports of coronavirus test kits made in China. Chinese exporters of coronavirus tests must now obtain a certificate from the National Medical Products Administration (NMPA) in order to be cleared by China's customs agency.

Meanwhile, the Chinese telecommunications giant Huawei [announced](#) that it would stop donating masks to European countries as a result of allegedly derogatory comments by the EU Foreign Policy Chief Josep Borrell.

On March 24, Borrell had [written](#) in a blog post that China was engaging in a "politics of generosity" as well as a "global battle of narratives."

On March 26, a Huawei official [told](#) the Brussels-based news service Euractiv that due to Borrell's comments, the company would be ending its donation program because it did not want to become involved in a geopolitical power play between the U.S. and China. On March 28, Huawei paid for sponsored content in the publication *Politico Europe*. Huawei's Chief Representative to the EU, Abraham Liu, [wrote](#):

"Let me be clear — we have never sought to gain any publicity or favor in any country by what we are doing. We made a conscious decision not to publicize things. Our help is not conditional and not a part of any business or geopolitical strategy as some have suggested. We are a private company. We are trying to help people to the best of our abilities. That's all. There is no hidden agenda. We don't want anything in return."

On March 30, the BBC [reported](#) that Huawei was acting as if nothing had really changed since the coronavirus crisis began:

"That may be naive on the company's part. While nothing has really changed when it comes to the technical and security issues around Huawei's equipment, the political climate for the company has certainly worsened.

"A story in the *Mail on Sunday* at the weekend had Downing Street warning China 'faced a reckoning' over its handling of the coronavirus.

"And that is likely to embolden those MPs who have been telling the government no Chinese company should be allowed a role in the UK's vital infrastructure."

On March 29, the British newspaper *Daily Mail* [reported](#) that British Prime Minister Boris Johnson and his allies in parliament had "turned" on China because of the coronavirus crisis:

"Ministers and senior Downing Street officials said the Communist state now faces a 'reckoning' over its handling of the outbreak and risks becoming a 'pariah state.'

"They are furious over China's campaign of misinformation, attempts to exploit the pandemic for economic gain and atrocious animal rights abuses blamed by experts for the outbreak."

On January 28, Johnson had [granted](#) Huawei a role in Britain's 5G mobile network, frustrating efforts by the United States to exclude the company from the West's next-generation communications, which, it seems, can also be used for [spying](#). The London-based *Financial Times* [reported](#) that U.S. President Donald J. Trump vented "apoplectic fury" at Johnson in a tense phone call. Johnson is now facing pressure from his Cabinet as well as from Members of Parliament to reverse his decision.

After Chinese officials blamed the United States and Italy for starting the coronavirus pandemic, the *Daily Mail* [quoted](#) a British government source as saying:

"There is a disgusting disinformation campaign going on and it is unacceptable. They [the Chinese government] know they have got this badly wrong and rather than owning it they are spreading lies."

The newspaper [continued](#):

"Mr. Johnson has been warned by scientific advisers that China's officially declared statistics on the number of cases of coronavirus could be 'downplayed by a factor of 15 to 40 times.' And No. 10 believes China is seeking to build its economic power during the pandemic with 'predatory offers of help' to countries around the world.

"A major review of British foreign policy has been shelved due to the Covid-19 outbreak and will not report until the impact of the virus can be assessed. A government source close to the review said: 'It is going to be back to the diplomatic drawing board after this. Rethink is an understatement.'

"Another source said: 'There has to be a reckoning when this is over.' Yet another added: 'The anger goes right to the top.'

"A senior Cabinet Minister said: 'We can't stand by and allow the Chinese state's desire for secrecy to ruin the world's economy and then come back like nothing has happened. We're allowing companies like Huawei not just into our economy, but to be a crucial part of our infrastructure.'"

In an article published by *The Mail on Sunday* on March 29, former Tory Party leader Iain Duncan Smith [wrote](#):

"All issues can and will be discussed, except for one, it seems — our future relationship with China.



"The moment anyone mentions China, people shift uncomfortably in their seats and shake their heads. Yet I believe it is vital that we start to discuss how dependent we have become on this totalitarian state.

"For this is a country which ignores human rights in the pursuit of its ruthless internal and external strategic objectives. However, such facts seem to have been swept aside in our rush to do business with China.

"Remember how George Osborne [Chancellor of the Exchequer under Prime Minister David Cameron from 2010 to 2016] made our relationship with China a major plank of UK Government policy? So determined were Ministers to increase trade that they were prepared to do whatever was necessary.

"Indeed, I am told that privately this was referred to as Project Kow-Tow — a word defined by the Collins dictionary as 'to be servile or obsequious.'

"We were not alone. Countless national leaders over recent years have brushed aside China's appalling human rights behavior in the blind pursuit of trade deals with Beijing....

"Thanks to Project Kow-Tow, the UK's annual trade deficit with China is £22.1 billion (\$27.4 billion). But we are not alone in being in hock to Beijing.

"For China has racked up a global trade surplus of £339 billion (\$420 billion). Distressingly, the West has watched as many key areas of production have moved to China....

"The brutal truth is that China seems to flout the normal rules of behavior in every area of life — from healthcare to trade and from currency manipulation to internal repression.

"For too long, nations have lamely kowtowed to China in the desperate hope of winning trade deals.

"But once we get clear of this terrible pandemic, it is imperative that we all rethink that relationship and put it on a much more balanced and honest basis."

*Soeren Kern is a Senior Fellow at the New York-based Gatestone Institute.*

## Trial Drug Can Significantly Block Early Stages of COVID-19 in Engineered Human Tissues

Source: <http://www.homelandsecuritynewswire.com/dr20200403-trial-drug-can-significantly-block-early-stages-of-covid19-in-engineered-human-tissues>

Apr 03 – An international team led by [University of British Columbia](#) researcher Dr. Josef Penninger has found a trial drug (soluble human ACE2) that effectively blocks the cellular door SARS-CoV-2 uses to infect its hosts. UBC [says](#) that the findings, [published today in Cell](#), hold promise as a treatment capable of stopping early infection of the novel coronavirus that, as of April 2, has affected more than 981,000 people and claimed the lives of 50,000 people worldwide. The study provides new insights into key aspects of SARS-CoV-2, the virus that causes COVID-19, and its interactions on a cellular level, as well as how the virus can infect blood vessels and kidneys.

## These Drugs Don't Target the Coronavirus—They Target Us

Source: <http://www.homelandsecuritynewswire.com/dr20200403-these-drugs-don-t-target-the-coronavirus-they-target-us>

Apr 03 – In another example of the blinding speed at which science is moving during the pandemic era, researchers at Aarhus University in Denmark will start a clinical trial of a drug named camostat mesylate tomorrow—barely 1 month after [a Cell paper](#) showed the compound can prevent the novel coronavirus, SARS-CoV-2, from entering human cells. Kai Kupferschmidt writes in [Science](#) that one reason the Danish researchers can act so fast is that camostat mesylate is already licensed in Japan and South Korea to treat pancreatitis, a potentially fatal inflammation of the pancreas. Enough safety data were available to convince an ethical panel to greenlight the trial. The trial also illustrates a new approach to combatting the virus. Thousands of researchers around the world are investigating existing drugs as potential therapies for COVID-19, most of them looking at antivirals, such as remdesivir, developed



to treat Ebola, or Kaletra, a combination drug against HIV. But Nevan Krogan, a molecular biologist at the University of California, San Francisco, sees another opportunity: “The virus can’t live by itself, right? It needs our genes and proteins in order to live and to replicate.” Camostat mesylate is one of several candidate drugs that block those interactions. They don’t target the virus, but us, the host.

## MUST READ

### The possible origins of 2019-nCoV coronavirus

Botao Xiao<sup>1,2\*</sup> and Lei Xiao<sup>3</sup>

Source: <https://img-prod.tgcom24.mediaset.it/images/2020/02/16/114720192-5eb8307f-017c-4075-a697-348628da0204.pdf>

In summary, somebody was entangled with the evolution of 2019-nCoV coronavirus. In addition to origins of natural recombination and intermediate host, the killer coronavirus probably originated from a laboratory in Wuhan. Safety level may need to be reinforced in high risk biohazardous laboratories. Regulations may be taken to relocate these laboratories far away from city center and other densely populated places.

## Blockchain – Could it Prevent Next Pandemic?

Source: <https://i-hls.com/archives/100274>

Apr 03 – Blockchain technology is gradually transcending its use in the cryptocurrency sector and is proving effective for logistics



management. The decentralized open ledger system can help to provide stable identity management, transparent ownership structures, and effective data mining. Now, blockchain is one of the latest technologies being deployed to prevent the spread of COVID-19 disease.

It is particularly useful in tracking the origin and checking the quality of medical goods supply. Blockchain is ensuring supplies of emergency products and helping the frontline medical workers control the coronavirus pandemic.

During this ongoing health crisis, several governments have

turned to blockchain solutions to manage their medical records, monitor the distribution of virus-prevention materials, and consult with the public.

The World Health Organization (WHO) has chosen to partner with leading technology and blockchain companies IBM, Oracle, Microsoft, and decentralized platform Hacerato to build a distributed ledger technology-based platform to share data. The platform, **MiPasa** will be utilizing IBM’s enterprise-grade blockchain Hyperledger Fabric. The blockchain network will aid the exchange of data relevant to the



pandemic. With its analytic tools and sources of data, the project aims to help citizens and public health officials to track coronavirus infection hotspots.

**In the first two weeks of February, China introduced 20 blockchain-based applications designed to help counter the pandemic outbreak.**

SF Express, China's second-largest courier service provider, is using blockchain technology to distribute vital supplies during the ongoing pandemic. The company said it is exploring the application of blockchain technology to the transportation of key supplies related to COVID-19. The system will be able to track, verify, and record each transaction in the logistics process, and identify the priority level of each order. The company's blockchain system would be able to classify priority levels of supply as well as minimize the risks of counterfeit or unlicensed goods being shipped to designated regions, according to insidebitconis.com. SF Express is also reportedly using big data to build a trackable logistics network.

The Singapore-based blockchain company Algorand Foundation has launched an application called IReport-Covid to help the fight against the pandemic. It allows symptomatic and non-symptomatic users to directly report any information they wish about the virus anonymously by filling a survey in order to learn about how COVID-19 is affecting people in real-time.

In the Netherland, the distributed ledger technology firm, Tymlez, has offered its blockchain platform as the underlying technology to "model the medical goods ecosystem through a platform that matches supply and demand." The company is part of a consortium of Dutch companies which has launched the "Tech against Corona" initiative. Participating firms will freely provide the Dutch government with access to innovative technologies that can be used in the fight against COVID-19, according to cointelegraph.com.

**But Could the use of blockchain in the healthcare industry help to prevent future pandemics?** Blockchain could be used to improve record management, healthcare surveillance, tracking disease outbreaks, management crisis situations and many more.

The biggest opportunity for blockchain in the healthcare industry is as a single source of truth for the data provenance, as the whole world is fighting against this outbreak. It could be used for record management purposes, to manage real-time data and importantly, to ensure its integrity, while identifying and eliminate misinformation about the coronavirus, according to finextra.com. The technology can also be used for surveillance purposes, tracking public health data surveillance, particularly for infectious disease outbreaks.

## A Coronavirus Thriller Was Finished Just Before the Shutdown

Source: <https://www.nytimes.com/2020/03/31/movies/coronavirus-movie.html>



Mar 31. — In between the time the coronavirus started to make headlines but before life shut down to restrain the pandemic, an independent filmmaker conceived, shot and finished postproduction on a movie about the contagion.

Thanks to the availability of relatively cheap digital equipment, there is [rarely much lag time](#) these days between real-life events — like Hurricane Sandy in 2012 or the Japanese tsunami in 2011 — and films about them. But this new movie, by Mostafa Keshvari, is unusual in that it was made even as the story is still unfolding.

Keshvari's 63-minute "[Corona](#)" looks at what happens when seven people are trapped in an elevator, and begin to realize that one of them has Covid-19. The movie is about fear and "a study of society, people and moral choices," Keshvari, 33, said in recent phone and email interviews about the movie. "We are all in this ride together."

Vancouver, known as "Hollywood North," is Canada's [gateway to Asia](#), and also an epicenter in the country's Covid-19 crisis. As news reached here of a "Wuhan virus," there were increasing reports of harassment of Chinese-Canadians and others of Asian heritage. Patronage of Chinese-Canadian businesses [dropped by up to 70 percent](#).

The filmmaker was in an elevator reading the headlines when he had the idea. "There were just so many incidents," said Keshvari,

who also runs [BC Minorities in Film & TV Society](#), a network for budding artists from minority backgrounds. At the time he embarked on his project, "nobody thought a white person could get it. But the virus doesn't discriminate."



In real life, “everyone faces discrimination, all different kinds,” he said, so if he could “bring all these people” together in the film and “trap them,” he thought, then their “true colors come out.”

Starting in late January, he spent two weeks writing the script; the set took 10 more days to create. “We rented a space and we built an elevator,” he said. “Ultralow budget.”

Some cast members he already knew; others he found through word of mouth. The director also left room to improvise. “I told them: ‘Imagine that the actual coronavirus is in this elevator.’”

He wanted the action to unfold in real time, he said. “My struggle was to make sure it was all one shot,” Keshvari said.

Over three days in February, it took nearly 70 takes to pull that off. Money was running out. And time. “It helped with the anxiety of the film,” he said.

Outside, the coronavirus moved fast. “We thought it was just going to pass,” Keshvari said. “No one could have imagined.”

He had planned to submit the film, finished before the city declared a state of emergency, to festivals. “Unfortunately, that’s not the case anymore,” he said, as nearly every such event has been canceled for the foreseeable future. Streaming is the most likely option.

The movie “belongs to humanity,” he said.

As for Keshvari’s cast and his crew of 25, he said, so far, they are well.

## **Coronavirus at beaches? Surfers, swimmers should stay away, scientist says**

Source: <https://www.latimes.com/california/story/2020-04-02/coronavirus-ocean-swimming-surfing-safe-beaches-los-angeles>

Apr 02 – Kim Prather, a leading atmospheric chemist at the Scripps Institution of Oceanography, wants to yell out her window at every surfer, runner, and biker she spots along the San Diego coast.

“I wouldn’t go in the water if you paid me \$1 million right now,” she said.

The beach, in her estimation, is one of the most dangerous places to be these days, as [the novel coronavirus](#) marches silently across California.

Many beachgoers know they [can suffer skin rashes](#), stomach illness and serious ear and respiratory infections if they go into the water within three days of a heavy rain, because of bacteria and pathogens washing off roads and into the ocean. Raw or poorly treated sewage entering the ocean also poses major health risks.

Prather fears that SARS-CoV-2, the virus that causes COVID-19, could enter coastal waters in similar ways and transfer back into the air along the coast.

In her research, Prather has found that the ocean churns up all kinds of particulate and microscopic pathogens, and every time the ocean sneezes with a big wave or two, it sprays these particles into the air. She believes that this new coronavirus is light enough to float through the air much farther than we think. The six-foot physical distancing rule, she said, doesn’t apply at the beach, where coastal winds can get quite strong and send viral particles soaring.

“It’s not going to kill you if you miss a few surfing sessions, but it could if you go out there and get in the wrong air,” she said.

“You can’t see the virus, you can’t smell it ... It’s a real silent killer right now.”

Scientists across the globe are scrambling to learn the basic characteristics of the virus, and so far, neither the World Health Organization, the U.S. Centers for Disease Control and Prevention nor local health agencies have warned that the virus can be spread by ocean spray or coastal breezes. However, they have warned that it can be spread by droplets from sneezes and coughs, and by coming into contact with it on surfaces.

And though the virus has been detected in sewage, scientists are still investigating whether it remains infectious in fecal matter — and whether it survives treatment in a wastewater facility.

In the eyes of California health officials, beaches pose a health threat by drawing large crowds of people who will congregate too closely and trigger a chain of infections.

It hasn’t been easy keeping Californians [off the beach](#) even with those concerns, despite stay-at-home orders and officials urging the public to avoid crowding popular areas. By now most beaches, trails and parks in California have been roped off in an effort to slow the spread of COVID-19, which has [overwhelmed hospitals](#) and escalated medical emergencies across the nation and world.

Even the Coastal Commission, usually the gatekeeper of California’s [landmark law](#) that declares access to the beach is a fundamental right, is [allowing](#) local officials to put up temporary signs and barricades — citing the emergency need to protect public health and safety.



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Patrol cars and loudspeakers can be heard blasting social distancing rules along Ocean Avenue in Santa Monica. In Manhattan Beach, a surfer was [slapped with a \\$1,000 fine](#) after he ignored numerous warnings by police and lifeguards cautioning him not to go in the water.



People walk along the beach in Coronado, which is among the few remaining beaches open in San Diego County on March 29, 2020. (K.C. Alfred/The San Diego Union-Tribune)

Prather, who directs the Center for Aerosol Impacts on Chemistry of the Environment, a large research hub at Scripps backed by \$40 million from the National Science Foundation, sent her researchers and students home long before California officials issued stay-at-home orders. She suspected this virus was contagious by air, and knew from past studies that coronaviruses can be excreted in fecal matter. She worries SARS-CoV-2 could enter the ocean from sewage spills and outfalls, and then reenter the atmosphere. Wastewater treatment plants don't necessarily deactivate viruses before sending the sewage into the ocean — they tend to target bacteria like E. Coli, she said. And in areas like Imperial Beach, sewage from the Tijuana River often spills into the ocean completely untreated.

Coronaviruses are encased by what she calls a "hydrophobic" lipid, or fatty, membrane. Fat tends to float to the surface of water, similar to oil in a vinaigrette dressing. When waves break in the surf zone and all the foam and bubbles pop, Prather said, "all that stuff — the viruses, the bacteria, pollutants, all the goeey, oily stuff — just launches into the air."

The ocean, in fact, is the largest natural source of aerosol particles after dust. These marine aerosols affect the formation of clouds over the ocean and can spread over large distances.

Once in the air, studies have shown that aerosols can travel around the globe in as little as two weeks. Prather has found dust in microbes from Africa that changed the snowfall in California. She's been tracing the bacteria and sewage pollution dumped into the ocean from the Tijuana River, showing how much ends up transferring to the atmosphere.

"Once things are in the air, they can go pretty darn far. People are shocked whenever I talk about stuff becoming airborne," she said. "I see pictures of the beach shut down, and the signs tell you don't walk on the beach, don't swim, don't surf, but nobody tells you: Don't breathe."

Scientists are still debating the characteristics of this latest coronavirus. Recent research in the *New England Journal of Medicine* found that when the virus was suspended in a mist under laboratory conditions, it remained "viable and infectious" for three hours — though researchers have said that time period would probably be no more than half an hour in real-world conditions.



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Charles Gerba, a professor of microbiology at the University of Arizona who has studied coronaviruses in wastewater since the SARS outbreak, said these kinds of viruses have typically been found to survive two or three days in raw sewage.

With this new coronavirus, he's done a few molecular tests: Though he's confirmed that the virus does wind up in sewage, he found that more than 90% of this new coronavirus was removed by typical wastewater treatment — "it's very sensitive to disinfectants."

Still up for debate, however, is whether the virus in the sewage is still infectious.

"One report says yes, another report says no, so we don't really know yet for certain," said Gerba, whose research focuses on wastewater removal of viral pathogens. As for how long the virus could survive in saltwater, there's not much data, he said, but pathogens like hepatitis A or norovirus tend to survive much longer in wild environments.

For Prather, she hopes to fill in more data gaps and is preparing to test the air particles along the coast for signs of the virus — especially in areas known for inconsistent water quality.

"People kept saying respiratory droplets and surfaces, surfaces, surfaces, but I just felt like no way, this is something special," she said. "This thing is so contagious .... Look at [that choir](#) in Washington — those people weren't coughing. They were just singing! But it got so many of them."

In the meantime, California beaches are likely to remain close to empty. Even beach advocacy groups have joined the Coastal Commission in urging people to avoid crowding the beaches and ocean. Fresh air and connecting with the outdoors are important, they said, but these are extraordinary times.

Some people worry the temporary closures could lead to permanent beaches behind lock and key — public beach access, after all, has been a [contentious battle](#) along the coast for decades. Coastal officials say they've been keeping track of which beaches have closed, and city and county leaders have been told that access restrictions expire immediately whenever shelter-in-place orders are lifted.

"We recognize there is an inequity in coastal access and we strongly encourage local governments to consider approaches that balance public health order requirements and equitable public access — the coast belongs to all," Jack Ainsworth, the coastal commission's executive director, wrote in a letter to local officials.

Surfrider Foundation, one of the most passionate public access groups in California, assured beachgoers that they will be out in full force once the restrictions are lifted to ensure that no oceanfront property owners took advantage of this unprecedented situation.

"We in California have fought for open beaches for decades," said Jennifer Savage, Surfrider's policy manager in California. "But we also believe in being responsible citizens and protecting the health and safety of our community."

"Right now, you can be the difference between life and death for somebody you don't know."

### RST Introduces 'Demron-C' Line of Covid-19 Anti-Viral, Reusable Personal Protective Equipment (PPE) for Coronavirus First Responders and Healthcare Workers

Source: <https://www.businesswire.com/news/home/20200403005432/en/RST-Introduces-%E2%80%98Demron-C%E2%80%99-Line-Covid-19-Anti-Viral-Reusable>

Apr 03 – [Radiation Shield Technologies](#) today announced its introduction of Demron C reusable, full-body, anti-viral personal-protective equipment (PPE) for healthcare workers, first responders, and other high-risk individuals at the frontlines of the Covid-19 pandemic. Demron C is differentiated as a reusable PPE, thereby eliminating the need to continuously replace the traditional single-use, disposable garments that are in scarce supply in today's healthcare crisis.

RST introduces Demron C reusable, full-body, anti-viral personal-protective equipment (PPE) for healthcare workers, first responders, and other high-risk individuals at the frontlines of the Covid-19 pandemic.

Demron C is developed from the same technology as RST's Demron line of anti-terrorism Chemical, Biological, Radiological and Nuclear (CBRN) protective garments, which for years have been used by the U.S. military and many international first responder and military teams. Specifically, Demron C is tailored to fit the needs of the healthcare and first responder community for durable, cost-effective, anti-viral PPE.

"Within the crowded, chaotic environments at hospitals, emergency rooms and fire rescue departments, Demron C provides the protection that professionals on the frontlines need to save lives and stay productive – and safe—throughout the entire workday," said Ronald DeMeo, M.D., the surgeon who invented and patented RST's Demron technology almost 20 years ago.

Some facts about RST's new Demron C:

- The only protective Anti-Viral suit that is both impermeable to fluids and breathable. This enables continuous daily use with minimal heat stress



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- May be worn under protective disposable garments by healthcare workers and first responders caring for patients, enabling them to remain protected while simply removing and replacing the disposable garments between each patient
- Lightweight, cool and comfortable
- Easily washable with regular soap and water
- A cost-effective, multi-use solution helping reduce the infection risk of healthcare workers and first responders, enabling them to stay longer in the workforce

In addition to military and first responder teams, Demron has been used for years by U.S. CST teams, the FDNY, IAEC, DSTA, and NASA. The U.S. Army recently joined forces with Miami-Dade Fire Rescue in a [nuclear disaster exercise](#) that showcased the Demron product line.

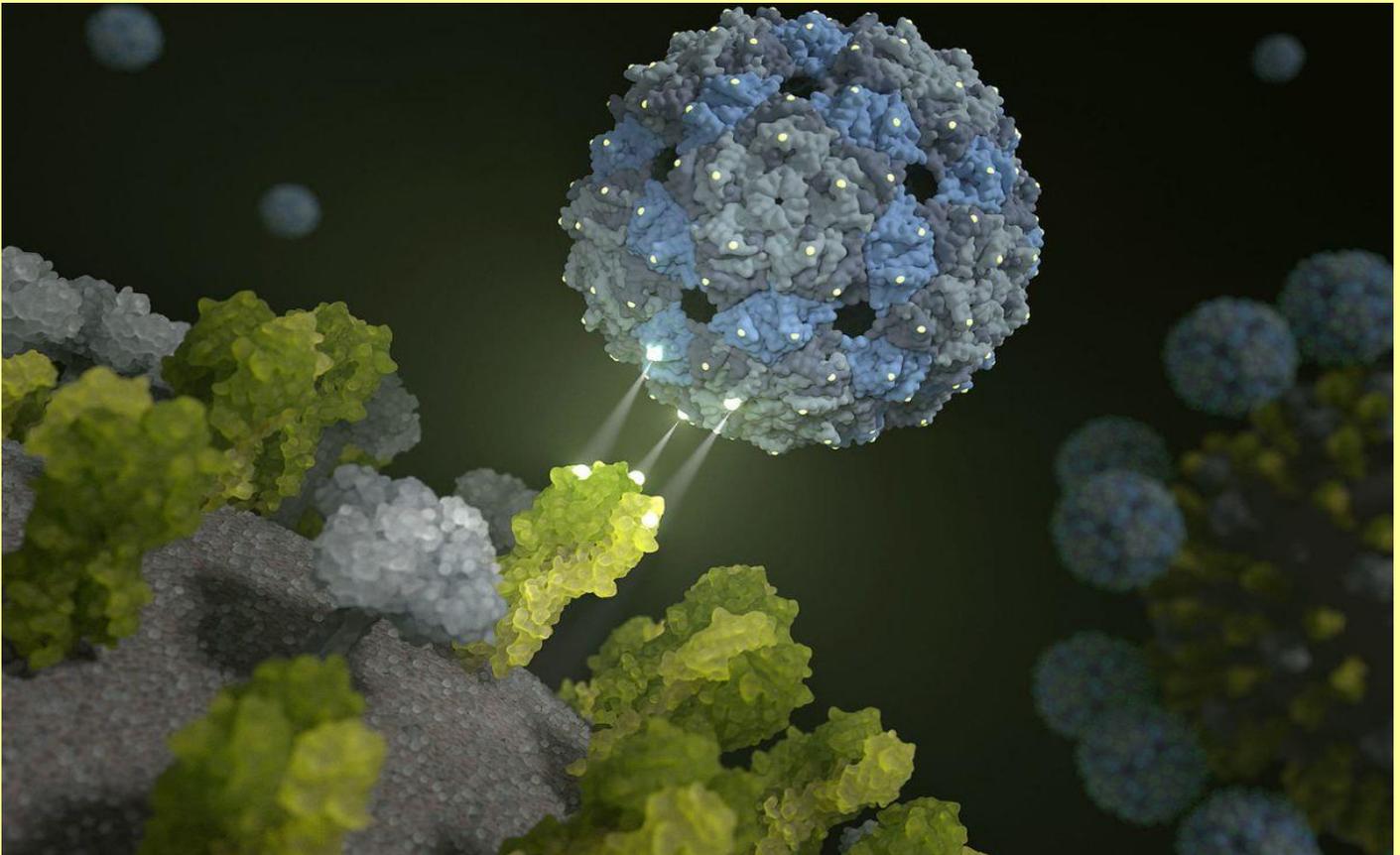
**These 'disease hunters' developed a novel technique for tracking pandemics after 9/11, but lost funding right before COVID-19**

Source: <https://www.cnn.com/2020/04/04/syndromic-surveillance-useful-to-track-pandemics-like-covid-19.html>

EDITOR'S COMMENT: Read and cry! When obviously a financial brain decided the syndromic surveillance is of no benefit!

### Harmless virus fights the flu by mimicking lung cells

Source: <https://newatlas.com/medical/phages-fight-flu-virus/>



An artist's visualization of a phage shell docking on a flu virus to neutralize it (Barth van Rossum, FMP)

Apr 01 – As the current [COVID-19](#) situation shows, viruses are a major health risk. But what if we could fight them using other viruses? Scientists in Berlin have created virus shells that mimic the target cells that the flu virus latches onto in the body, preventing them from taking hold and causing infection.

[Bacteriophages](#) (or just phages) are types of viruses that prey on other microbes, usually bacteria. They've been explored as [alternatives to antibiotics](#), and could come in many



forms, such as [inhalable treatments](#) for pneumonia, [dressings](#) to sterilize wounds while they heal, [antibacterial food wraps](#), or drinkable concoctions to [treat food poisoning](#).

For the new study, the researchers pitted phages against other viruses. Rather than kill the invading virus, the phages instead act like a kind of trap. The team designed a phage to mimic the structures in lung cells that the flu virus binds to, rendering it ineffective. The surface of the flu virus is covered in receptors called hemagglutinin proteins, which latch onto sugar molecules on the surface of lung cells. Like a key in a lock, this is a very precise match that requires just the right number of bonds spaced apart at just the right intervals. So the team set out to design a decoy for the flu to bond to instead of lung cells.

The researchers started with a harmless intestinal phage called Q-beta, which already had a structure similar to what they needed. Using synthetic chemistry, the team equipped an empty Q-beta shell with sugar molecules in exactly the right arrangement. The end result is called a phage capsid.

“Our multivalent scaffold molecule is not infectious, and comprises 180 identical proteins that are spaced out exactly as the trivalent receptors of the hemagglutinin on the surface of the virus,” says Daniel Lauster, first author of the study. “It therefore has the ideal starting conditions to deceive the influenza virus – or, to be more precise, to attach to it with a perfect spatial fit. In other words, we use a phage virus to disable the influenza virus!”

Through mathematical models and cryo-electron microscope studies, the team was able to determine that the phage capsid completely encapsulated the virus, and was effective against several flu strains, including avian flu viruses. Tests in animal models and cell cultures showed that the phage capsid was able to neutralize the flu in human lung tissue, preventing it from reproducing.

“Pre-clinical trials show that we are able to render harmless both seasonal influenza viruses and avian flu viruses with our chemically modified phage shell,” says Christian Hackenberger, corresponding author of the study. “It is a major success that offers entirely new perspectives for the development of innovative antiviral drugs.”

As intriguing as the results are, the team says there’s still plenty of work to do before this new kind of treatment becomes available. A few important questions are still unanswered, such as whether the phages might trigger an immune response in people – and if so, whether that response helps or hinders the treatment. The flu might also develop resistance to the phages, which would put a damper on its usefulness. And that’s if it works in humans at all.

The team plans to continue working to address these issues and is also hopeful the technique could hold promise for the development of drugs that prevent infection of coronaviruses. Even if such a drug were developed, it would likely not be soon enough to help with the current pandemic, but could offer a potential weapon for any future coronavirus outbreaks.

►► The research was published in the journal [Nature Nanotechnology](#).

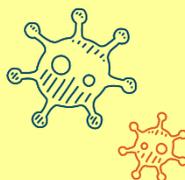
## **If long-term suppression is not possible, how do we minimize mortality for COVID-19 and other emerging infectious disease outbreaks?**

By Andreas Handel, Joel Miller, Yang Ge, and Isaac Chun-Hai Fung

Source: <https://www.medrxiv.org/content/10.1101/2020.03.13.20034892v2>

**This article is a preprint and has not been certified by peer review [what does this mean?]. It reports new medical research that has yet to be evaluated and so should not be used to guide clinical practice.**

If COVID-19 containment policies fail and social distancing measures cannot be sustained until vaccines becomes available, the next best approach is to use interventions that reduce mortality and prevent excess infections while allowing low-risk individuals to acquire immunity through natural infection until population level immunity is achieved. In such a situation, allowing some infections to occur in lower-risk groups might lead to an overall greater reduction in mortality than trying to protect everyone equally.



## Coronavirus testing: What is the difference between antigen and antibody tests?

What is an antigen test?	What is an antibody test?
<p>Antigens are found on the surface of invading pathogens, including coronavirus. Testing for antigens can determine whether someone is currently carrying the virus and are actively infectious.</p> <p>The NHS is currently using antigen tests in hospitals to determine if someone is currently infected with Covid-19.</p> <p>Samples are taken using a swab - which resemble a large cotton bud - from deep inside the nose and throat before being sent off to a lab for testing.</p> <p>Most labs use a method called the polymerase chain reaction (PCR), which takes several hours to get a result.</p> <p>It can take days for labs to run the tests and tell people their result.</p> <p>Several companies are working on ways to fast track this type of testing.</p>	<p>When a person gets infected with antigen, the body starts making specially designed proteins called antibodies in response - as a way to fight the infection.</p> <p>After they recover, those antibodies float in the blood for months, maybe even years.</p> <p>That's the body's way of defending itself in case it becomes infected with the virus again.</p> <p>So, an antibody test specifically looks for antibodies which will be able to tell whether you've already been exposed to Covid-19.</p> <p>Anyone who has already had the illness is presumed to be immune to getting it again - at least, in the intermediate term.</p> <p>This would allow them to go back to work safe in the knowledge that they are unlikely to become infected again or pass the virus on.</p> <p>The check that has been developed for Covid-19 is a finger-prick blood test, with the samples sent to laboratories and results available within a few days.</p> <p>Dr Hilary Jones, a GP and resident doctor on Good Morning Britain, explained that it works "almost like a pregnancy test, except you need a drop of blood".</p> <p>These tests are being developed by several different firms and Public Health England (PHE) is also working on its own test.</p> <p>They still need to be validated to ensure they give accurate results</p>

## Why It's So Freaking Hard to Make A Good COVID-19 Model?

By Maggie Koerth, Laura Bronner and Jasmine Mithani

Source: <https://fivethirtyeight.com/features/why-its-so-freaking-hard-to-make-a-good-covid-19-model/>

Mar 31 – Here we are, in the middle of a pandemic, staring out our living room windows like aquarium fish. The question on everybody's minds: How bad will this really get? Followed quickly by: Seriously, how long am I going to have to live cooped up like this?

We all want answers. And, given the volume of research and data being collected about the novel coronavirus, it seems like answers *ought* to exist.

There are certainly numbers out there. Trouble is, [they're kind of all over the place](#). For example, the Centers for Disease Control and Prevention is using models that forecast a best-case scenario in which about 200,000 Americans die, [according to reporting by The New York Times](#). Meanwhile, a [report from Imperial College London](#) that [made headlines for its dire, modeling-based forecasts](#) predicted about 2.2 million U.S. deaths from the coronavirus, if nobody changes their everyday behavior.

That is, to put it mildly, a freaking huge spread — the difference between a death toll on par with [the number of people who die](#) from injury and violence annually in the U.S. and one that's closer to the number of people murdered when the Chinese communists moved to [suppress counterrevolutionaries between 1950 and 1953](#). It is, in other words, the difference between a number we routinely live with, and one that changes a country forever.

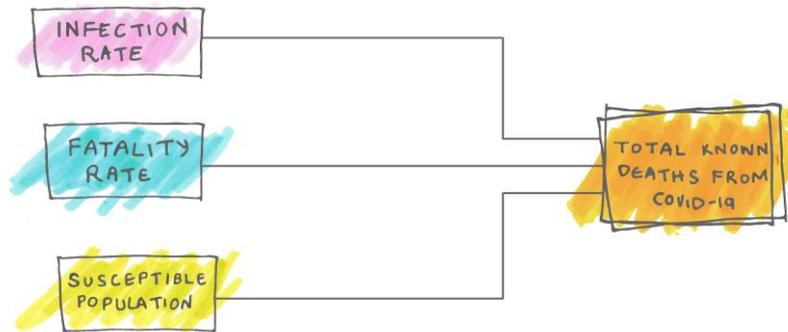
So why is that gap so wide? Well, friends, that's the nature of modeling this beast. (And one of the reasons why FiveThirtyEight doesn't have a model of its own. Thanks for your emails asking for one, though.) Using a mathematical model to predict the future is valuable for experts, even if there are vast gulfs between possible outcomes. But it's not always easy to



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make sense of the results [and how they change over time](#), and that confusion can hurt both your brain and your heart. That's why we want to talk about what goes into a model of a pandemic. Hopefully, understanding the uncertainty can help you get the most out of all the numbers flying around.

So, imagine a simple mathematical model to predict coronavirus outcomes. It's relatively easy to put together — the sort of thing



people on our staff do while buzzed on a socially isolated conference call after work. The number of people who will die is a function of how many people could become infected, how the virus spreads and how many people the virus is capable of killing.

In other (more mathematical) words:

$$N(\text{dead}) = N(\text{susceptible population}) * \text{infection rate} * \text{fatality rate}$$

See? Easy. But then you start

trying to fill in the blanks. That's when you discover that there isn't a single number to plug into ... anything. Every variable is dependent on a number of choices and knowledge gaps. And if every individual piece of a model is wobbly, then the model is going to have as much trouble standing on its own as a data journalist who has spent too long on a conference call while socially isolated after work.

Consider something as basic as data entry. Different countries and regions collect data in different ways. There's no single spreadsheet everyone is filling out that can easily allow us to compare cases and deaths around the world. Even within the United States, [doctors say we're underreporting the total number of deaths due to COVID-19](#).

The same inconsistencies apply to who gets tested. Some countries are giving tests to anyone who wants one. [Others are ... not](#). That affects how much we can know about how many people have actually contracted COVID-19, versus how many people have tested positive.

And the virus itself is an unpredictable contagion, [hurting some groups](#) more [than others](#) — meaning that local demographics and health care access are going to be big determinants when it comes to the virus' impact on communities.

"As public health people, we're often working in a little bit of the dark, trying to make our best estimates with really uncertain information," said Dr. Bill Miller, a professor of epidemiology at Ohio State University.

So, let's explore our super simple model to see why it's so hard to make a good model for something this uncertain.

### THE FATALITY RATE

Some people die from COVID-19. That's maybe the last absolute statement we can make here. But "some" is not a number and you can't math with it.

The problem is, calculating the virus' [fatality rate](#) is fuzzy from the very start. It can vary wildly from cohort to cohort. "Because age is a huge factor, you have to adjust case fatality rates for the demographic makeup of the U.S., and also the rate of comorbidities," said Rae Wannier, a biostatistician at the University of California, San Francisco, in an email to FiveThirtyEight. (Comorbidities are other underlying diseases and conditions that can exacerbate the effects of COVID-19.)

In other words, [there is no single "fatality rate"](#) — there are many. The fatality rate for the United States is [going to differ](#) from the fatality rate in a country where, say, diabetes is less prevalent. The same could be said for the rates *within* the U.S. — if the virus spreads in a metro area with many elderly residents, the fatality rate calculated there will be higher than if the epicenter was in a city that skewed younger.

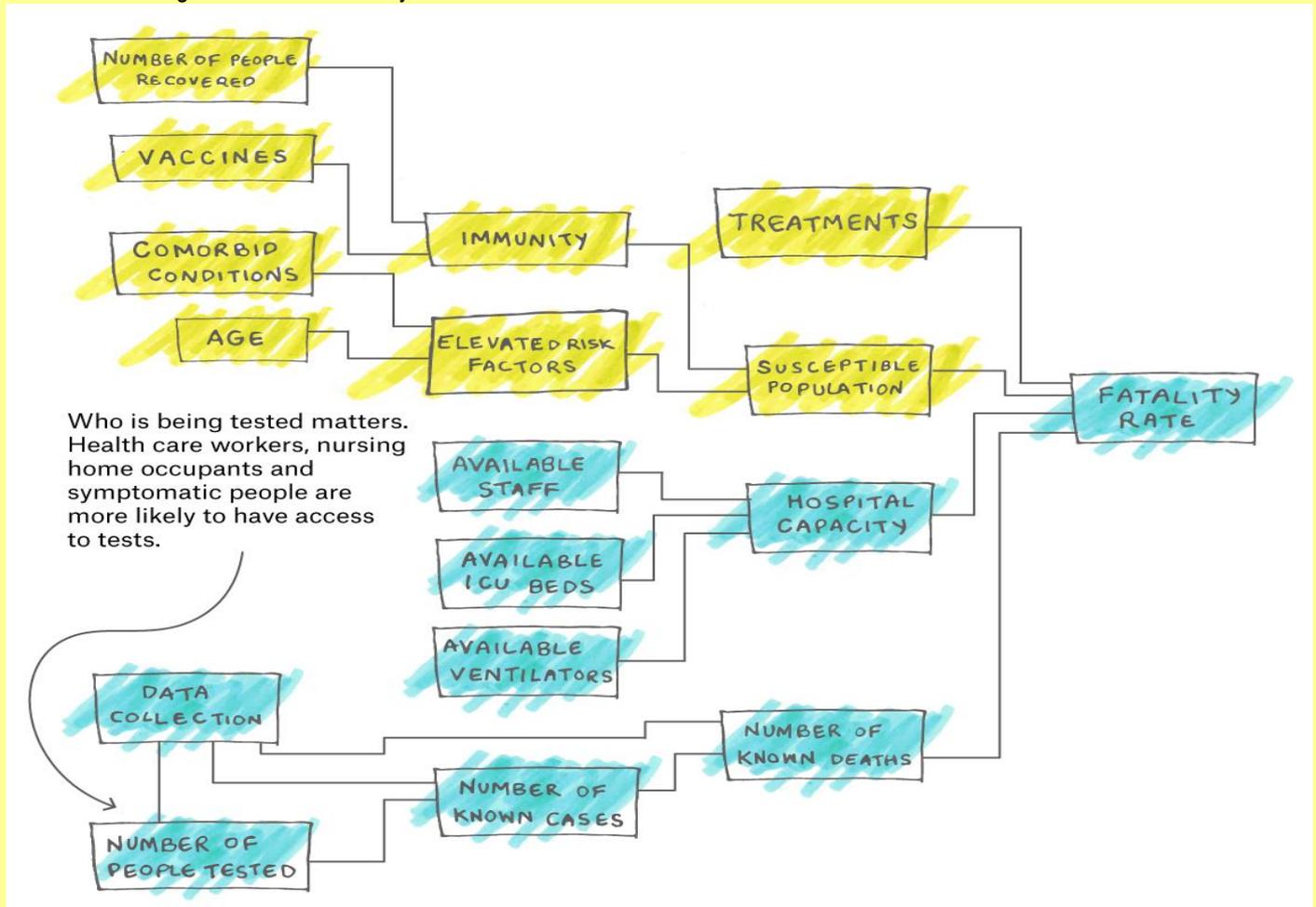
But let's stay international for now. Does knowing the fatality rate of COVID-19 in China or Italy tell us what the fatality rate will be in the U.S.? It certainly helps — but that just lowers the uncertainty, it doesn't make things certain.

Of course, we probably don't know the actual [fatality rate in those places](#), anyway. That's true for a number of reasons, starting with the [collection of basic data](#) about coronavirus cases. Numbers aren't facts. They're the result of a lot of subjective choices that have to be



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documented transparently and in detail before you can even begin to consider treating the output as fact. How data is gathered — and whether it is gathered the same way each time — matters.



There's also the issue of uncollected or inaccurate data. To determine the fatality rate, you have to divide the number of people who have died from the disease by the number of people infected with the disease. In this case, we don't really have a reliable count for the number of people infected — so, to put it mathematically, we don't know the denominator. (If we're being honest, we probably don't know exactly what the first number — the numerator — is, either, but we're assuming it's closer to correct.)

In an ideal world, we would test everyone in a population for signs of having been infected with the novel coronavirus so we could know for certain how many people have ever had the disease and how many of them died due to it. There are only a couple situations in which that has even gotten close to happening, though. Take the Diamond Princess, [one of the cruise ships](#) that got quarantined after a COVID-19 outbreak. Nearly everyone on board was tested (3,063 samples from 3,711 people). The Diamond Princess became a living laboratory with the kind of data documentation conditions we don't usually get in the real world. Researchers were able to capture not just how many people had the disease, but also how many were completely asymptomatic — and thus, would likely have gone untested, undiagnosed and uncounted had they been on land.

The results of this unusual setup suggest that there are a lot of people walking around with COVID-19 who don't know it — and, consequently, that the death rates are lower than other data has suggested. In the Diamond Princess population, the fatality rate for people with a diagnosis and symptoms was 2.3 percent, but the fatality rate for all diagnosed cases — including those who were asymptomatic — [was 1.2 percent](#).<sup>1</sup> In Iceland, a company called deCODE Genetics started offering free screenings to the general, asymptomatic population on March 13. As of March 29, deCODE identified 71 infected people [in a sample of 8,694 tests](#), including asymptomatic infections.

Meanwhile, that [symptomaticity ratio](#) — how many people are symptomatic versus asymptomatic — is a big deal and we're mostly just guessing at it right now. The Imperial College London report [assumes that two-thirds](#) of cases will be symptomatic enough that



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the infected person will notice and self-isolate. Data from the Diamond Princess found something more like [half of the cases were symptomatic](#) at the time of diagnosis. What the symptomaticity ratio turns out to *actually* be will change fatality rate calculations. The Diamond Princess data isn't perfect — they didn't test everyone, cruise ship demographics aren't representative of the broader population and some sick passengers may still die, which would increase the fatality rate. But you're not going to find more reliable stats on land. Iceland's data hasn't been published with the same level of methodological detail. In the U.S., [that kind of widespread testing is only just beginning](#), and that really

matters. If you primarily test sick people, [as some states are doing](#), the fatality rate isn't going to reflect anything like the actual fatality rate of the virus. (The denominator problem rears its head again.) And testing in the U.S. has been hampered by additional issues, such as the overall lack of available tests and the fact that some [private labs don't provide the number of tests that came up negative](#).

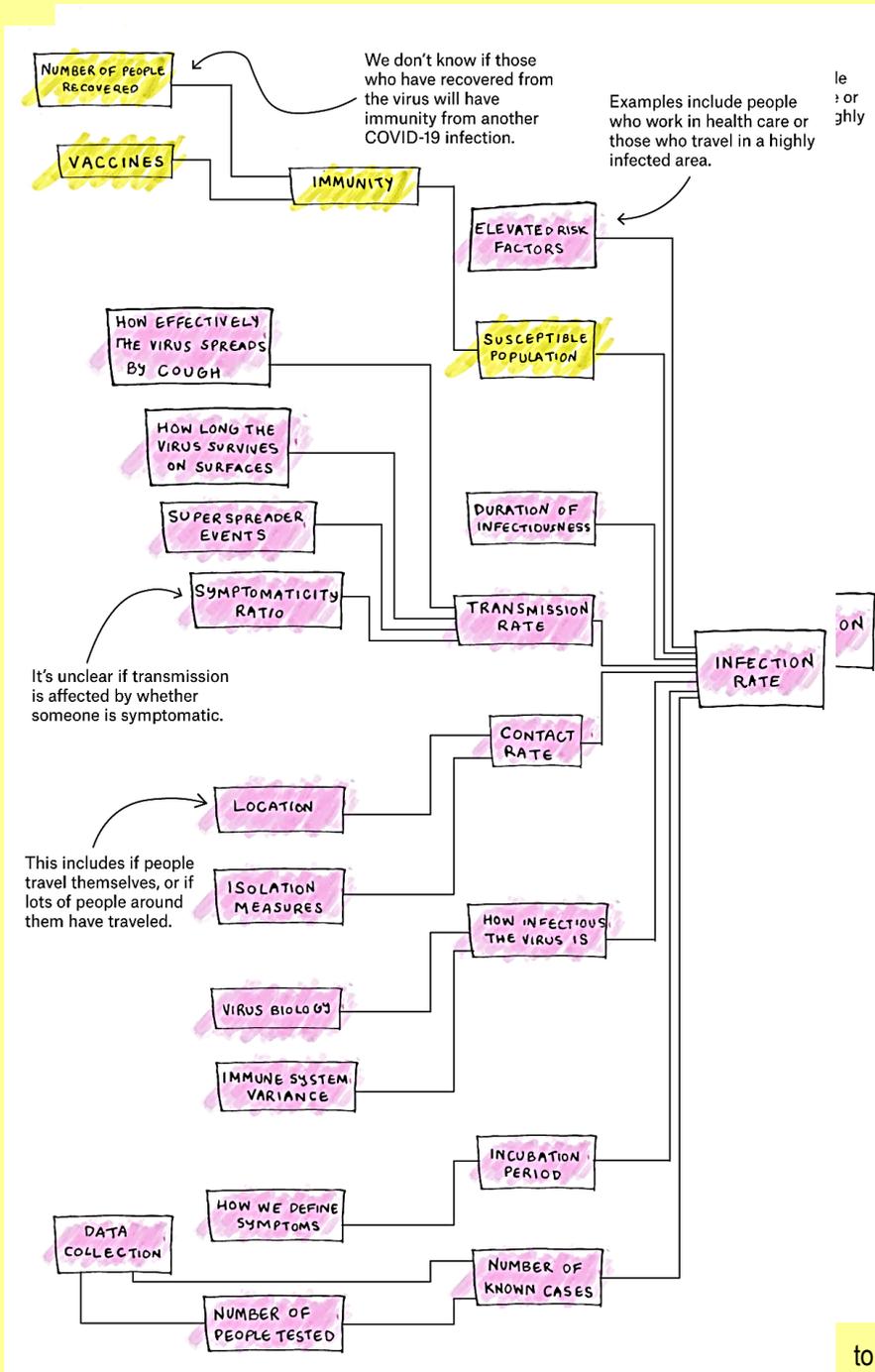
The true fatality rate of the disease is also influenced by our ability to prevent death once someone is grievously ill. And that depends on [hospital capacity](#). Given unlimited access to Intensive Care Unit beds and ventilators, many people with even severe symptoms could survive the infection. But [these resources are relatively scarce](#), and if demand exceeds supply — as [it already has in some parts of the country](#) — people who would have survived with a ventilator will likely die. This can have knock-on effects. People seeking treatment for unrelated accidents or emergencies could also suffer from the [lack of hospital resources](#), and their potentially preventable deaths — even from causes unrelated to COVID-19 — will add to the overall death toll — even if those don't get counted as COVID-19 deaths.

"Whether we end up seeing supply and personnel shortages will greatly impact fatality, and it is not yet clear the degree to which there is elasticity in our medical system," Wannier said.

**THEN THERE'S THE INFECTION RATE**

Pretty much everything we've already said about the fatality rate applies to the [infection rate](#) as well: The estimates are all going to be affected by data collection, sampling and symptomaticity ratios. But to know the infection rate, you also have to figure out how often the virus moves from one person to another. (You've probably heard the term [basic reproduction number, or R<sub>0</sub>](#), thrown around, which is the average number of new infections traced back

to each infected person in a population where everyone is susceptible to



the disease.)

Here's the thing: Transmission is likely to be extremely variable, dependent on all kinds of social behaviors, local environmental details and political decisions. It's not going to be the same from one country to another. It's probably not going to be the same from one *state* to





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susceptible. One of the reasons that so much of the population is seen as likely to be susceptible is that the novel coronavirus is just that — novel. Nobody has had it before.

A good model needs to also think about questions of reinfection: if people who have had the virus and recovered are immune to getting it again, the susceptible population shrinks. But so far, [we don't know much](#) about [post-infection immunity](#) with this virus. And that doesn't even get into how susceptibility changes if something like a vaccine is discovered. But we've gone on long enough.

### MIX IT ALL UP IN A MODEL

To make a model, then, you have to assemble all those variables (and others our editor wouldn't let us mention), account for their uncertainty, how correlated they are to each other and all sorts of other stuff. It can get messy.

And all of these factors can be affected by all the [interventions](#) we've tried to reduce the virus' spread — social distancing, hand-washing, school closing, reducing elective surgeries, and the like. This is the big unknown that [can drastically change the shape of the outbreak](#) — and yet it also differs by country, state and even city.

Think of it like making a pie. If you have a normal recipe, you can do it pretty easily and expect a predictable result that makes sense. But if the recipe contains instructions like “add three to 15 chopped apples, or steaks, or brussels sprouts, depending on what you have on hand” ... well, that's going to affect how tasty this pie is, isn't it? You can make assumptions about the correct ingredients and their quantity. But those are assumptions — not absolute facts. And if you make too many assumptions in your pie-baking process, you might very well end up with something entirely different than what you were meant to be making. And you wouldn't necessarily know you got it wrong.

Over the next few months, you are going to see many different predictions about COVID-19 outcomes. They won't all agree. But just because they're based on assumptions doesn't mean they're worthless.

“All models are wrong, it's striving to make them less wrong and useful in the moment,” Weir said.

We're hungry, so somebody has to do some baking. But be sure to ask what ingredients went into that pie and in what quantities.

[Maggie Koerth](#) is a senior science writer for FiveThirtyEight.

[Laura Bronner](#) is FiveThirtyEight's quantitative editor.

[Jasmine Mithani](#) is a visual journalist for FiveThirtyEight.

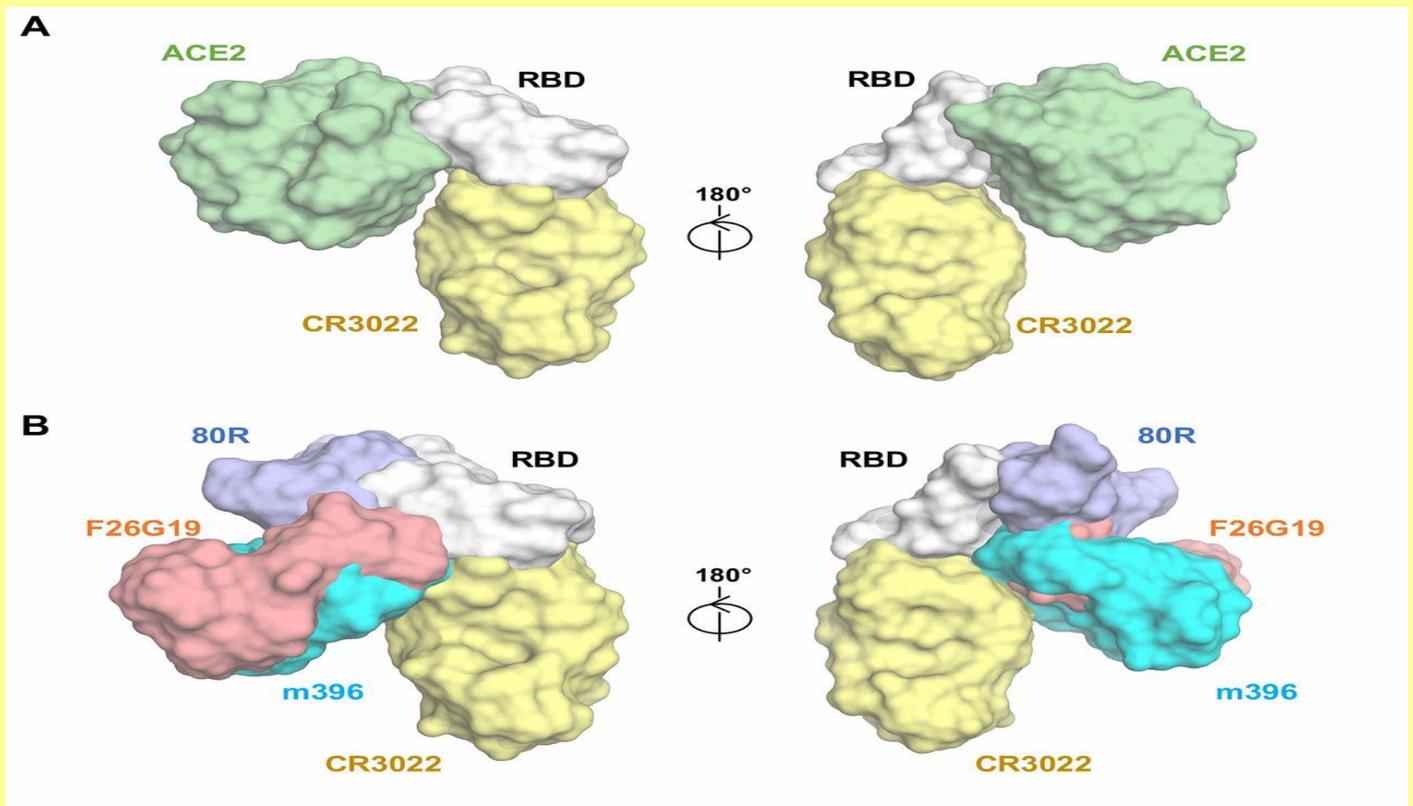


## A highly conserved cryptic epitope in the receptor-binding domains of SARS-CoV-2 and SARS-CoV

By Meng Yuan, Nicholas C. Wu, Xueyong Zhu, et al.

Science 03 Apr 2020

Source: <https://science.sciencemag.org/content/early/2020/04/02/science.abb7269>



(A) Structures of CR3022-SARS-CoV-2 RBD complex and ACE2-SARS-CoV-2 RBD complex are aligned based on the SARS-CoV-2 RBD. ACE2 is colored in green, RBD in light grey, and CR3022 in yellow. (B) Structural superposition of CR3022-SARS-CoV-2 RBD complex, F26G19-SARS-CoV RBD complex (PDB 3BGF), 80R-SARS-CoV RBD complex (PDB 2GHW), and m396-SARS-CoV RBD complex (PDB 2DD8).

The outbreak of COVID-19 caused by SARS-CoV-2 virus has now become a pandemic, but there is currently very little understanding of the antigenicity of the virus. We therefore determined the crystal structure of CR3022, a neutralizing antibody previously isolated from a convalescent SARS patient, in complex with the receptor-binding domain (RBD) of the SARS-CoV-2 spike (S) protein to 3.1 Å. CR3022 targets a highly conserved epitope, distal from the receptor-binding site, that enables cross-reactive binding between SARS-CoV-2 and SARS-CoV. Structural modeling further demonstrates that the binding epitope can only be accessed by CR3022 when at least two RBD on the trimeric S protein are in the “up” conformation and slightly rotated. Overall, this study provides molecular insights into antibody recognition of SARS-CoV-2.

## Is Coronavirus an old US bio-weapon!

Source: <https://nenow.in/health/is-coronavirus-an-old-us-bio-weapon.html>

Apr 07 – It has been known to a small community of American bio-weapon researchers that by 1969, US had developed six mass-produced, battle-ready biological weapons in the form of agents that cause anthrax, tularemia, brucellosis, Q-fever, VEE and Botulism, each a deadly disease capable of emerging into a pandemic. In addition, Staphylococcal enterotoxin B was produced as an incapacitating agent by the program. One Indian-origin biologist, with long experience of research in US' top biological labs, told **Northeast Now** this week, that by 1969, the US bio-weapons program had conducted detailed research for weaponization of at least 20 more agents, all deadly virus.



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He said on condition of anonymity, citing possible implications on future research funding, that the 20 bio-agents developed by the program included both [Hantavirus](#) and [Coronavirus](#).

The other bio-agents developed by the program were Smallpox, EEE and WEE, AHF, Lassa fever, Melioidosis, plague, yellow fever, psittacosis, typhus, dengue fever, Rift Valley fever (RVF), CHIKV, late blight of potato, rinderpest, Newcastle disease, bird flu, and the toxin ricin.

This, the Indian-origin biologist said, was 'not huge secret' and was fairly well known in the American biologists' community, especially scientists who had once worked in the country's elaborate bio-weapons program.

Even the Wikipedia's entry on US biological warfare program attests to this claim of the Indian origin biologist. The Wikipedia cites in a footnote to back its claim a work on Bioterrorism by well-known UK biologist Nancy Khordari.

So, both the coronavirus and the hantavirus are old virus developed by US bio-scientists in the 1960s before President Richard Nixon put an end to the country's bio-warfare program.

He had told those who had reservations that if any country dared to inflict bio-terrorism on US, "we will nuke those bastards".

Besides the numerous pathogens that afflict human beings, the US had developed an arsenal of anti-agriculture biological agents. These included rye stem rust spores (stored at Edgewood Arsenal, 1951–1957), wheat stem rust spores (stored at the same facility 1962–1969), and the causative agent of rice blast.

A US facility at Fort Terry focused primarily on anti-animal biological agents. The first agent that was a candidate for development was foot and mouth disease (FMD). Besides FMD, five other top-secret biological weapons projects were commissioned on Plum Island. The other four programs researched included RVF, rinderpest, African swine fever, plus eleven miscellaneous exotic animal diseases.

The eleven miscellaneous pathogens were: Blue tongue virus, bovine influenza, bovine virus diarrhea (BVD), fowl plague, goat pneumonitis, mycobacteria, "N" virus, Newcastle disease, sheep pox, Teschers disease, and vesicular stomatitis.

Work on delivery systems for the U.S. bioweapons arsenal led to the first mass-produced biological weapon in 1952, the M33 cluster bomb. The M33's sub-munition, the pipe-bomb-like cylindrical M114 bomb, was also completed and battle-ready by 1952. Other delivery systems researched and at least partially developed during the 1950s included the E77 balloon bomb and the E86 cluster bomb.

The peak of US biological weapons delivery system development came during the 1960s.

Production of cluster bomb submunitions began to shift from cylindrical to spherical bomblets, which had a larger coverage area.

Development of the spherical E120 bomblet took place in the early 1960s as did development of the M143 bomblet, similar to the chemical M139 bomblet.

The experimental Flettner rotor bomblet was also developed during this time period. The Flettner rotor was called, 'probably one of the better devices for disseminating micro-organisms', by William C Patrick III.

The Indian-origin scientist says that though the bio-weapons were supposed to be totally destroyed, a small stock of each of the agents developed was retained for 'future research'.

That included the coronavirus and the Hantavirus, which have surfaced in China during the recent corona pandemic.

How the deadly virus found their way into China is anybody's guess but the biologist was not willing to pander to speculations that have acquired the dimensions of a psywar between US and China.

From the beginning of the Corona outbreak, online sources advanced the claim that the virus was genetically engineered.

An unpublished paper authored by some Indian scientists (<https://www.biorxiv.org/content/10.1101/2020.01.30.927871v1>) bolstered this notion by suggesting that the virus' protein sequence included elements of HIV, that virus that causes AIDS.

The Indian scientists soon voluntarily withdrew the paper after some Chinese protests but the proposed linkage attracted websites like ZERO HEDGE to make the claim that the novel coronavirus was weaponized by Chinese scientists.

Speaking on Fox News, Republican Senator Tom Cotton suggested that it could not be ruled out that the virus originated in a lab in Wuhan that is used to handle the most dangerous pathogens.

Zero Hedge has been barred from Twitter, but Chinese social media abounds with conjecture that the virus was engineered by the United States as an agent of biological warfare against China.

One widely shared conspiracy theory suggests that American soldiers participating in the 2019 Military World Games in Wuhan deliberately shed the virus at the Hunan Seafood Market.

Contending that 'a new type of biological warfare is coming,' a retired People's Liberation Army general called for building a permanent biodefense force in China.

The current outbreak in China is not the first to be a rumored biological weapons attack. During the 2002–3 SARS epidemic, a Russian scientist claimed that the virus was a mixture



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of measles and mumps that could be made only in the lab. Many Chinese seized on this notion and speculated that SARS was a genetic weapon developed by the United States to target them alone.

The official China Youth Daily linked a National Institutes of Health–sponsored genetic study in China to the US genetic warfare program.

In the United States, meanwhile, a China expert suggested that the virus was linked to China's biowarfare program.

Yet SARS was by no means a genetic weapon. According to the U.S. Centers for Disease Control and Prevention, of the 166 reported SARS patients in the United States in 2003, 58 percent were white and 32 percent were Asian.

The truth, a casualty in such intense exchange of allegations and counter-allegations, is difficult to establish as to how the novel coronavirus emerged in Wuhan, whether it is a modification or an advanced version of the one the American bio-warfare program had developed in the 1960s and whether it was deliberately released.

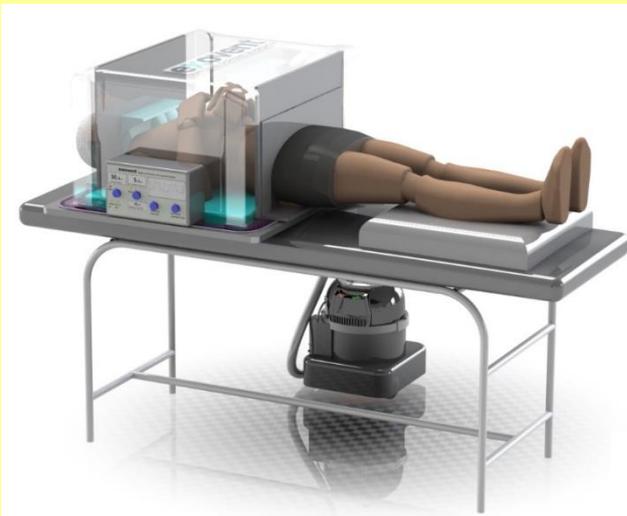
What is, however, certain is that the coronavirus that has plunged the world into a huge crisis was first developed by the US.

### Modern iron lung designed to address ventilator shortage



Source: <https://newatlas.com/medical/british-engineers-modern-iron-lung-covid-19-ventilator-alternative/>

Apr 06 – British engineers are developing a modern version of the Negative Pressure Ventilator (NPV), more popularly known as the "iron lung," to provide COVID-19 patients under the care of the NHS with a simple, inexpensive alternative to ventilators.



One of the resources that is in critically short supply for treating COVID-19 patients in need of respiratory support is ventilators. They help to support breathing in people whose lungs have been heavily affected by the virus, but these machines face a number of problems.

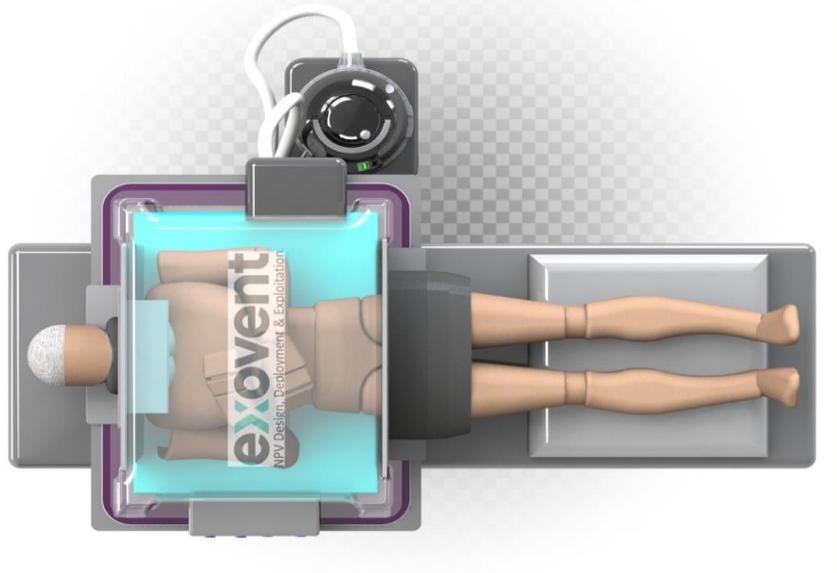
The most obvious difficulty is that ventilators are in short supply across the world as health authorities scramble to secure enough to meet the current and estimated demand as the pandemic spreads. They are also complex, expensive, require monitoring by trained personnel, and are dangerous to use on even healthy people because they require the patient to be intubated and sedated, and sometimes even paralyzed.

Such Intermittent Positive Pressure Ventilators (IPPV), as they are formally known, work by means of positive pressure. That is, they pump air or oxygen directly into the lungs as a way to help a patient breathe. The iron lung is

essentially the opposite.

First suggested in the 17th century, an iron lung, in its classic form, is a large, airtight cylindrical chamber big enough to hold a person, whose head sticks out at one end through a special collar. Inside the chamber is a diaphragm hooked to an electric motor. As the motor turns, it operates a crank that causes the diaphragm to expand and contract. As it does so, the volume inside the chamber becomes larger and smaller, causing the air pressure to rise and fall. This causes the patient's chest to expand and contract, allowing them to breathe even if they are totally paralyzed.

Such iron lungs were a common sight in hospitals and even private homes during the height of the polio epidemics of the 20th century, though they have since been superseded by more sophisticated machines. But COVID-19 might give them a new lease on life.



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The product of the University of Warwick, Marshall Aerospace & Defence Group, the Imperial NHS Trust, the Royal National Throat Nose and Ear hospital, and teams of citizen scientists, medical clinicians, academics, manufacturers, and engineers, the new NPV device, called the "exovent," has already reached the prototype stage and will be tested at two intensive care clinics in the UK.

Unlike ventilators, the exovent doesn't require intubation and is much simpler in design and operation. According to the consortium responsible for its design, patients can remain awake, take medications, eat and drink, and talk to their loved ones on the phone. In addition, the machine improves heart efficiency by 25 percent over conventional ventilators, which can adversely affect cardiac functions.

The developers also say that the exovent can be used in regular wards, which frees up ICU beds for more serious cases. Enclosing only the thorax, the machine does not use compressed air or oxygen, has only a few moving parts, and the components are readily available. The design is also adaptable for individual patients.

It's estimated that, once approved, 5,000 exovents could be manufactured a week in the UK.

"We are delighted to be working with exovent to help scale up their non-invasive ventilator from prototype to volume manufacturing," says Margot James, Executive Chair, Warwick Manufacturing Group (WMG), University of Warwick. "Our engineers and researchers are collaborating with the exovent team on the design, engineering, component sourcing and assembly of the ventilator. I am extremely proud of the unstinting and dedicated efforts of our research team, led by Archie MacPherson at WMG, and glad that we are able to apply our expertise to this important project."



### Covid ICUs and personal protection equipment

Source: <https://www.bbc.com/news/av/world-europe-51980665/inside-an-italian-icu>

**EDITOR'S COMMENT:** Watch all videos from UK, S. Korea, Spain and Italy and make your own conclusions. Keep these videos as reference material for the day after and reschedule your protection guidelines. Victimization of front-line healthcare personnel is as dangerous as the pandemic itself. Doctors and nurses provide their dedication and sacrifice. The least that governments should do is to provide them all the necessary equipment in order to be able to accomplish their duties and stay ALIVE. Perhaps it would be a good idea and a unique opportunity all those in high places and behind comfortable desks to spend just one shift in an ICU setting. This will help them to understand the situation first hand and enable them to act accordingly

## COMMENTARY: Respirators can be reused, but decontamination not well studied

By Lisa M Brosseau, ScD, and Margaret Sietsema, PhD

Source: <https://www.cidrap.umn.edu/news-perspective/2020/04/commentary-respirators-can-be-reused-decontamination-not-well-studied>

Apr 06 – Perhaps lost in the recent debate and federal recommendations on cloth masks for the general public has been the key issue of protecting those putting their lives on the line daily: hard-working healthcare workers as hospitals face limited supplies of N95 filtering facepiece respirators (FFRs) during this pandemic.

Key to such protection are issues surrounding respirator reuse and decontamination to optimize use of FFRs, which are personal protective devices constructed largely from filter material worn on the face that prevent inhalation of viral aerosols by the wearer.

This commentary assumes, however, that healthcare institutions are already implementing all other engineering controls—such as isolation rooms, physical barriers, and ventilation systems—and administrative controls—steps like limiting patients being admitted, practicing telemedicine, and cohorting healthcare workers—as recommended by the Centers for Disease Control and Prevention (CDC) in its [conventional and contingency strategies](#) for optimizing respirator supplies.

In China, the response to COVID-19 included cohorting patients in separate locations. Those with mild symptoms were housed in temporary hospitals fashioned from large open buildings such as sports stadiums. Those with more serious or life-threatening symptoms were cohorted in wards or hospitals with more medical resources and higher levels of engineering and administrative controls.<sup>1</sup> This allowed healthcare workers to wear a single respirator throughout a shift.

These same practices, recommended by the CDC in its [conventional capacity strategies](#), along with respirator reuse, would greatly limit the number of respirators required to care for patients with mild symptoms, thus saving them for healthcare workers in higher-risk settings.



### FFRs are disposable, not single use

FFRs can be worn many times. They are disposable but not single use. As well, there is no requirement that only respirators with the N95 designation must be used. Any filter designation, [N, P, R and 95, 99, 100](#), will provide a similar or higher level of protection. FFRs are manufactured from electrostatic filter material, which yields high collection efficiency due to electrostatic attraction of charged particles and low breathing resistance. Over time, breathing resistance will increase as the filters become loaded with particles, as might occur in mining or construction.

In healthcare settings, however, loading is not likely to occur before the respirator becomes too "grungy" to wear or multiple donnings have compromised the straps or nose clip.

### Extending respirator use in a single shift...

When caring for multiple COVID-19 patients, there should be no concern for cross-contamination and no need to remove the respirator between patients. Healthcare workers had no detrimental physiologic health effects when wearing an N95 FFR throughout a 12-hour shift but did report discomfort and feeling out of breath.<sup>2</sup>

Discomfort is most likely caused by buildup of temperature and humidity inside the facepiece. A respirator with an exhalation valve would do much to alleviate discomfort.

If multiple donnings are required throughout the shift, then hand contamination may be a problem. Careful doffing and storage followed by immediate hand washing may be a solution. Other solutions include wearing a face shield or a surgical mask over the respirator. The former is preferred because it will have no impact on respirator fit. The latter has been shown to have no adverse physiologic effects,<sup>3</sup> but the impact on respirator fit has not been studied.

Wearing a single respirator throughout a shift would somewhat alleviate the number of respirators needed overall during a pandemic. We recommend adopting this approach, now, for extending the limited supply of respirators and helping healthcare workers feel protected.

### ...and over multiple shifts

Fit can be compromised after multiple donnings, as straps and other components begin to fail. A study of six N95 respirators found increasing rates of failure to achieve passing fit factors as the number of donnings increased, although failure rates differed with the respirator model. Fit was most consistent on the first five donnings, and failure rates increased to 53% to 76% after 15 donnings.<sup>4</sup> Our recommendation, in pandemic situations, would be to use the same respirator over a 5-day period, as long as it is not being removed multiple times during a shift.

### Respirator decontamination

Another possible approach to stretching respirator supply is decontamination of the FFR, but there are many caveats.

While extended use of FFRs is addressed in [CDC COVID-19 pandemic guidelines as a possible contingency capacity strategy](#), FFR decontamination is not. Nor is FFR decontamination addressed in [National Institute for Occupational Safety and Health \(NIOSH\) pandemic planning recommendations for FFR extended and limited reuse in healthcare settings](#).

Decontamination of FFRs is not an approved practice by the CDC, NIOSH, the Occupational Safety and Health Administration (OSHA), or the Food and Drug Administration (FDA). Modifying a respirator invalidates its NIOSH certification, and OSHA requires that only NIOSH-certified respirators may be used in workplaces for worker protection. Respirator manufacturers have stated that FFR decontamination is not acceptable for their respirators.

Research on decontamination has been conducted or supported by NIOSH and the FDA, but only for the purpose of exploring its use in pandemic situations, as the result of recommendations from the National Academies of Science Institute of Medicine.<sup>5</sup>

In the case of a pandemic, an acceptable decontamination method must render the organism (or a closely related surrogate) non-viable and not diminish filter and fit performance, respirator integrity and structure, or comfort, odor, and wear.

These are minimal criteria. A full health and safety assessment should be conducted before bringing any decontamination method on-line. This should include consideration of the impacts on health and safety of workers involved in the decontamination process as well as those wearing the decontaminated respirator. Fisher and Shaffer<sup>6</sup> detail the many factors that should be considered before selecting decontamination as a means of extending respirator supplies.

We reviewed a few of the early NIOSH studies of respirator decontamination,<sup>7-10</sup> The most promising methods appeared to be ultraviolet germicidal irradiation (UVGI) with UV-C light and hydrogen peroxide vapor (HPV). We explore these two methods in more detail here but do not claim to have reviewed all of the data available for either method, and there may be other methods to consider, as well.



### Ultraviolet germicidal irradiation

UVGI disinfection involves placing respirators in direct line with UV-C lamps. Any exposed surface of the mask will be disinfected. This process generally requires the masks to be flipped after some period to ensure both sides of a mask are disinfected or requires a setup involving two UV-C lamps on either side of the respirator.

For samples of FFR filters treated with SARS (severe acute respiratory syndrome) and MERS (Middle East respiratory syndrome) viruses, no viable virus was found following a dose of 1 joule per square centimeter ( $J/cm^2$ ) of short wavelength (254 nanometers) UV-C light, even in the presence of artificial skin oil and saliva.<sup>11</sup> Researchers found no impact of doses ranging from 3 to 20  $J/cm^2$  on filter performance.<sup>9-12</sup>

A similar dose range did not compromise fit on three N95 FFRs worn by 10 volunteers.<sup>12</sup> Doses ranging from 3 to 6.5  $J/cm^2$  did not alter fit performance on human subjects; doses up to 20  $J/cm^2$  did not significantly change fit performance on respirators mounted on a static head form connected to a breathing machine.<sup>11</sup>

Lindsley et al<sup>13</sup> tested the impact of much higher doses, ranging from 120 to 950  $J/cm^2$ , on respirator filter samples and 590 to 2,360  $J/cm^2$  on respirator straps. For most samples, filter efficiency decreased after UVGI treatment but remained above 95% at all dose levels for the four tested respirator models. Strength of the different layers decreased at all doses, with more layers showing decreased strength with increasing dose. The breaking strength of straps also decreased at all doses, ranging from a loss of 10% to 21% at the lowest dose of 590  $J/cm^2$  and 20% to 51% at the highest dose of 2,360  $J/cm^2$ . Respirators treated with a single decontamination of UVGI showed no significant difference from untreated respirators in odor, donning ease, comfort, and respirator fit.<sup>9</sup>

Altogether, these data suggest that respirators could be decontaminated by UVGI for up to 20 cycles at a dose of 1  $J/cm^2$  per cycle, if the fit performance data from Heimbuch and Harnish<sup>11</sup> using a static head form are representative of fit on humans. Limited human data on a small number of N95 FFR models suggest that 3 cycles at this dose will not degrade fit.

While respirator filter performance (and perhaps fit) were not adversely affected at the higher doses studied by Lindsley et al,<sup>13</sup> because the lowest dose level of 120  $J/cm^2$  caused a loss of strength of at least one filter layer, extending UVGI treatment beyond 20 cycles does not seem appropriate at this time.

More research is needed on off-gassing, process implementation, and worker health and safety (for process workers and respirator wearers). Without published studies describing implementation of this method in real-world settings, we are hesitant to recommend UVGI during the COVID-19 pandemic. If absolutely necessary for extending limited supplies, it would be precautionary to limit its use to no more than 5 cycles at 1  $J/cm^2$  per cycle.

### Hydrogen peroxide vapor

HPV involves generating a hydrogen peroxide vapor at a concentration able to deactivate organisms. The generated vapor needs to be able to reach all sides of the respirator.

Two studies have demonstrated six-log spore reduction with biological indicators (*Geobacillus stearothermophilus*) using:

1. In a 64-cubic-meter room, exposure of 8 grams per cubic meter ( $g/m^3$ ) HPV for 3 cycles (total dose of 24  $g/m^3$ , total single cycle time of 125 minutes with 15-minute dwell) using a **Bioquell** Room Bio-Decontamination Service HPV generator.<sup>10</sup>
2. A 310-liter test chamber exposure of 323  $g/m^3$  (10 minutes conditioning, 20 minutes at 2  $g/min$  gassing, 120 minutes at 0.5  $g/min$  dwell) using a mobile HPV generator (Bioquell Clarus C).<sup>14</sup>

It is assumed that a dose sufficient to deactivate bacterial spores will be sufficient for deactivation of less hardy viral organisms. No data are available, however, for the dose required to deactivate SARS-CoV-2, the virus that causes COVID-19.

After 3 or 50 rounds of disinfection in these two studies, respectively, neither group found any significant reduction in filter performance. Respirator fit was measured only in the second study, using a static head form and breathing machine. After 20 cycles, the researchers found no difference in fit between treated and control respirators, but there was noticeable and significant damage to the straps.<sup>14</sup> (Richter 2016) No off-gassing of HPV from the respirator was measured after 5 hours of aeration in the second study<sup>14</sup>; off-gassing was not explored in the first.



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Thus, HPV appears to meet the minimum threshold of our four criteria, although there are some important limitations in the data. There are no data for the dose required to inactivate SARS-CoV-2 or other similar coronaviruses.

It is not clear why the doses required to achieve a 6-log reduction differ by an order of magnitude between the two methods. Richter et al<sup>14</sup> conducted the most extensive set of experiments but evaluated only a single respirator model; the data are available only in a non-peer-reviewed final contract report. Bergman et al<sup>10</sup> conducted fewer assessments on six respirator models and did not evaluate fit.

In addition, neither study evaluated fit on human subjects. The application in a real-world setting for either approach has not been described in a peer-reviewed publication. Given these many limitations, we hesitate to recommend the use of HPV unless absolutely necessary in the most dire of pandemic situations. It would be precautionary to limit the number of cycles to no more than 5 for either of the two protocols.

### More decontamination caveats

None of the methods described here have received a thorough health and safety process review, and none have been adequately assessed in clinical settings. More information is needed on the health and safety of workers involved in the decontamination process; short- and long-term costs of equipment purchase and installation, training, maintenance, program administration, quality control, process time, etc.; and whether the method introduces new hazards for respirator wearers.

Respirator users should be involved in the assessments. We should expect to see well-designed pilot studies in real-world settings prior to a pandemic. The literature and research do not yet appear to be at that point.

Recent [guidelines from NIOSH](#) confirm UVGI and HPV as possible methods for decontaminating FFRs but also suggest that moist heat may be acceptable. Our criteria should be considered for any additional decontamination methods that were not reviewed in detail here.

### Exhausting all means to extend protection

Organizations should be implementing as many of the controls described in the CDC conventional and contingency strategies for extending respirator supplies before resorting to FFR decontamination, which, as noted above, is not an approved or even suggested strategy by any federal government agency.

We ask the public to support their healthcare workers and insist that healthcare institutions implement all possible administrative and engineering controls that would ensure ongoing supplies of respirators throughout the pandemic.

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## Pioneering UAE research monitors vital signs by radar

Source: <https://www.thenational.ae/uae/health/pioneering-uae-research-monitors-vital-signs-by-radar-1.1002005>

Apr 06 – Vital signs such as blood pressure and heart rate could soon be monitored wirelessly via radar following pioneering work by UAE researchers.

A team at Khalifa University believe the technology could be used in hospitals and from homes, reducing the need for doctors' house visits and avoiding the need for patients to be physically hooked up to machines.

Scientists hope that in time the radars could also be deployed in public settings such as airports to monitor the health of passengers and prevent the spread of future pandemics.

A prototype device for individual monitoring has already been built and researchers are now working on refining their design.

They believe the technology could help improve efficiency in operating theatres, reduce dependence on care homes and prevent cot deaths.

"It's interesting and challenging work but we also feel good about coming up with a solution that can contribute to society," said Baker Mohammad, Associate Professor of Electronic Engineering at Khalifa University.

"The four major vital signs are body temperature, heart rate, breath rate and blood pressure.

"They provide almost a complete picture of individuals' body vital functions and help to assess their general physical health.

"The prototype we have built is a little bit bulky for an operating room or as a mobile device. So our goal now is to build a customised solution for these purposes."

Radars have been used for monitoring patient breathing and circulation since the 1970s.

However, rapid advances in technology mean researchers believe they can now analyze multiple vital signs at once, with small, highly efficient devices.

The radar works by sending out electromagnetic waves which can detect a person's heartbeat, breathing patterns and blood pressure.

The data then bounces back to the unit where an onboard processor is able to analyze the information.

*The prototype undergoing testing. Courtesy: Khalifa University*



Small, portable devices could be used by medics to analyze patients or they could be installed in homes to monitor patients and transmit readings remotely. They could also raise the alarm if abnormal readings were found. While academics say they have shown the technology does work for individual monitoring provided a patient remains motionless, they admit further study is required before they can be deployed to monitor large groups, for example in airports.

This is because multiple body movements could confuse the radar processors. Prof Mohammad also said there could be privacy concerns about spying on a person's vital signs without their knowledge.

However, he believes these could be overcome with further research and regulation, and that one day radars may be a far more effective way to check a person's health than the body temperature cameras which have recently appeared at UAE airports and malls to scan for coronavirus cases.

"Our proposed radar-based vital sign detection system has great potential in monitoring crowds or groups of passengers from a distance," said Prof Mohammad, who is also director of Khalifa University's System on Chip Centre (SOCC) and has published his findings in an academic paper.

"Hospitals told us they were already interested in contactless monitoring.

We were also thinking we could make a small miniature radar

which we could put in a crib, and if the baby was to stop breathing, it would alert the parents.

"But now with coronavirus it has made us think it could be of even more interest.



"If the UAE succeeded in getting this technology to a stage that we could put it in airports, planes or schools to look for abnormalities, it could be very useful."

Research is already underway on refining the prototype, and the potential for using radar to monitor the health of larger groups.

"To further improve the contactless vital signs detection accuracy, the SOCC team is currently working on implementing the radar at millimeter-wave [extremely high] frequencies," Prof Mohammad said.

"Moving to higher frequencies enables higher heart rate detection. This feature could help monitor, for example, the vital signs of students in a classroom or passengers in airplane."

## Use of Alternative Medical Care Facilities in the COVID-19 Pandemic

By Eric Toner, MD, and Richard Waldhorn, MD

Source: <http://www.centerforhealthsecurity.org/cbn/2020/cbnreport-04072020.html>



Apr 07 – A number of cities in the United States are preparing alternative care facilities (ACFs) to augment surge capacity in response to the COVID-19 pandemic. But in some instances, it seems the use case or strategy for these facilities is unclear. We published papers on this topic in 2006 and 2008, during the height of concerns about an imminent H5N1 influenza pandemic.<sup>1,2</sup> Most of the recommendations in those papers are still relevant and applicable to the current coronavirus pandemic. Here we provide our recommendations for how ACFs can best be used in the immediate response to COVID-19.

### Establish ACFs in All Communities

We recommend that all cities and towns immediately start working rapidly to establish and make plans for staffing ACFs. Time is of the essence, because constructing and outfitting a facility cannot happen overnight. Some towns may wish to jointly establish ACFs, or states may establish regional facilities. COVID-19 epidemiology models forecast that hospitals across the United States may be stretched to their limits, if not completely overwhelmed. Some cities are experiencing it now; the rest of the country can expect to see it in the coming weeks. Even with successful social distancing, it is unlikely that any location will be completely spared, and it is hard to predict which communities will see the greatest mismatch between patient demand and medical capacity.

The ACFs should be established jointly by the local or state governments and the local hospitals in collaboration with local healthcare coalitions. They may be established in a variety of spaces, including gymnasiums, conference halls, hotels, and, in some cases, tents. The choice of the space as well as the size and configuration should be determined by the anticipated demand as well as the specific purpose of the ACF. That purpose is likely to vary from location to location.

### Possible Uses for ACFs

ACFs have been proposed to serve a variety of functions, including:

- Overflow from hospitals, providing a full range of care
- Patient isolation and alternative to home care for COVID-19–infected patients
- Quarantine of contacts of confirmed cases
- Primary triage and rapid patient screening
- Limited supportive care for noncritical infected patients
- Expanded ambulatory care
- Care for recovering, noninfected patients

The first of these proposed functions is not practical. It is not possible to recreate all the capabilities of a hospital in an ACF. Hospitals require extraordinary amounts of large, sophisticated, and expensive equipment and infrastructure. To build an ACF with these capabilities would be to build a new hospital. The only full hospital model to augment surge capacity being attempted right now is the deployment of the Navy hospital ships *Comfort* and *Mercy* to New York and California, and defining their exact mission and integration into the local surge capacity effort remains challenging.

Each of the others make some sense and could be useful for some communities. We would not expect that any location would create ACFs to address all these functions. Which functions are needed must be determined locally.

#### ❖ Patient isolation and alternative to home care for infected patients

There are many people in society who may not be able to effectively home isolate if they become ill with COVID-19. They may live in a crowded apartment with others, be medically frail with no one to care for them, or even be homeless. An ACF could



be a resource for medically supervised isolation for people with limited healthcare needs.

❖ **Quarantine of contacts of confirmed cases**

Close contacts of confirmed or suspected COVID-19 patients should undergo 2 weeks of home quarantine, but as with home isolation, this may not be possible for many people. An ACF could provide shelter with some separation between individuals, along with medical monitoring for emerging symptoms.

❖ **Primary triage and rapid patient screening**

Most COVID-19 patients will not need hospital care and should not be seen in an overcrowded emergency department (ED). ACFs could provide a space for initial screening and triage of potential COVID-19 patients. An ACF used for this purpose would need to be located physically close to the hospital ED so that unstable patients can be admitted as quickly as possible.

❖ **Limited supportive care for noncritical infected patients**

Although some hospitalized COVID-19 patients will require intensive care, the majority will not. These patients may need only low-flow oxygen, intravenous fluids, and some common medications and treatments. This could conceivably be done in a well-equipped ACF. However, some COVID-19 patients suddenly deteriorate, so there needs to be the capability of rapid transfer to a nearby hospital ICU.

❖ **Expanded ambulatory care**

In addition, there may be a need for an alternative to overwhelmed EDs and urgent care centers as well as closed physician offices for all non-COVID patients who need minor medical care but cannot access it because of the pandemic.

❖ **Care for recovering, noninfected patients**

In order to free up hospital space for COVID-19 patients, many hospitals are trying to discharge medically stable non-COVID-19 patients early. Some of these patients may not yet be well enough to go home but do not need the full services of a hospital. ACFs could provide basic medical care for such patients.

### Different Functions Require Different Plans

Each potential ACF function, or subgroup of functions, listed above requires a different layout, staffing pattern, and type of medical resources. The size of patient spaces, the barriers between them, and the medical resources (eg, oxygen) needed will vary depending on the intended use. The degree of proximity to the hospital will also vary depending on the intended function. In some smaller locations, such as a gymnasium, only 1 function is likely to be possible; however, in a very large space, like a convention center, separate parts of the facility can be used for different functions if the functions are sufficiently segregated.

### Staffing

Some functions will be fairly resource-intensive, requiring extensive coverage by physicians, nurse practitioners, or physician assistants (eg, expanded ambulatory care). Others may require much less coverage (eg, patient isolation and alternative to home care for infected patients). The ratio of nursing personnel to patients will also be different, depending on the functions. Volunteers may be more useful in some functions than in others. Where the staffing will come from is an important limiting factor, and the availability of staffing may dictate the kinds of functions that can be offered.

### The Challenge of Asymptomatic Transmission

Because a substantial portion of COVID-19 transmission is from people with no symptoms at the time, every ACF, regardless of its intended function, could and likely will become “infected” unless rapid COVID-19 testing becomes much more widely available than it is now. Therefore, every ACF, whether intended for COVID-19 patients or not, must adhere to strict infection control practices and have contingency plans for how to respond to an outbreak within the facility.

### Summary

ACFs can be an essential part of the response to the pandemic, and every community should be preparing them now. But form follows function, and those planning these facilities should have a clear notion of what the precise purpose of the facility will be.

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## Bluetooth Signals Help Prevent COVID-19 Contagion

Source: <https://i-hls.com/archives/100471>

Apr 21 – Smartphone signals could automate COVID-19 contact tracing while preserving privacy. A new system could send bluetooth signals to nearby devices in order to notify people if they have been near an infected person.

A team led by MIT researchers and including experts from many institutions is developing a system that augments “manual” contact tracing by public health officials, while preserving the privacy of all individuals.



The system relies on short-range Bluetooth signals emitted from people’s smartphones. These signals represent random strings of numbers, likened to “chirps” that other nearby smartphones can remember hearing.

If a person tests positive, they can upload the list of chirps their phone has put out in the past 14 days to a database. Other people can then scan the database to see if any of those chirps match the ones picked up by their phones. If there’s a match, a notification will inform that person that they may have been exposed to the virus, and will include information from public health authorities on the next steps to take.

Vitaly, this entire process is done while maintaining the privacy of those who are COVID-19 positive and those wishing to check if they have been in contact with an infected person.

**This approach to private, automated contact tracing will be available in a number of ways, including through the privacy-first effort launched at MIT in response to COVID-19 called [SafePaths](#). This broad set of mobile apps is under development by a team led by Ramesh Raskar of the MIT Media Lab.**

The system’s developers were inspired by Apple’s “Find My” feature used in case the phone is lost. With their system, the team is essentially asking a phone to send out this kind of random signal all the time and to keep a log of these signals. At the same time, the phone detects chirps it has picked up from other phones, and only logs chirps that would be medically significant for contact tracing — those emitted from within an approximate 6-foot radius and picked up for a certain duration of time, say 10 minutes.

The ability to conduct contact tracing quickly and at a large scale can be effective not only in flattening the curve of the outbreak but also for enabling people to safely enter public life once a community is on the downward side of the curve.

## How to Protect Troops from Coronavirus

Source: <https://i-hls.com/archives/100413>

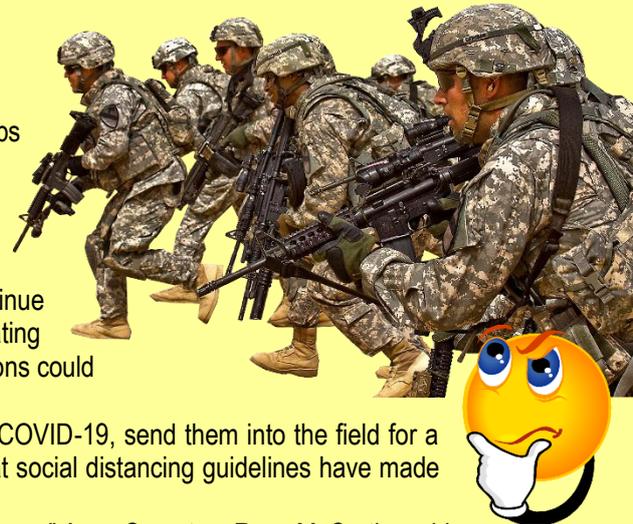
Apr 08 – The US Defense Department wants to balance the need to protect troops from the coronavirus while maintaining their readiness to fight. The challenge is the easy opportunity for the virus to wreak havoc among Army troops — combat arms units, like infantry battalions, and basic training environments in which recruits live and eat in close quarters.

The Army can’t wait a year until there’s a vaccine, so it is working on plans to continue training large groups of troops amid the escalating coronavirus pandemic by creating “safety bubbles” around groups of healthy soldiers. Entire companies and battalions could be isolated in the field for a month.

The idea is to test an entire company or battalion of soldiers, and if none have COVID-19, send them into the field for a month with prepackaged meals to do the kind of collective training exercises that social distancing guidelines have made risky on military bases throughout the United States.

“We’re going to look at how big the size of a cohort can be. This is all brand new for us,” Army Secretary Ryan McCarthy said. The key to the Army’s plan is pushing more coronavirus testing kits out into the field, McCarthy said.

The Army has already tested an early pilot model of the “safety bubble” concept. Some 800 soldiers were recently taken in 32 sterilized buses from Basic Combat training in South Carolina to bases in Virginia, Oklahoma, and Texas. The soldiers were screened for COVID-19 symptoms, but not tested for the coronavirus.





## **Practical considerations and recommendations for Religious Leaders and Faith-based Communities in the context of COVID-19**

This document and risk assessment tool provides practical guidance and recommendations to support the special role of religious leaders, faith-based organizations, and faith communities in COVID-19 education, preparedness, and response.

- [Access the publication](#)

- [Access the risk assessment tool](#)

- [Access the decision tree](#)

## **Management of ill travellers at Points of Entry – international airports, seaports and ground crossings – in the context of COVID-19 outbreak**

This document aims to provide advice on the detection and management of ill travellers suspected of COVID-19 infection, at international airports, ports and ground crossings. It includes the following measures; 1) Detection of ill travellers; 2) Interview of ill travellers for COVID-19; 3) Reporting of alerts of ill travellers with suspected COVID-19 infection and 4) Isolation, initial case management and referral of ill travellers with suspected COVID-19 infection.

- [Access the publication](#)

## **Online course for Management of ill travelers at point of entry**

This interactive e-learning course is converted from the WHO Interim Guidance for Management of ill travellers at Points of Entry – international airports, seaports and ground crossings – in the context of COVID-19 outbreak. This course is intended for National IHR Focal Points, public health authorities and operators at points of entry, conveyance operators, and other stakeholders.

- [Access the publication](#)

## **Key planning recommendations for Mass Gatherings in the context of the current COVID-19 outbreak (Interim guidance)**

The purpose of this document is to outline key planning considerations for organizers of mass gatherings in the context of the COVID-19 outbreak. It should be read in conjunction with WHO's Public Health for Mass Gatherings: Key Considerations, which provides general advice on the public health aspects of mass gathering events. It is also adapted from WHO's interim planning considerations previously released for mass gatherings in the context of pandemic (H1N1) 2009 influenza, and International meetings attended by individuals from Ebola virus disease-affected countries.

It is WHO's view that all countries with community transmission should seriously consider postponing or reducing mass gatherings that bring people together and have the potential to amplify disease and support the recommended best practice of physical distancing. Any decision will be supported through the use of WHO tools, in particular the Risk Assessment for Mass Gatherings during COVID-19 and this document.

If movement restrictions and further national measures have been established in the country, the WHO RA does not apply. However, when the process of re-opening/conducting mass gatherings is being considered post movement restrictions, it will be key to ensure any decisions are based on a risk assessment, such as the WHO Mass gatherings COVID-19 risk assessment and this document.

- [Access the publication](#)

## **Mass gatherings COVID-19 risk assessment**

This document provides a COVID-19 risk assessment and mitigation checklist for use by host countries and mass gathering organizers. It also includes an operational tool which offers guidance for organizers holding meetings during the COVID-19 outbreak and which should be accompanied by the WHO COVID-19 Generic Risk Assessment Excel file. It should be read in conjunction with WHO's Key planning recommendations for Mass Gatherings in the context of the current COVID-19 outbreak (Interim guidance).

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- [Access the publication](#)

- [Access the tool](#)

- [Access the decision tree](#)

## **Online course for public health preparedness for mass gathering events**

This project aims to support host nations in delivering a safe and successful event, as part of WHO's ongoing support to countries in strengthening the International Health Regulations capacities for prevention, detection and response to the public health events in the context of hosting mass gathering events.

To create a user account, future members need to click on "Register" from the homepage of the Health Security Learning Platform:

- [Access the course](#)

## **Public health preparedness and response for aviation sector**

Handbook for the Management of Public Health Events in Air Transport

This handbook was developed in collaboration with the International Civil Aviation Organization. It is intended to help competent authorities at airports to implement a risk-based approach to public health events in a consistent manner and assist in determining interventions that are commensurate to the risks, while avoiding unnecessary interference with international traffic and trade.

- [Access the publication](#)

## **Operational considerations for managing COVID-19 cases/ outbreak in aviation**

This document offers guidance on operational considerations for managing COVID-19 cases/outbreak in the aviation setting. It should be used in conjunction with WHO's Handbook for the Management of Public Health Events in Air Transport.

The target audience is any authority involved in public health response to a public health event in aviation, including International Health Regulations (IHR) National Focal Points (NFP), health authorities at airports, local, provincial and national health surveillance and response systems, as well as civil aviation authorities, airport operators, aircraft operators, airports and airlines.

- [Access the publication](#)

## **Public health preparedness and response for maritime sector**

WHO has published several technical guidance, developed in collaboration with the Maritime sectors, for routine inspection on board ships and for public health emergency response to the public health events on board ships and at ports.

### **Operational considerations for managing COVID-19 cases/outbreak on board ships**

To assist WHO Member States, all State Parties to the International Health Regulations (IHR), in managing individual case or outbreaks on board ships in the context of COVID-19, by outlining operational considerations to reduce the risk of transmission of COVID-19 on board ships, while avoiding unnecessary interference with international traffic and trade.

The target audience of this documents is any authority involved in public health response to a COVID-19 public health event on board ships, including IHR National Focal Points (NFP), port health authorities, local, provincial and national health surveillance and response system, as well as port operators and ship operators.

- [Access the document](#)

## **Handbook for the management of public health events on board ships**

To assist States Parties in contingency planning and implementation of health measures on board ships or in ports, WHO developed a generic guidance addressing all public health risks and related rules and regulations.

According to IHR, competent authorities at ports are responsible for responding to events that pose a risk to public health. These events are identified through notifications by ships or other competent authorities, during a ship inspection or even through other informal routes such as media reports. Events may be caused by biological, chemical or radiological agents. Event management involves event identification, verification, risk assessment and response.



[- Access the publication](#)

## Handbook for the inspection of ships and issuance of ship sanitation certificates

This handbook is intended to be used as reference material for port health officers, regulators, ship operators and other competent authorities in charge of implementing the IHR (2005) at ports and on ships. The handbook is based on the IHR (2005) provisions regarding ship inspection and issue of SSCs. They provide guidance for preparing and performing the inspection, completing the certificates and applying public health measures within the framework of the IHR (2005).

[- Access the publication](#)

## The COVID-19 vaccine development landscape

By Tung Thanh Le, Zacharias Andreadakis, Arun Kumar, et al

Source: <https://www.nature.com/articles/d41573-020-00073-5>

Apr 09 – The genetic sequence of SARS-CoV-2, the coronavirus that causes COVID-19, was published on 11 January 2020, triggering intense global R&D activity to develop a vaccine against the disease. The scale of the humanitarian and economic impact of the COVID-19 pandemic is driving evaluation of next-generation vaccine technology platforms through novel paradigms to accelerate development, and the first COVID-19 vaccine candidate [entered human clinical testing](#) with unprecedented rapidity on 16 March 2020.

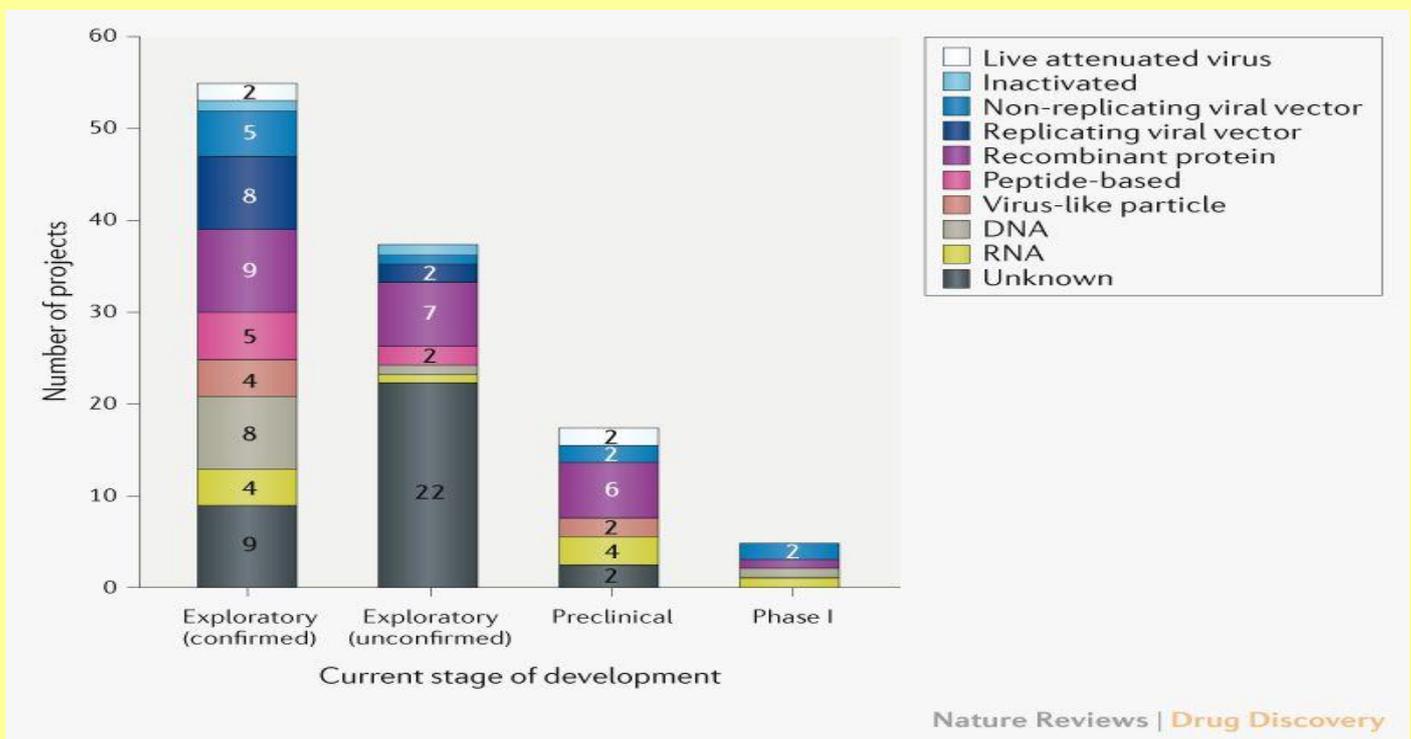


Fig. 1 | **Pipeline of COVID-19 vaccine candidates by technology platform.** Exploratory projects (split into confirmed and unconfirmed) are in the early planning stage with no in-vivo testing, and preclinical projects are at the stage of in-vivo testing and/or manufacturing clinical trials material.

The Coalition for Epidemic Preparedness Innovations (CEPI) is working with global health authorities and vaccine developers to support the development of vaccines against COVID-19. To facilitate this effort, we have developed and are continuously maintaining an overview of the global landscape of COVID-19 vaccine development activity. Our landscape database includes vaccine development programmes reported through the WHO's authoritative and [continually updated list](#), along with other projects identified from publicly available and proprietary sources (see



## HZS C<sup>2</sup>BRNE DIARY – April 2020

Supplementary Box 1). The landscape provides insights into key characteristics of COVID-19 vaccine R&D and serves as a resource for ongoing portfolio management at CEPI. We have also shared our landscape information with others in the global health ecosystem to help improve coordination in the COVID-19 outbreak response and enable global resources and capabilities to be directed towards the most promising vaccine candidates.

### COVID-19 vaccine R&D landscape

As of 8 April 2020, the global COVID-19 vaccine R&D landscape includes 115 vaccine candidates (Fig. 1), of which 78 are confirmed as active and 37 are unconfirmed (development status cannot be determined from publicly available or proprietary information sources). Of the 78 confirmed active projects, 73 are currently at exploratory or preclinical stages. The most advanced candidates have recently moved into clinical development, including [mRNA-1273](#) from Moderna, [Ad5-nCoV](#) from CanSino Biologicals, [INO-4800](#) from Inovio, [LV-SMENP-DC](#) and [pathogen-specific aAPC](#) from Shenzhen Geno-Immune Medical Institute (Table 1). Numerous other vaccine developers have [indicated plans to initiate human testing in 2020](#).

Table 1 | Clinical-phase vaccine candidates for COVID-19

Candidate	Vaccine characteristics	Lead developer	Status
mRNA-1273	LNP-encapsulated mRNA vaccine encoding S protein	Moderna	Phase I ( <a href="#">NCT04283461</a> )
Ad5-nCoV	Adenovirus type 5 vector that expresses S protein	CanSino Biologicals	Phase I ( <a href="#">NCT04313127</a> )
INO-4800	DNA plasmid encoding S protein delivered by electroporation	Inovio Pharmaceuticals	Phase I ( <a href="#">NCT04336410</a> )
LV-SMENP-DC	DCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins; administered with antigen-specific CTLs	Shenzhen Geno-Immune Medical Institute	Phase I ( <a href="#">NCT04276896</a> )
Pathogen-specific aAPC	aAPCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins	Shenzhen Geno-Immune Medical Institute	Phase I ( <a href="#">NCT04299724</a> )

aAPC, artificial antigen-presenting cell; CTL, cytotoxic T lymphocyte; DC, dendritic cell; LNP, lipid nanoparticle; S protein, SARS-CoV-2 spike protein. Source: ClinicalTrials.gov website; WHO.

**Diversity of technology platforms.** A striking feature of the vaccine development landscape for COVID-19 is the range of technology platforms being evaluated, including nucleic acid (DNA and RNA), virus-like particle, peptide, viral vector (replicating and non-replicating), recombinant protein, live attenuated virus and inactivated virus approaches (Fig. 1). Many of these platforms are not currently the basis for licensed vaccines, but experience in fields such as oncology is encouraging developers to exploit the opportunities that next-generation approaches offer for increased speed of development and manufacture. It is conceivable that some vaccine platforms may be better suited to specific population subtypes (such as the elderly, children, pregnant women or immunocompromised patients).

Considering the candidates in Table 1, the [novel platforms based on DNA or mRNA](#) offer great flexibility in terms of antigen manipulation and potential for speed. Indeed, Moderna started clinical testing of its mRNA-based vaccine mRNA-1273 just 2 months after sequence identification. Vaccines based on viral vectors offer a high level of protein expression and long-term stability, and induce strong immune responses. Finally, there are already licensed vaccines based on recombinant proteins for other diseases, and so such candidates could take advantage of existing large-scale production capacity.

For some platforms, adjuvants could enhance immunogenicity and make lower doses viable, thereby enabling vaccination of more people without compromising protection. So far, at least 10 developers have indicated plans to develop adjuvanted vaccines against COVID-19, and vaccine developers including [GlaxoSmithKine](#), [Seqirus](#) and [Dynavax](#) have committed to making licensed adjuvants (AS03, MF59 and CpG 1018, respectively) available for use with novel COVID-19 vaccines developed by others.

Public information on the specific SARS-CoV-2 antigen(s) used in vaccine development is limited. Most candidates for which information is available aim to induce neutralizing antibodies against the viral spike (S) protein, preventing uptake via the human ACE2 receptor. However, it is unclear how different forms and/or variants of the S protein used in different candidates relate to each other, or to the genomic epidemiology of the disease. Experience with SARS vaccine development



indicates the potential for immune enhancement effects of different antigens, which is [a topic of debate](#) and could be relevant to vaccine advancement.

**Profile of vaccine developers.** Of the confirmed active vaccine candidates, 56 (72%) are being developed by private/industry developers, with the remaining 22 (28%) of projects being led by academic, public sector and other non-profit organizations (Fig. 2). Although a number of large multinational vaccine developers (such as [Janssen](#), [Sanofi](#), [Pfizer](#) and [GlaxoSmithKline](#)) have engaged in COVID-19 vaccine development, many of the lead developers are small and/or inexperienced in large-scale vaccine manufacture. So, it will be important to ensure coordination of vaccine manufacturing and supply capability and capacity to meet demand.

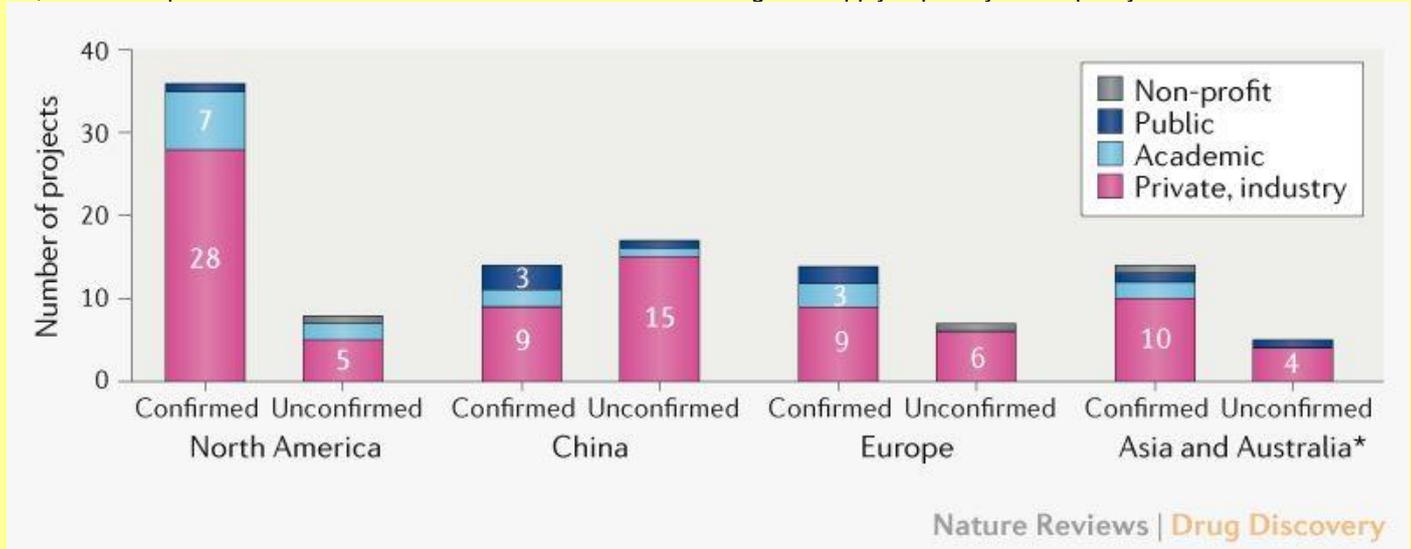


Fig. 2 | **Profile of COVID-19 vaccine developers by type and geographic location.** For partnerships, the location is that of the lead developer. \*Excluding China.

Most COVID-19 vaccine development activity is in North America, with 36 (46%) developers of the confirmed active vaccine candidates compared with 14 (18%) in China, 14 (18%) in Asia (excluding China) and Australia, and 14 (18%) in Europe (Fig. 2). Additional vaccine development efforts have been reported for China, and CEPI is in dialogue with the Chinese Ministry of Science and Technology to confirm their status.

Lead developers of active COVID-19 vaccine candidates are distributed across 19 countries, which collectively account for over three-quarters of the global population. However, there is currently no public information on vaccine development activity in Africa or Latin America, although vaccine manufacturing capacity and regulatory frameworks exist in these regions. The epidemiology of COVID-19 might differ by geography, and it is likely that effective control of the pandemic will require greater coordination and involvement of the southern hemisphere in vaccine R&D efforts.

## Outlook

The global vaccine R&D effort in response to the COVID-19 pandemic is unprecedented in terms of scale and speed. Given the imperative for speed, there is an indication that vaccine could be available under emergency use or similar protocols [by early 2021](#). This would represent a fundamental step change from the traditional vaccine development pathway, which [takes on average over 10 years](#), even compared with the accelerated 5-year timescale [for development of the first Ebola vaccine](#), and will [necessitate novel vaccine development paradigms](#) involving parallel and adaptive development phases, innovative regulatory processes and scaling manufacturing capacity.

Industry benchmarks for traditional vaccine development paradigms [cite attrition rates for licensed vaccines of more than 90%](#). The approaches being applied for COVID-19 development — which involve a new virus target and often novel vaccine technology platforms and novel development paradigms as well — are likely to increase the risks associated with delivering a licensed vaccine, and will require careful evaluation of effectiveness and safety at each step. In order to assess vaccine efficacy, [COVID-19 specific animal models are being developed](#), including ACE2-transgenic mice, hamsters, ferrets and non-human primates. Biosafety-level 3 containment measures are needed for animal studies involving live-virus challenges, and the demand for



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these capabilities is likely to require international coordination to ensure that sufficient laboratory capacity is available.

Finally, [strong international coordination and cooperation](#) between vaccine developers, regulators, policymakers, funders, public health bodies and governments will be needed to ensure that promising late-stage vaccine candidates can be manufactured in sufficient quantities and equitably supplied to all affected areas, particularly low-resource regions. CEPI has recently [issued a call for funding](#) to support global COVID-19 vaccine development efforts guided by three imperatives: speed, manufacture and deployment at scale, and global access. We maintain a dynamic portfolio management approach, and will make our enabling science resources available globally. We urge the global vaccine community to collectively mobilize the technical and financial support needed to successfully address the COVID-19 pandemic through a global vaccination programme, and provide a strong base to tackle future pandemics.

## Emergency Planning, Decision Making to Prepare for the Second Wave of COVID-19

By Robert Lewin

Source: <https://www.hstoday.us/subject-matter-areas/emergency-preparedness/emergency-planning-decision-making-are-critical-to-prepare-for-the-second-wave-of-covid-19/>

***“Planning is everything, the plan is nothing.”***

***Dwight D. Eisenhower, General of the Army, 34<sup>th</sup> President of the United States***

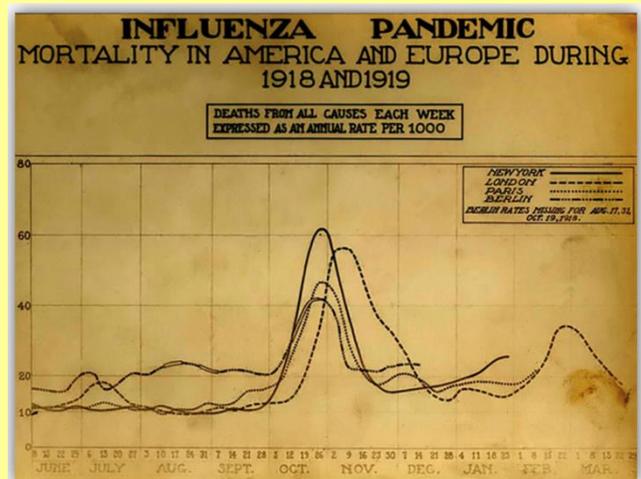
Apr 09 – Seasoned disaster managers recognize that it is not just the best decision that needs to be made, it is the execution of those decisions. Across the world leaders not normally accustomed to emergency decision making are being confronted by a catastrophe that has or is about to strike them. It is that moment when they must adapt their normal business-as-usual planning and decision making to an emergency decision and planning process. Moving to an emergency planning and decision-making process will make the difference between a COVID-19 emergency response that is flatfooted and reactive to one that is nimble and responsive. This process must be used at the local, state and federal levels of all agencies and organizations engaged in this fight. Lives will be saved.

Plans once written are often not opened when the emergency is occurring. This is because it is the planning that is more important than the plan. The effort of planning is continuous; plans are never done. Engaging the decision team in the planning process will make the difference when the implementation of the plan is necessary. There are three important plans that must be developed simultaneously for this pandemic emergency at all levels of government and organizations.

1. Action plans that are created for each operational period, generally for a 24-hour period to a week. These are tactical plans to promote specific actions.
2. Contingency plans that are developed for the long view. They require a very strategic level approach and require predictions. The predictions should include both what is the most likely situation to occur and what is the most dangerous situation to occur. Within the contingency plan a set of decision points should be determined that guide the actions to take as the situation develops.
3. Recovery plans should be developed to ensure both government and communities are successful at recovering from this catastrophic emergency.

When we plan for the COVID-19 pandemic emergency, we must use the 1918 pandemic to guide us. The second wave of the 1918 pandemic that struck in the fall of 1918 was exponentially worse than the first wave in the previous spring. The virus had mutated and was more virulent than it was in the spring of 1918. It killed 195,000 Americans in just the month of October. The heroic people who were battling that pandemic did many things right, they also made decisions that later proved ineffectual and even harmful.

They also knew that imposing lockdowns was the best way to fight the spread, but too often leaders were not prepared to impose them. While there are differences between this pandemic and the 1918 pandemic, there is much to consider. The most important



Second wave of the 1918 pandemic was by far more deadly than the first



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consideration at all levels of governments and agencies is that while we need to respond to the current emergency, we simultaneously must start doing contingency planning for the next wave, as it may be much worse.

We also must stand up recovery planning now. Any emergency manager who has been through a disaster knows that the day after the disaster strikes is the day you must stand up your recovery team. Recovery brings hope to a community. In an emergency, hope is oxygen.

### Decision Points

In the words of Dr. Anthony Fauci, “You don’t make the timeline, the virus makes the timeline.” Thus, instead of identifying an exact target date of when businesses will open or when schools will convene, it is prudent instead to identify specific criteria as decision points of when to consider changes. The contingency planning must include decision points and prescribed actions. They are called decision points instead of trigger points on purpose. A trigger point means a response or change will be triggered automatically. A decision point is the moment when the unified command decision team must immediately come together to determine if in fact a change or actions are justified. Most often a modification to a prescribed decision is chosen. Humans must always be part of the decision process so that they can ensure the data and intelligence has been ground-truthed. Decision makers can act as a brake or accelerator as needed.

For example, schools may be able to safely open before a vaccine is available, but COVID-19 may have a second or third wave. Therefore, each school district will have to prepare to once again implement protective measures, including closing schools again. This could occur in the fall or early winter. Thus, the school district must maintain a posture of getting students safely back to school, while simultaneously preparing for another interruption. We can plan to return to normal while simultaneously preparing our communities to return to a lockdown posture.

### Unified Command

The importance of unified command is to ensure that the personnel fighting the fight and the communities who are part of this fight are being led by one set of objectives. All emergencies tend to cross jurisdictions, none more so than this pandemic, therefore a unified command at all levels of government providing one desired end state and one set of objectives is essential to success. A unified command should not just make a decision, it should also provide the intent of the decision.

#### MCS Intent-based Planning

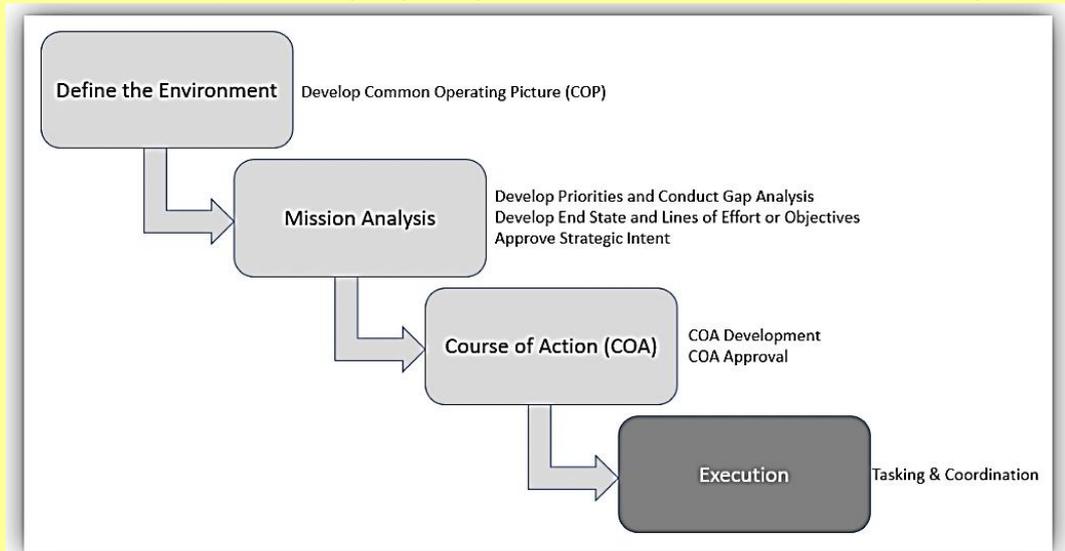
#### Intent-Based Planning

A system developed by [Mission-Centered Solutions](#) recognizes the

need to make sure all decision makers are operating under the same common operating picture, that they all see the situation the same way. Once they have a common operating picture, they need to look at the pandemic situation in a strategic way so they can provide clear objectives to the leadership operating at the tactical level. The leaders in the field need to know what the desired end state must be so that they can execute the tasks necessary to achieve that end state.

#### Decision Making

Decisions made during an emergency do not have the luxury of time. In emergency decision making, the emergency is coming at you, the fire, the storm or the disease. Theodore Roosevelt said, “In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing.” This does not mean making a knee-jerk decision. It means making decisions based on the real situation with imperfect information. Leaders must have good situational awareness, referred to as SA, before making a decision. You will never have



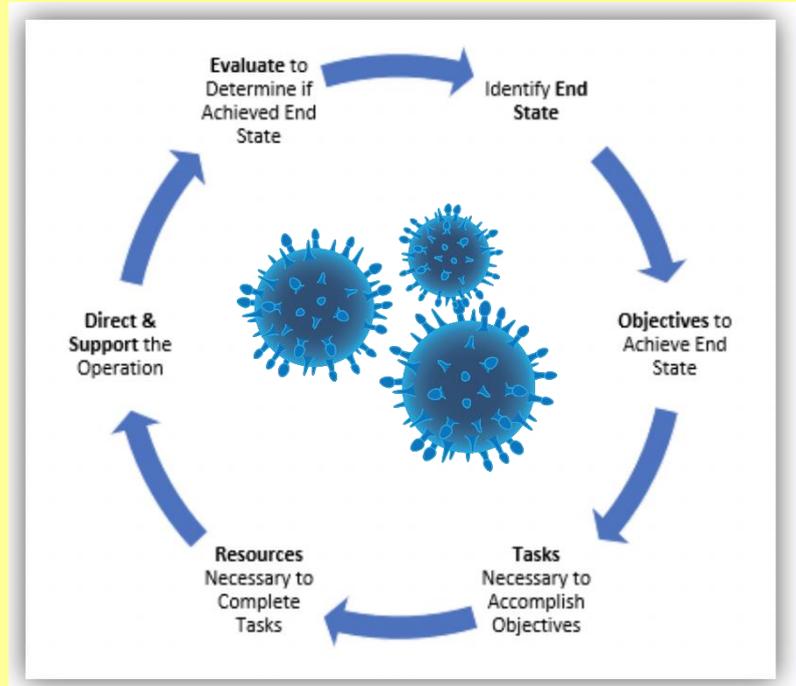
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as much as you desire or are used to having during non-emergency situations. Therefore, it is important to utilize Gen. Colin Powell's 40-70 Rule. Once you have 40 to 70 percent of the intelligence and data you must make a decision. If you make it before you have 40 percent of the information you are impetuous. If you wait for more than 70 percent you have waited too long and missed your opportunity to make a difference.

### Decision and Action Cycle

The process for leading during an emergency is to follow a simple decision and action cycle:

1. What should the end state be?
2. What objectives are required to achieve the end state?
3. What tasks need to be done to accomplish the objectives?
4. What resources are necessary to accomplish those tasks?
5. What direction and support are needed in the field to achieve success?
6. Evaluate to see if the end state is still relevant or has it been accomplished? If not, begin the cycle again.



### Leader's Intent

In any emergency, including this one, the situation is always dynamic and top down tactical decision making will be detrimental to success. Leaders at all levels must provide leader's intent and allow the people closest to the action to adapt and exercise initiative, as long as they are meeting the leader's intent. A leader should provide the following information in a clear and concise way.

- **Task** – what is the objective or goal of the assignment
- **Purpose** – why the assignment needs to be done
- **End state** – how the situation should look when the assignment is successfully completed

An example of how leader's intent would be used is in the delivery of essential personal protective equipment (PPE):

**Task:** Provide PPE to the facility with the greatest need based on the following priority within the next operational period: hospitals, first responders, defined essential workers, etc.

**Purpose:** If we do not provide the proper PPE it will result in unnecessary transmission of the disease resulting in more casualties.

**End State:** All hospitals, first responders and defined essential workers have required PPE and the transmission rates have been reduced in hospital workers, first responders and defined essential workers and the people with whom they come in contact.

### Conclusion

Emergency planning and decision making has never been more essential in the protection of so many at one time. Leaders now pressed into being disaster managers need to quickly adapt their methods of leadership. With a real threat that the disease will have a second or third wave, we need to immediately begin contingency planning while still providing daily operational planning and decision making. It is now time to determine what resources we will need this fall if there is a deadly second wave. To do contingency planning now, we need to understand the situation, know our desired end state, create objectives and tasks, and identify what organization and resources will be necessary to handle this looming catastrophe. Hopefully we will never use the plan, but hope is not a plan.

*After retiring from government service as the Director of the Santa Barbara County Office of Emergency Management and the Fire Chief for CAL FIRE/San Luis Obispo County Fire, Robert Lewin is now a Principal at Resolute Associates LLC providing a range of emergency management consulting including numerous efforts in support of the COVID-19 emergency. Lewin is a Type 1 Incident Commander and served many years on Incident Management Teams. He has held command positions both in the field and*



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*in Emergency Operations Centers (EOC) on some of California's most complex incidents including fires, floods, earthquakes, human and animal diseases, and on special assignments. Most recently he led the actions of the EOC during the Thomas Fire and resulting Montecito Debris Flow. Robert is a Cal Poly graduate in Political Science, an Allan Hancock College graduate in Fire Science and completed the Executive Leadership Program at the Naval Post Graduate School. He is a Certified Emergency Manager (CEM).*

### **PERSPECTIVE: Make Collaboration Great Again to Confront Coronavirus Pandemic**



By Ajit Maan

Source: <https://www.hstoday.us/subject-matter-areas/pandemic-biohazard/perspective-make-collaboration-great-again-to-confront-coronavirus-pandemic/>

Apr 10 – **There has been a lot of militarized language applied to the pandemic, apparently in order to mobilize a whole of society response. But “combat,” “fight,” “war,” and most recently a “Pearl Harbor Moment” are completely inaccurate comparisons. The later analogy is completely inept as we didn’t have a four-month advance warning about the Pearl Harbor attack. Things would have been different if we had had a four month, or even four days, warning.**

Throwing around militarized language and nonsensical comparisons have led to dangerous behaviors. We need to rethink how we talk about this situation so that we might survive it.

“War on coronavirus” is the wrong narrative. Living that narrative will get us into the same types of problems that the narrative “War on Terror” got us into. We cannot shoot it. We cannot bomb it. We have to use our heads and we have to influence populations. The only military analogy that might be apt is Stability Operations.

“War” is a mischaracterization of what is involved, who is involved, and what needs to be done. If this were a war, we would have a national strategy. If what we needed to fight were guns, drones, and other hardware, there would be no shortage. If this was a war, state governors would not have to plead for help from the federal government, and we would not see the shocking lack of planning in the richest, most powerful nation in the world – despite warnings that go back at least to the Bush administration.

If this is a military fight, then we have already lost. “America First” was never a good idea and now it is a dead idea. The virus has demonstrated that border walls, immigration controls, and the politics of isolationism are archaic.

**The militarization of this threat is misplaced; it is dangerous on multiple levels. And it’s about to get more deadly if we don’t change the way we think about it.**

The American civilian population, who were not around during WWII, is not accustomed to thinking of war as a whole of society endeavor. That is why Florida beaches were packed with college students during spring break. Now is not the right time to teach them what war meant to the entire world, civilians included, during the last world war. We have no time for that. The narrative we need has to ring true immediately and elicit the response that will save lives. If we need to teach a new generation what a narrative means, we are using the wrong one. The purpose of a narrative is to create an immediate “got it” in the mind.

Generation X and millennials don’t think of war as something that happens on the homeland. Even when the events of 9/11 brought terrorism home in a big way, we decided to “take it to them” before they brought it back to us. Those who went to Iraq and Afghanistan did so to avoid the involvement of the homeland.

The military notion of “mobilizing” is the last thing we need now. Actions based on that sort of wrong-headed talk will lead us down a death trap. We can do better.

We have the capacity to save lives without lifting a finger. The contribution we need now, from every citizen of the world, is to stay put. We should not be using language that “activates” people, but rather, calms them down. The energizing “go get ‘em” attitude that is emboldened by militarized language is not what we need now. We need leaders who know how to say the right thing. Words are important. Narratives are powerful. We need leadership that implements narratives that stem from the head, the heart, and the moral backbone. We don’t need to evoke fighting spirit; we need to evoke a spirit of collaboration.

**This is no time for competition. We need leadership that can unify the global community and demonstrate collaboration with other nations in order to preserve our mutual co-existence. The language of competition, opposition, fighting, battle, blame, war does not do that.**

*Ajit Maan, Ph.D. is Professor of Practice, Global Security, at Arizona State University, affiliated faculty at the Center for Narrative Mediation, George Mason University, and Founder and CEO of the Think-and-Do Tank Narrative Strategies.*



*She is also author of Narrative Warfare, Counter-Terrorism: Narrative Strategies and numerous books and articles on security strategies and irregular warfare.*

**EDITOR'S COMMENT:** There are many valid points in this article. BUT the thing is that current pandemic is synonymous to an asymmetric war where the weak part (the entire planet) is fighting against a strong opponent (Covid-19 virus). In that respect, the militarization response analogue is the only appropriate way to counter the "enemy". Besides, in every major emergency whether natural or man-made, civic authorities could never make it without the military. In the midst of a pandemic terminology is of no importance – the important thing is to identify gaps and fix them!

## **Iceland has tested more of its population for coronavirus than anywhere else. Here's what it learned**

Source: <https://www.yahoo.com/news/iceland-tested-more-population-coronavirus-081244404.html>



Apr 11 – Iceland has achieved something no other country has: tested 10% of its population for [coronavirus](#), a figure far higher than anywhere else in the world. No country or scientist or doctor has all the answers about the pandemic that has swept the globe, infecting more than 1.6 million people and killing at least 95,000. But some places, such as tiny Iceland, Europe's most sparsely populated country – pop. 364,134, broadly equivalent to the number of people in Tulsa, Oklahoma – may be better placed to deliver some types of [coronavirus information](#), and even answers than most, at least in the short term, according to public health experts, international government officials and others involved in responding to the outbreak.

### **Facing a crisis to rival Pearl Harbor**

#### [World's superpower pleads for coronavirus aid](#)

"The size of a place matters. It tracks with the number of introductions of the virus. It is no coincidence the places now doing (the best work) share this feature," said William Hanage, an epidemiologist at Harvard University's T.N. Chan School of Public Health.

To be clear, Iceland has not yet been able to provide definitive explanations for the most pressing coronavirus questions vexing scientists, politicians and publics the world over. Among them: its transmissibility; why it hits some people exceptionally hard and affects others only mildly; the most promising vaccines and treatments; actual mortality rates; and whether lifting lockdowns will later usher in a deadly second and third wave of new infections – if the so-called coronavirus curve, in fact, looks more like a loop. Hanage said in terms of lasting analysis models for our understanding of the virus it's also not clear for how long size will matter to health experts probing the disease.

### **'Afraid and overwhelmed'**

#### [A look inside one hospital on the front lines of the coronavirus pandemic](#)

Still, for now, Iceland may be one of best live coronavirus laboratories we have, according to Kari Stefansson, an Icelandic neurologist and chief executive officer of Reykjavik-based biopharmaceutical company deCODE genetics, which has partnered with Iceland's government to carry out its massing testing efforts.

Iceland's 10% figure, confirmed by Stefansson, was achieved on April. 11.

It is not just about bragging rights.

Among the Nordic nation's findings: about half of its citizenry at any given time who have coronavirus but don't know it, will be asymptomatic – a large percentage many experts studying the virus have suspected, but have had little firm data to corroborate. The U.S. Centers for Disease Control has previously estimated that about 25% of people infected with coronavirus may be asymptomatic.

"That's a bit scary," said Stefansson, who noted that Iceland is testing its citizens at random by selecting names out of the country's main telephone directory, another large-scale testing strategy that has not been adopted elsewhere.



"They could be spreading it and not knowing it," he said.

### 'It means the containment efforts of the authorities are working'

Iceland has not imposed a full national lockdown.

Its restrictions are largely based on trust. Most shops and businesses are still open.

However, the country has banned gatherings of more than 20 people. Of Iceland's more than 1,600 coronavirus infections as of April 11, seven have ended in deaths.

Like other localities such as Taiwan, Singapore and Hong Kong that have moderately sized populations and relatively diminutive geographies, Iceland has proved successful at "flattening the curve" – keeping the number of coronavirus infections at a manageable level for medical workers who would otherwise be overwhelmed with sick patients.

In Iceland's case, it has done this through a combination of rigorous testing and tracing. Authorities say Icelanders are heeding social distancing recommendations.

Stefansson said Iceland's randomized tests revealed that between 0.3%-0.8% of Iceland's population is infected with the respiratory illness, that about 50% of those who test positive for the virus are asymptomatic when they are tested, and that since mid-March the frequency of the virus among Iceland's general population who are not at the greatest risk – those who do not have underlying health conditions or signs and symptoms of COVID-19 – has either stayed stable or been decreasing.

This data has yielded, he said, yet more knowledge.

"It means the containment efforts of the authorities are working," he said.

While many countries publish daily and cumulative infection and death rates, there don't appear to be comparable statistics for other nations available that give an overall sense of how deep-rooted the virus is, or how many carriers of the disease, at any given time, may have no symptoms. Iceland has not yet been able to determine how many asymptomatic infections, once confirmed, will later go on to develop symptoms.

John P.A. Ioannidis, a professor biomedical data science and epidemiology at Stanford University, said that the "best data" on coronavirus is currently coming from Iceland. But that may be partly because Iceland is the only country that has so much data, even if it's too early to draw unequivocal conclusions about what the data are saying and Iceland's relatively small sampling size could impact the results.

President Donald Trump said on April 6 in a press briefing that almost two million Americans have been tested – 0.6% of the population – but it's not clear what metrics the White House is relying on and hundreds of hospitals have complained about severe shortages of testing supplies and long waiting times, according to a report from the [Inspector General](#) for the Department of Health and Human Services. Although access to testing in the U.S. does appear to be improving in some areas.

According to Worldometer, an online statistics website run by an international team of developers and researchers that collates public health information published directly by each state, the U.S. has conducted about 2.5 million tests as of April 11. That equates to about 7,600 tests per one million people. Using that same scale that accounts for Iceland's population, Iceland has undertaken 100,000 tests per million people.

### 'Scale is important but for reasons you might not initially think'

Some countries, such as Germany, have predicted that up to 70% of their nationals could eventually contract coronavirus. And officials at the U.S. Centers for Disease Control and Prevention have said that under a worst-case scenario, between 160 million and 214 million people in the U.S. – 48% to 64% of Americans – could be become infected over the course of the epidemic, although those numbers don't account for various social-distancing measures underway aimed at slowing transmission rates.

Gestur Palmason, a police detective deployed as a coronavirus "contact tracer" at Iceland's National Crisis Coordination, said few other places would have the resources or serendipitous combination of factors to carry out Iceland's preliminary research.

These include the island-nation's remoteness, the high regard its nationals have for scientific expertise – medical experts, not politicians, are leading its response – its tech-savvy government infrastructure, a relatively tried and tested emergency agency that is used to dealing with volcano eruptions and avalanches, and yes, fewer people.

"Scale is important but also for reasons you might not initially think," Palmason said.



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"The smaller the population you have the more chance there is you will know someone who is affected. Whatever your government or law enforcement may be saying, you are much more likely to want to play a part and take recommendations seriously because of that personal connection – compared to places where there are tens of millions of people and you may not have been to parts of the country or know people there."

### A bridge between life and death

#### [Most COVID-19 patients on ventilators won't survive](#)

Still, Wang Ting-yu, a Taiwanese lawmaker who has been active in the East Asia island-state's much-admired response to its coronavirus outbreak, said that while he was watching Iceland's experiment with mass testing and data with interest – noting that Taiwan has also rolled out islandwide coronavirus screening – he thought that other western countries in Europe and North America would be better off at this stage of their fight with the disease by adopting a "war time" mentality to combat the outbreak.

This means, Wang said, strictly enforced quarantines, protecting frontline workers with the most advanced [personal protective equipment](#) and a whole-of-government approach to keeping the public informed about lockdowns, setbacks, any changes in tactics and, crucially, developing tailored technology to deliver this information.

U.S. technology companies [Apple and Google announced April 10](#) that they have teamed up to develop technology that can help people figure out if they've been exposed to COVID-19, via apps and the Bluetooth wireless standard.

Taiwan has a similar population to Australia – about 24 million people. Both are islands, although Taiwan's population density is far higher. As of April 11, Australia has recorded more than 6,200 coronavirus cases and 56 deaths. Taiwan has 385 cases and 6 deaths. In New Zealand, another small island-nation – pop. 4.7 million – that early on in the global pandemic imposed a tight lockdown strategy aimed at totally eliminating the virus rather than just containing it, there has been just 4 deaths amid more than 1,300 cases. "Our message to our friends abroad is: centralize your response," Wang said. "If you don't move quickly, or with enough purpose, then the price is peoples' lives."

### 'We now seem to be the safest place on the planet'

Governments from Rome to Berlin have indicated that daily new coronavirus infections and death tolls may be on the verge or even already be starting to plateau or fall as a result of social distancing measures. The White House has made similar claims.

New York state has actively flattened its curve with social distancing regulations, Governor Andrew Cuomo said in a press briefing on April 8.

Singapore, Hong Kong and even China, where coronavirus originated in December last year and authorities have all but claimed total victory over COVID-19, have meanwhile seen rising clusters of new infections in recent weeks. While most of these cases are imported, it remains unclear whether by lifting restrictions authorities around the world will be forced into a game of coronavirus whackamole with no obvious end date. In the last few days Japan, which initially held off on a lockdown, has fortified its restrictions.

### Enforcing shutdowns

#### [Officials grapple with policing stay-at-home orders, social distancing, quarantines](#)

The U.S. has largely relied on a [patchwork of social distancing measures and lockdowns](#) dictated at state level, while the Trump administration has offered federal guidance that is not mandatory to follow. More than 500,000 people in the U.S. have been infected with coronavirus and the number of deaths – almost 19,000 – is about the same as in Italy, the worst-affected place in Europe along with Spain.

Still, in terms of collecting actionable data about coronavirus, Hange, the Harvard epidemiologist, questioned whether Iceland would be better off focusing on [serological tests](#) that could determine whether a person had developed certain antibodies in the blood indicating that they were infected by the virus without knowing it, and recovered.

Knowing whether these antibodies exist in someone's blood could, potentially, enable tens of millions of people around the world to reenter the workforce at a time [economies are reeling](#) because they are under orders to stay home to prevent the virus' spread.

### When will life return to normal?

#### [Expert says US testing is too far behind to know](#)

"Random testing for ongoing infections helps but runs into a lot of issues," Hanage said.

"If you find someone is positive and asymptomatic now, you still have to wait until they have recovered to know the course of their illness," he added, noting that some reports out of Italy indicate that the most seriously affected towns in the nation's Lombardy region show a large portion of the population with signs of immunity.



"If true this is obviously a very good sign, but it has come at an appalling cost," he said.

The U.S. Centers for Disease Control and Prevention has begun preliminary studies into serological tests – called sero-surveys – to try to determine what proportion of Americans caught the disease but evaded detection. No results have been published.

Various U.S. cities are launching their own antibody studies.

Stefansson, the CEO of deCODE genetics, which is doing Iceland's testing in coordination with the government, said it started screening for antibodies on April 8.

Germany has started Europe's first large-scale coronavirus antibody testing effort to help researchers assess infection rates more effectively.

Still, one place where the coronavirus data are especially pure, and small, is Antarctica.

While more than 100 people from Australia, Europe and the U.S. on board a cruise ship traveling to Antarctica and South Georgia tested positive this week for coronavirus, the ice-covered landmass is the only continent that remains untouched by the outbreak.

"We now seem to be the 'safest' place on the planet," said Stijn Tholen, a European Space Agency medical research doctor who is spending a year on the ice investigating how humans adapt to living in extreme environments, in an email.

"The increasing darkness and cold here already feel so otherworldly, and to see what is happening in the rest of the world makes me feel even more distant," he said.

## The Maths Logic That Could Help Test More People for Coronavirus

By Usama Kadri

Source: <http://www.homelandsecuritynewswire.com/dr20200410-the-maths-logic-that-could-help-test-more-people-for-coronavirus>



April 10 – [Rapid testing](#) of patients is of great importance during a pandemic. But at a time when there [aren't enough COVID-19 tests](#) or testing has been slow, is there a way to enhance the process? As a mathematician and engineer, I asked myself if there was anything a theoretician could do to help meet the demands of the World Health Organization [to test as many patients as possible](#).

Well, there might be a way to test many patients with a few test tubes. Instead of using one test tube to produce a result for one sample, we can use several test tubes to test many more samples – [with the help of some logic](#).

The general idea is simple. A sample taken from each of our theoretical patients is distributed to half of the test tubes that we have, in different combinations. If we have ten test tubes, for example, we would distribute the samples from each patient into a different combination of five of them.

Any tube that tests negative tells us that all the patients that share that test tube must be negative. Meanwhile, test tubes that test positive could contain samples from a number of positive patients – and an individual patient will test positive only if all their associated test tubes are positive.

This approach is efficient at the early stages of an epidemic in particular, when there are relatively few people that might test positive.

### Modifying the Approach

As more patients are infected, however, identifying who has the virus is more challenging because the positively tested tubes are more likely to include even greater combinations of patients. To overcome this difficulty, the approach has to be modified as illustrated in the example below.

Say that we have six test tubes and 20 patients. And the test tubes are ordered and numbered as #1, #2, #3, #4, #5, and #6. Each patient is given a six-digit number made up of zeros and ones (a binary system). Each digit corresponds to a test tube – a "0" means we don't add the sample to the corresponding test tube, whereas a "1" means that we do.

For example, patient #1 is given the number [0 0 0 1 1 1], which means that only test tubes #4, #5, and #6 will contain samples from patient #1. Patient #2 is given the number [0 0 1 0 1 1], which means that only test tubes #3, #5, and #6 will contain samples from patient #2. And so on, for all 20 patients.

After adding the samples from all 20 patients, the six tubes go through testing. If, then, the test returns positive for tubes #4, #5, and #6, for example, we can say that only patient #1 – allocated the number [0 0 0 1 1 1] – will be positive, because only that patient had samples added to all three test tubes – #4, #5, and #6 – and none to the rest.



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Now comes the difficult part. Say that test tubes #3, #4, #5, and #6 return positive. We can say that all patients with samples added to tubes #1 and #2 are negative, but we cannot be definite about the rest, since we have multiple possibilities with test tubes #3, #4, #5 and #6. Are patients [0 0 1 0 1 1] and [0 0 1 1 1 0] sick, or perhaps [0 0 0 1 1 1], [0 0 1 0 1 1], and [0 0 1 1 0 1], or maybe all four of them? All these combinations would result in test tubes #3, #4, #5, and #6 returning positive. So, is there a way to get a definite answer for who are the sick patients?

Yes, but only if the test is now able to return not only a positive or negative result, but also some degree of “positiveness”, for example by identifying the amount of antibody that there is in a sample. Using this, we can compare the amount of “positiveness” between test tubes, which gives us a clue as to the right combination of patients that test positive.

### A degree of “Positiveness”

Going back to our example, if the positiveness in test tubes #4 and #5 is the same (let’s say the same amount of antibody in both), but different in #3 and #6, then we can conclude that patients [0 0 0 1 1 1] and [0 0 1 0 1 1] can’t both be positive since the sample from the first patient [0 0 0 1 1 1] is in tubes #4, and #5, whereas the sample from the other patient [0 0 1 0 1 1] is in tube #5 (but not #4). This means the positiveness in those test tubes cannot be the same if both patients are sick (tube #5 will have the positiveness of both patients, but tube #4 will have the positiveness of just one).

The only two patients that would return identical positiveness in tubes #4 and #5 are patients [0 0 0 1 1 1] and [0 0 1 1 1 0], since samples from both of these would have been added to both tubes #4 and #5, resulting in the same positiveness in both test tubes. In the example above we were able to test 20 patients with as few as six test tubes. But the method can be scaled up to test many thousands of patients with many fewer test tubes. And even with machines being developed that can process tests within five minutes, this approach could still be much quicker – and cheaper in places where there are fewer resources.

Using maths, then, we can enhance the testing of collected samples, particularly when, and in areas where, testing is challenging. In these cases, it could potentially help to mitigate the novel Coronavirus and save many lives.

*Usama Kadri is Senior Lecturer of Applied Mathematics, Cardiff University.*

## Solving the Ventilator Shortage with Windshield Wiper Parts

Source: <http://www.homelandsecuritynewswire.com/dr20200406-solving-the-ventilator-shortage-with-windshield-wiper-parts>

Apr 06 – Researchers at The University of Texas at Austin are building a new type of ventilator made of cheap, widely available materials to help fill the demand created by the spread of COVID-19 for these critical devices that help patients breathe.

Ventilators become necessary when patients can’t breathe on their own, physically pumping oxygen into their lungs. They are in short supply. That’s why the researchers are building a “bridge ventilator” that can be replicated and mass-produced by others.



“The problem is that when ICUs fill up, there are no more ventilators,” said Thomas Milner, a professor in the [Department of Biomedical Engineering](#) in the [Cockrell School of Engineering](#), who is leading the project. “And you can’t bring in new ICU beds because you don’t have the ventilators.”

UTexas [says](#) that hospitals across Texas had an estimated 3,730 ventilators in 2009 during the H1N1 pandemic, according to [research published in 2017](#). That supply is enough to handle patient needs during mild to moderate pandemic scenarios. However, during a more severe scenario, statewide projected demand would top 10,000 ventilators, the research found, far exceeding 2009 resources.

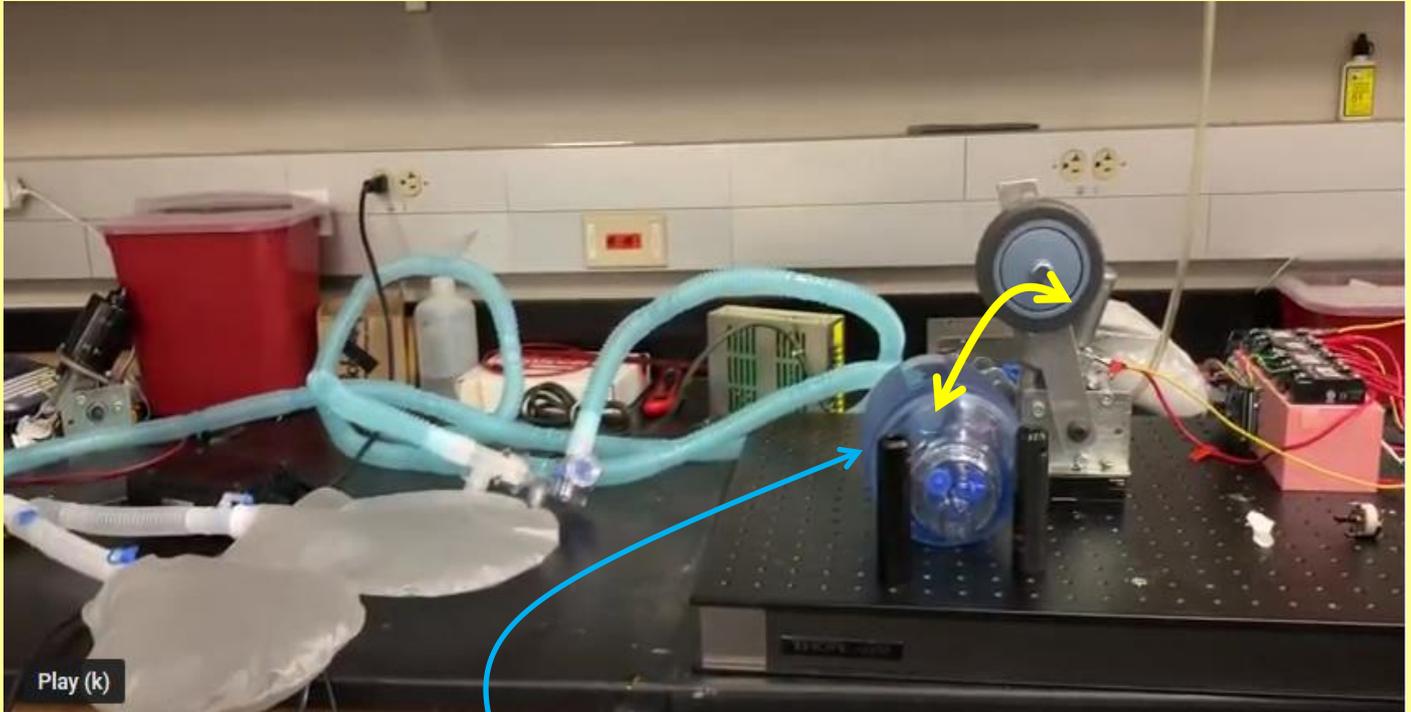
The device is called the **Austin Bridge Breathing Unit**, and it uses a manual resuscitator, a common tool called an AMBU (artificial medical breathing unit) bag. The AMBU is a handheld device approved by the U.S. Food and Drug Administration that includes a bag that fills up with oxygen and a mask that patients wear to receive ventilation.

However, the unit requires a person to compress the bag frequently to help patients breathe, a challenging task at a time when medical personnel across the country are stretched thin due to the coronavirus. The team needed a way to automatically compress the bag to get oxygen to patients.



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A windshield wiper motor pulled from a Toyota Camry powers a small caster wheel that pushes down on the bag to control oxygen flow. Four [potentiometers](#) control the respiration rate, the volume of oxygen given to patients, the time to inhale and the maximum pressure.

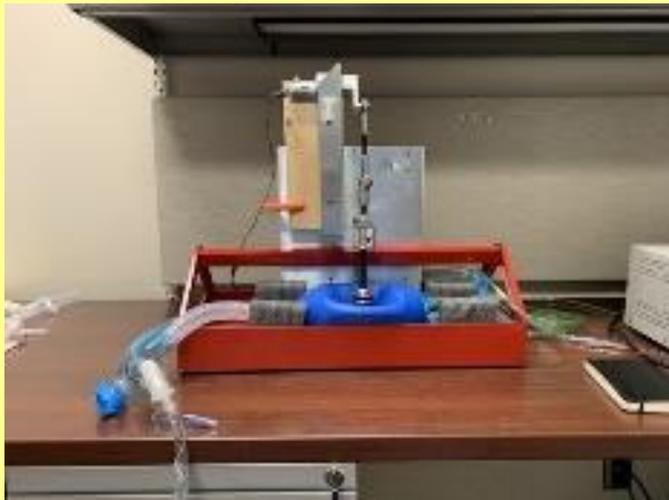


**“Essentially, we are replacing the human hand that would normally depress against the bag to inject oxygen into the patient’s lungs,” Milner said.**

Milner said a colleague came up with the idea to use a windshield wiper motor during a brainstorming session. These motors are available, reliable and inexpensive. They go through extensive testing as part of the automobile production process. It took a little while for the team to figure out the motor, but they worked with a local mechanic to learn the ins and outs.

The team is testing the device on a manikin from UT’s [Dell Medical School](#) and test lungs provided by UT Health San Antonio.

Once the team vets its prototype, the plan is to provide an open license to the design so that anyone can make their own low-cost, reliable ventilator. The researchers and a team from Dell Medical School are in discussion with numerous manufacturing partners, with a goal of quickly producing at least 2,000 ventilators. Austin’s Unorthodox Ventures has committed to producing five prototype units for the team to stress test.



[Full-on MacGyver – University of Minnesota \(read at the end\)](#)

Because the components of the device are regulated individually, Milner is hoping for approval in a matter of weeks rather than months. Just recently, the FDA issued an Emergency Use Authorization protocol to speed up production of ventilators and other respiratory devices.

“Really, all we are doing is making what we would argue is a simple modification of how you push on the bag,” Milner said.

His team from UT includes Arnold Estrada, Scott Jenny, Nitesh Katta, Aydin Zahedivash,

Tim Phillips and Austin McElroy. Numerous medical doctors are also contributing to the project, including Dr. Paul Harford from Dell Medical School, and Drs. Stephen Derdak and Marc Feldman and respiratory therapist Richard Wettstein, all from UT Health San Antonio. The group is part of a [Bridge Ventilator Consortium](#), headed by Dr. Brian Wong, assistant



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chair of the Department of Otolaryngology in the School of Medicine at the University of California, Irvine, that aims to produce alternative ventilators amid a nationwide shortage.

Milner noted the impressive efforts of universities across the country, including The University of Texas at Austin, to quickly pivot to COVID-19 projects after most research was shut down by the pandemic. Another recent example of that effort came out of the University of Minnesota last week, when a cardiac anesthesiologist went “[full-on MacGyver](#),” building a ventilator prototype out of \$150 worth of spare parts found in a medical device lab.

▶▶ **Video of the team’s ventilator in action:** [youtu.be/6AQII\\_I0OWs](https://youtu.be/6AQII_I0OWs).

## Coronavirus Can Stay on Face Masks for up to a Week, Study Finds

Source: <http://www.homelandsecuritynewswire.com/dr20200406-coronavirus-can-stay-on-face-masks-for-up-to-a-week-study-finds>

Apr 06 – The coronavirus that causes COVID-19 can adhere to stainless steel and plastic surfaces for up to four days, and to the outer layer of a face mask for a week, according to a study by researchers from the University of Hong Kong (HKU). Simone McCarthy writes in the [South China Morning Post](#) that the team also found that common household disinfectants, including bleach, were effective in “killing” the virus.

The report, published in medical journal *The Lancet* on Thursday, adds to a growing body of research about the stability of Sars-CoV-2 – as the coronavirus is formally known – and what can be done to prevent its transmission.

“Sars-CoV-2 can be highly stable in a favorable environment, but it is also susceptible to standard disinfection methods,” said the researchers, who included, from HKU’s school of public health, Leo Poon Lit-man, head of the public health laboratory sciences division, and Malik Peiris, a clinical and public health virologist.

## Ebola patient dies in Congo, first case in 50 days

Source: <https://in.reuters.com/article/health-ebola-congo/ebola-patient-dies-in-congo-first-case-in-50-days-idINKCN21S1MX>



Apr 10 – The first person to contract Ebola in Democratic Republic of Congo in more than 50 days has died, the government said on Friday, ending hopes that the second worst outbreak of the disease in history might be over.

The Central African country planned to declare an end to the epidemic on Sunday, which would have allowed its overstretched health service to concentrate on containing the coronavirus, which has infected 215 and killed 20 there.

The new Ebola case, the first since Feb. 17, was a 26-year-old man in the area of Beni, a town in eastern Congo. He developed symptoms on March 27 and died in hospital on Thursday morning, regional health authorities said in a statement.

Ebola has killed more than 2,200 since August 2018 in a volatile area of the country where rebel attacks hobbled efforts to contain it. The country is also trying to bat back a measles epidemic.

“This is now a triple emergency: vulnerable populations facing ongoing humanitarian crises, the spread of COVID-19, and now again potentially a re-emerging Ebola crisis,” said Kate Moger, International Rescue Committee’s Regional Vice President of the Great Lakes region.

Ebola causes fever, bleeding, vomiting and diarrhoea and spreads among humans through bodily fluids. The current outbreak has killed about two thirds of those it infected.

### WHO ON ALERT

The World Health Organization (WHO) had been expecting more cases to emerge in Congo, and was primed to respond, its head Tedros Adhanom Ghebreyesus said.

The agency’s top emergencies expert, Mike Ryan, said health teams on the ground were continuing to investigate 2,600 Ebola alerts across the country’s two affected provinces.

“We take thousands of samples every single week, and we will continue that active surveillance right the way through,” he told a news conference.

Flare-ups or one-off transmissions are common towards the end of Ebola outbreaks, and a new case does not necessarily mean that the virus will spread out of control again.

But it can stay in semen for over 550 days, researchers have said, and can be transmitted through sex long after a patient recovers.

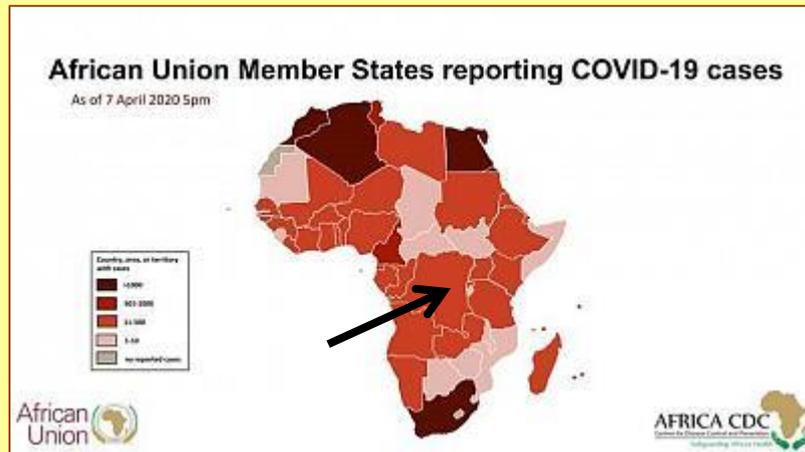


## A 'LESSON' FOR COVID-19?

**Congo has suffered 10 outbreaks of the virus since it was first detected in humans near the Ebola River in 1976. The biggest was in West Africa between 2013 and 2016 and killed over 11,000 people.**

Two new vaccines have had a major impact on containing the virus this time, though Islamist rebels stopped health workers from reaching some areas where the virus spread.

Late last year deadly attacks on health centres in and around the city of Beni forced aid groups to suspend operations and withdraw staff from the epidemic's last strongholds.



For those on the frontline, like Babah Mutuza lusungu, a doctor at a health research clinic in Beni, Friday's news was a bitter blow.

"It's really a step backwards, you see today if we're going to start managing a pandemic and an epidemic at the same time, it's going to be impossible, it's going to be very difficult to manage," he said.

The WHO's Ryan said it and the Congo government were ready to respond should the Ebola situation deteriorate.

▶▶ Covid-19 in DRC: 223 confirmed cases; 20 deaths (as of April 12, 2020).

## What Does It Mean to 'Recover from Coronavirus'? Here's What You Need to Know

By Tom Duszynski

Source: <https://www.sciencealert.com/this-is-what-it-means-to-recover-from-corona-and-what-you-can-do-after>



Apr 11 – The coronavirus is certainly scary, but despite the constant reporting on total cases and a climbing death toll, the reality is that the vast majority of people who come down with COVID-19 survive it.

Just as the number of cases grows, so does another number: those who have recovered.

In mid-March, the number of patients in the US who had officially recovered from the virus was close to zero. That number is now [in the tens of thousands](#) and is climbing every day.

But recovering from COVID-19 is more complicated than simply feeling better. Recovery involves biology, epidemiology and a little bit of bureaucracy too.

### How does your body fight off COVID-19?

Once a person is exposed the coronavirus, the body starts producing [proteins called antibodies to fight the infection](#). As these [antibodies start to successfully contain the virus](#) and keep it from replicating in the body, symptoms usually begin to lessen and you start to feel better.

Eventually, if all goes well, your immune system will completely destroy all of the virus in your system. A person who was infected with and survived a virus with no long-term health effects or disabilities has "recovered".

On average, a person who is infected with SARS-CoV-2 will feel ill for about seven days from the onset of symptoms.

Even after symptoms disappear, there still may be small amounts of the virus in a patient's system, and they should stay [isolated for an additional three days](#) to ensure they have truly [recovered and are no longer infectious](#).

### What about immunity?

In general, once you have recovered from a viral infection, your body will keep cells called lymphocytes in your system. These cells "remember" viruses they've previously seen and can react quickly to fight them off again.

If you are exposed to a virus you have already had, your antibodies will likely stop the virus before it starts causing symptoms. [You become immune](#). This is the [principle behind many vaccines](#).



## HZS C<sup>2</sup>BRNE DIARY – April 2020

Unfortunately, immunity isn't perfect. For many viruses, like mumps, immunity can wane over time, leaving you [susceptible to the virus in the future](#).

This is why you need to get revaccinated – those "booster shots" – occasionally: to prompt your immune system to make more antibodies and memory cells.

Since this coronavirus is so new, scientists still don't know whether people who recover from COVID-19 are [immune to future infections of the virus](#). Doctors are finding antibodies in ill and recovered patients, and [that indicates the development of immunity](#).

But the question remains how long that immunity will last. Other coronaviruses like [SARS and MERS produce an immune response](#) that will protect a person at least for a short time.

I would suspect the same is true of SARS-CoV-2, but the research simply hasn't been done yet to say so definitively.

### Why have so few people officially recovered in the US?

This is a dangerous virus, so the Centers for Disease Control and Prevention is being extremely careful when deciding what it means to recover from COVID-19. Both medical and testing criteria must be met before a person is [officially declared recovered](#).

Medically, a person must be fever-free without fever-reducing medications for three consecutive days. They must show an improvement in their other symptoms, including reduced coughing and shortness of breath. And it must be at least seven full days [since the symptoms began](#).

In addition to those requirements, the CDC guidelines say that a person must test negative for the coronavirus twice, with the [tests taken at least 24 hours apart](#).

Only then, if both the symptom and testing conditions are met, is a person officially considered recovered by the CDC.

This second testing requirement is likely why there were so few official recovered cases in the US until late March. Initially, there was a [massive shortage of testing in the US](#).

So while many people were certainly recovering over the last few weeks, this could not be officially confirmed. As the country enters the height of the pandemic in the coming weeks, focus is still on [testing those who are infected](#), not those who have likely recovered. Many more people are being tested now that states and private companies have begun [producing and distributing tests](#).

As [the number of available tests increases](#) and the pandemic eventually slows in the country, more testing will be available for those who have appeared to recover.

As people who have already recovered are tested, the appearance of any new infections will help researchers learn [how long immunity can be expected to last](#).

### Once a person has recovered, what can they do?

Knowing whether or not people are immune to COVID-19 after they recover is going to determine what individuals, communities and society at large can do going forward.

If scientists can show that recovered patients are immune to the coronavirus, then a person who has recovered could in theory [help support the health care system](#) by caring for those who are infected.

Once communities pass the peak of the epidemic, the number of new infections will decline, while the number of [recovered people will increase](#). As these trends continue, the risk of transmission will fall.

Once the risk of transmission has fallen enough, community-level isolation and social distancing orders will begin to relax and businesses will start to reopen. Based on what other countries have gone through, it will be [months until the risk of transmission is low](#) in the US.

But before any of this can happen, the US and the world need to make it through the peak of this pandemic. Social distancing works to slow the spread of infectious diseases and [is working for COVID-19](#).

Many people will [need medical help to recover](#), and social distancing will slow this virus down and give people the best chance to do so.

*Tom Duszynski is Director Epidemiology Education, IUPUI.*

## Does the Amount of Coronavirus You're Exposed to Determine How Sick You'll Get?

By Sarah L. Caddy

Source: <https://www.sciencealert.com/does-the-amount-of-covid-19-virus-you-are-exposed-to-determine-how-sick-you-ll-get>



## HZS C<sup>2</sup>BRNE DIARY – April 2020

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Apr 11 – Healthcare workers are likely to be in contact with many COVID-19 patients every day. Being in contact with more people with the disease means that, in theory, they will be exposed to higher doses of the coronavirus over time.

Does that mean they are at greater risk of contracting the disease, as [reports from some countries suggest](#)?

We know for some diseases that the dose of virus a person is exposed to will directly correlate with how severe the disease is. A good example of this is influenza.

A 2015 [study from the US](#) showed that the higher the dose of influenza virus given to healthy volunteers, the worse their symptoms. Viruses are tiny particles that must get into our cells in order to replicate, so the logic is that the more starting virus particles there are, the more cells will be infected.

However, viruses [replicate exponentially](#). **A single infected cell can produce hundreds, if not thousands, of copies of the particle. This means that for some viruses, even a tiny dose of virus is enough to cause an infection.**

For example, for half the population, it takes just [18 particles of norovirus](#) to cause an infection. This can lead to the classic clinical signs of vomiting and diarrhoea. In such infections, the virus replicates so fast that the starting dose can become much less relevant.

Is the initial dose of SARS-CoV-2 (the virus that causes COVID-19) related to the disease severity?

At the moment, we just don't know. The only way to answer this question definitively is with "experimental challenge studies", which involves intentionally infecting healthy volunteers in order to study diseases and their treatments. These would be ethically questionable because of the potential severity of the disease.

Once a patient is infected, it is relatively straightforward to measure how much virus they are making – a value known as the "viral load". This is because the standard international test for coronavirus is quantitative.

Instead of just a positive or a negative result, diagnostic teams also get a number from zero to 40. This number is known as the Ct value or threshold cycle.

Counter-intuitively, the lower the number, the more virus a patient sample has. Any number less than 15 corresponds to very high levels of virus, whereas samples greater 35 only have low quantities of virus.

In the absence of infectious dose data, researchers have been trying to determine whether a high viral load corresponds to worse illness. A report from China suggested that there is [no difference](#) between how much coronavirus a person is exposed to and how sick they get.

But another report showed that [patients with milder disease had lower levels of the virus](#).

### Other factors to consider

**It is important to bear in mind that the amount of virus it takes to cause infection is only one part of the story. How the body responds to the virus can also be critical.**

This is because the immune response to a virus can be both beneficial and harmful. If the immune system isn't adequately activated, the virus can replicate faster. On the other hand, if the immune system is over-activated, it can damage healthy tissues.

There is a long list of medical conditions that can increase the chances of having a severe case of COVID-19, from [diabetes](#) to high blood pressure. But what about factors such as exhaustion or extreme stress? We expect many frontline medical staff to be under significant pressure in the coming weeks and months; could this affect their susceptibility?

Sleep deprivation has been shown to affect your chances of getting infected with rhinovirus, also known as the common cold virus. Scientists in Pittsburgh, Pennsylvania, monitored sleep patterns in 164 adults over a week and then exposed them all to rhinovirus. Those people who [slept fewer than five hours a night](#) were significantly more likely to develop a cold than those who slept seven or more hours.

We don't know whether these findings can be applied to SARS-CoV-2 as the new coronavirus is very different from rhinovirus. But we can speculate that the immune responses of severely overworked healthcare workers will not be optimal compared with a well-rested person at home.

This could be an additional factor explaining why more frontline staff are seemingly becoming infected with COVID-19.

Despite all these uncertainties, of course, it is still essential for healthcare workers to minimise exposure to the virus as much as possible. From wearing as much protective equipment as available to practising social distancing with colleagues – every measure will count.

*Sarah L Caddy, Clinical Research Fellow in Viral Immunology and Veterinary Surgeon, University of Cambridge.*



## Swedish model of social care: Reality or just personal fake perception?

A Facebook post of a Greek covid? patient in Sweden (translated from Greek)



Ο Alex A Stolt είναι με την Karin Widholm.

10 Απριλίου στις 1:20 π.μ. · 🌐

...

Να είμαι λοιπόν πάλι έξω. Όχι από το νοσοκομείο. Από το σπίτι μου. Δεν είμαι καν ένα καταγεγραμμένο επίσημα περιστατικό για το Σουηδικό κράτος. Είμαι ένας από τους ανώνυμους πασχόντες που είτε επιβιώνουν είτε πεθαίνουν αβοήθητοι στο σπίτι τους. Δύο εβδομάδες μάχη με τον κορωνοϊό. Ύψηλος πυρετός, βήχας, πόνοι στο σώμα, σπασμοί. 14 μέρες συνεχούς αγωνίας. Δίπλα η Karin σε κάθε δύσκολη στιγμή μου. Κρατούσε το χέρι μου και αποκοιμόταν δίπλα μου. Δύο εβδομάδες που έφτασαν ώστε οποια αγάπη και θαυμασμό είχα για το Σουηδικό κράτος να την εκμηδενίσουν.

Μία χώρα που είναι τυλιγμένη με τον μύθο του κράτους που μάχεται ανά το κόσμο για τις ανθρώπινες αξίες καταδικάζει σε θάνατο οτιδήποτε μπορεί να σταθεί εμπόδιο στην οικονομική του ανάπτυξη.

Αυτό που μου έκαναν οι υπάλληλοι αυτού του κράτος, το ιατρονοσηλευτικό προσωπικό τους, όταν ζήτησα την βοήθεια τους την 11η μέρα εύχομαι να μην το πάθει άλλος άνθρωπος αλλά εύχομαι οι ίδιοι να ζήσουν τα χειρότερα και να ψοφήσουν σαν αδεσποτα σκυλιά στον δρόμο όπως κόντεψα εγώ όταν με ξεφόρτωσαν στον δρόμο έξω από την κλειδωμένη πόρτα των επειγόντων περιστατικών με πυρετό και μια υπόσχεση ότι έρχονται να με πάρουν μέσα. Ποτέ δεν ήρθαν και παρέμεινα 45 λεπτά στο έλεος του κρύου ανέμου. Είχα για αυτούς την Πανώλη του Μεσαίωνα. Είχα όμως λάδι ακόμα στο καντήλι μου. Καθίκια..

So, I am out again. Not from the hospital. From my house. I am not even a recorded official incident for the Swedish state. I am one of the anonymous sufferers who either survive or die helplessly in their home. Two weeks of battle with the crown. High fever, cough, body aches, convulsions. 14 days of constant agony. Next to Karin in every difficult moment. He was holding my hand and lying next to me. Two weeks have passed so that whatever love and admiration I had for the Swedish state to annihilate it.

A country that is shrouded in the myth of the state fighting for human values around the world is doomed to death whatever may stand in the way of its economic development.

What the officials of this state did to me, their medical staff, when I asked for their help on the 11th day, I wish no one else would suffer, but I wish them to live the worst and die like stray dogs on the street as I did when I was unloaded on the street outside the locked emergency door with a fever and a promise that they would come to pick me up. They never came and I stayed 45 minutes at the mercy of the cold wind. I had the Panol of the Middle Ages for them. But I still had oil in my candle. Kathikial! (assholes!)

I don't want to be brave, but the truth is that after several hot days, I wasn't afraid for my life. I settled my financial obligations, transferred the money to members of my

family so that if there was no good outcome, they would not have it but in their head. I gave my fight and whatever happened. Once I just cried. When my partner told me about a 35-year-old father of three where the ambulance went to the house which his wife called for the second time and they were told that he would not go to the hospital because he is not old and he is strong and will drink them. The next day he died. I cried for this man. Not for me. I did not shed tears for myself. My partner yes. Not me. I felt angry and I feel all this time. No fear. Anger because this otherwise developing state, with the expectation of ever-increasing growth, has lost what is called humanity and the barbarity that accompanies economic charts prevails.

So, the Swedish model. My partner works as a nurse in a hospital. She had not even been informed that her patients were suspected of coronary heart disease. When I got stuck, they treated me like a leper. As I tell you. Like leprosy. The Swedish model is as follows. Is it financially advantageous for us to take measures in the long run? No. It will cost us much more if we try to limit the spread. So all the children go to school. Now, whether they stick to their parents and grandparents aaaaaa there is a matter of individual responsibility. And of course, they will go to school. How else will Dad and Mom go to work? The value of human life cannot be costed. The amount they pay for pensions and patient support is well known. Like the unbearable cost of taking action. (Unbearable. But Greece of the Memoranda accepted it to save its citizens). So, if you put the expenses that will arise from restrictive measures, it doesn't come out with anything. So, let them die. So, the sign says that in Sweden today we have about 9000 cases and 800 died. But they don't have me inside. Like those who die in their homes. Test? What do you say now? Does not make sense. As if it also spoils their static image to the outside. The same is 9000 and the same is 60,000? No, let's not go crazy. The same 800 deaths instead of 5000; Of course not. So, let's not spoil the image of the state, the authorities are doing a good job here.

Love Greece. Let's not talk disparagingly about her. We do not have the money of the rich Europeans but we have respect and humanity. In the year 2020 we are still teaching culture.



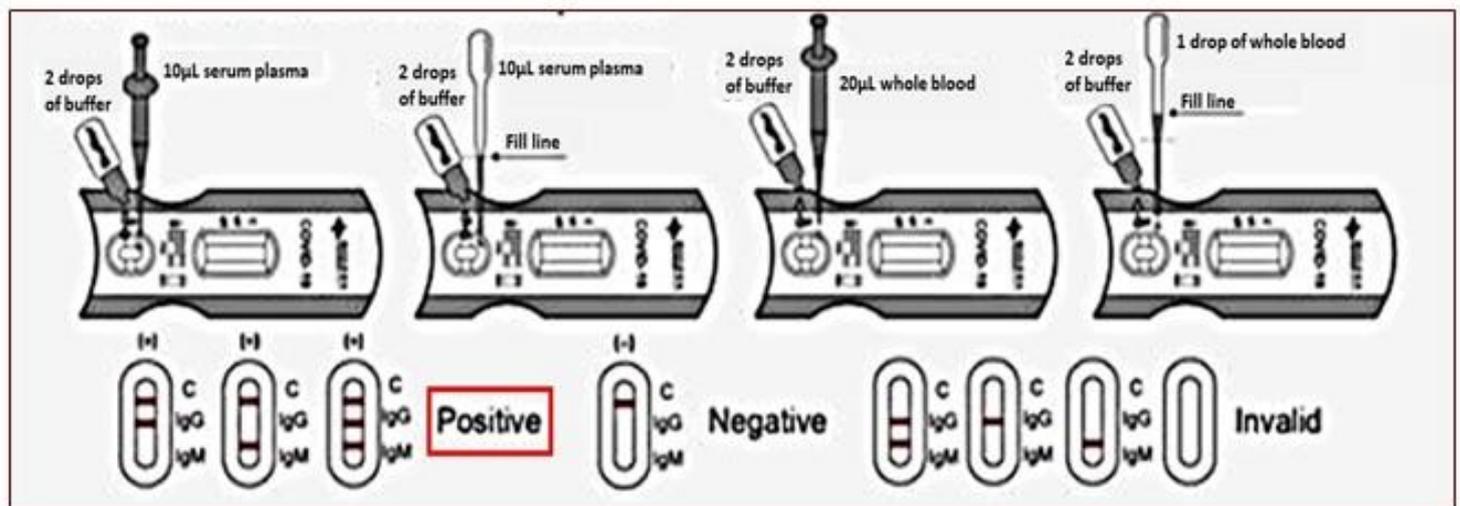
## NEW COVID-19 TEST KIT

Now available from Hotzone Solutions Group.

The rapid test is a lateral flow chromatographic immunoassay for the qualitative detection of IgG and IgM antibodies to COVID-19 in human whole blood, serum or plasma specimen with only 10 minutes assay time.

**High accuracy** (sensitivity: IgG 99.9%; IgM 85%  
 ■ specificity: IgG 98%; IgM 96% (compared to PCR performed with BAL/ nasopharyngeal/oral samples).

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## Covid-19: Antibody tests will not be rolled out in UK until at least May, MPs hear

BMJ 2020;369:m1449

Source: <https://www.bmj.com/content/369/bmj.m1449.short?rss=1>

Apr 09 – Antibody tests to determine whether someone has had covid-19 will not be available until at least May, the government's national testing coordinator has said. John Newton, Public Health England's director of health improvement, said that none of the tests tried so far had been accurate enough.

The government has set itself a target to carry out 100 000 covid-19 tests a day by the end of April, through a "five pillar" policy including a big increase in capacity for polymerase chain reaction (PCR) swab tests that detect the presence of the virus, alongside rolling out antibody testing.<sup>1</sup>

But Newton, appointed last week to oversee this increase, told MPs on the House of Commons science and technology select committee on 8 April that he did not expect antibody tests to be factored into this target.

"We do not expect to be doing antibody tests by the end of April," he said. "We're not relying on antibody tests to make up that [100 000] target. A number of companies were offering us these quick antibody tests, and we were hoping that they'd be fit for purpose, but when they got to test, they all worked but were just not good enough to rely on.

"The judgment was made [that] it's worth taking the time to develop a better antibody test before rolling it out, and that is what the current plan is."

### Sensitivity

Newton told the committee that the tests trialled so far had lacked sufficient sensitivity to identify people who had been infected. "We set a clear target for tests to achieve, and none of them frankly were close," he said. "That doesn't mean to say they don't have any value, but we think it is possible to improve on that."

Last month England's health secretary, Matt Hancock, announced that the government had purchased 3.5 million antibody tests, promising to make them available to frontline NHS staff "very soon" so that people could find out whether they had been infected.

But Kathy Hall, director of the covid-19 testing strategy at the Department of Health and Social Care, told the committee that, in light of the trials of the tests, the government would now be "working with companies to cancel the orders and get the money back where possible." She added that "no country has a valid antibody test in use" at present.

But Newton said he was optimistic that a reliable test could emerge soon in the UK, noting comments yesterday<sup>2</sup> from AstraZeneca's CEO, Pascal Soriot, that an antibody test developed by the company would be ready in May.

Newton said, "There is an active partnership with industry and academics to improve on the underlying molecules that make up the test. We are reasonably optimistic that we can produce a test that does meet the standard in the time when it's needed at very high volumes. But, because it is innovation, we can't be absolutely certain of that."

**EDITOR'S COMMENT:** The moment that rapid tests achieve an accuracy of over 90% (specificity + sensitivity); the moment that PCR has a much lower accuracy; what do they expect? The 100% present diagnostic? Perhaps there is something fishy here but no sight of the fish itself! It is like the "immunity passport" they envision with a 3 months expiry from those recovered from the novel coronavirus. Very scientific I must confess! Perhaps a biomarker other than antibodies is what we need (but I have not read anything towards this direction but I am confident that in the near future somebody will think about it),

## DRDO at the forefront of fighting Covid-19

Source: <https://www.sundayguardianlive.com/news/drdo-forefront-fighting-covid-19>

Apr 11 – The DRDO has developed 11 such products to combat the coronavirus. These products include visor-based full-face shield, isolation shelter, mobile area sanitisation system, advanced N99 masks, personal sanitisation equipment, portable backpack area sanitisation equipment, advanced PPEs (Personal Protection Equipment) for doctors and frontline health workers, ventilators and sanitisers.

With an anticipation of a growing need for ventilators in the coming days for patients fighting the coronavirus, the DRDO's Defence Bioengineering and Electromedical Laboratory in Bangalore, in partnership with Bharat Electronics Limited (BEL) and Scanray Pvt Ltd in Mysuru, will develop modern and portable ventilators at the earliest.



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And, according to sources in the DRDO, works on the development of such ventilators are progressing and each scientist and technician is working to come up with the best and most advanced form of ventilator.

Apart from this, a personal sanitisation equipment which is a full body disinfection chamber has been developed by the DRDO's Vehicle Research and Development Establishment laboratory in Ahmednagar.

This personal sanitisation equipment, which is currently being used at the entrance of many markets across the country, is a walk-through full body disinfection chamber. It is a portable system equipped with sanitiser and soap dispenser. The decontamination is



started using a foot pedal at the entry. On entering the chamber, an electrically operated pump creates a disinfectant mist of hypochlorite sodium chloride for disinfecting. The mist spray is calibrated for an operation of 25 seconds and stops automatically, indicating completion of operation.

An official from the DRDO told The Sunday Guardian, "The person who enters the chamber will have to keep their eyes closed as per the procedure because of the disinfectant. This system consists of roof mounted and bottom tanks with a total of 700 litres capacity and approximately 650 personnel can pass through the chamber for disinfection until the refill is required. This system can be used for disinfection of personnel at the areas of controlled ingress and egress such as entry and exit to hospitals, malls, office buildings and critical installations."



Apart from this, the DRDO's Research Centre Imarat, Hyderabad laboratory and the Terminal Ballistics Research Laboratory in Chandigarh have developed a light weight face protection mask for frontline healthcare professionals handling Covid-19 patients.

According to the DRDO's laboratory, the frame of the mask has been made using 3D Printing, while the face covering thermoplastic is made using biodegradable renewable resources such as corn starch or sugarcane.

The DRDO's innovation to develop suits against CBRN (Chemical, Biological, Radiological and Nuclear) agents have also led to the development of a special bio suit for healthcare workers to fight Covid-19 using a "specific type" of fabric and a "specific type" of agent.



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A DRDO official in the know of this development told this newspaper, “The suit has been prepared with the help of the industry and has been subjected to rigorous testing for textile parameters as well as protection against synthetic blood. The protection against synthetic blood exceeds the criteria defined for body suits by the Ministry of Health and Family Welfare. Currently, the capacity of production exists at 7,000 suits per day, but efforts are on to ramp up the production to 15,000 suits per day.”

In an effort to help the government with rapid sanitization, the DRDO has also come up with a Trolley Mounted Large Area Sanitisation Equipment which has the capability of disinfecting up to 3,000 square metre area in one go.

**EDITOR’S COMMENT:** Come on! A decon chamber where people go through with their clothes on? Nobody considered the fact that soaked clothes can transfer pathogens from outside inwards? As for the new PPEs (without access to test results) is there a difference between blood and other secretions, water or (non-corrosive) liquids in general? A waterproof/splash-proof fabric is enough and already existing in the market. Just hope that the new PPEs are not those in the [picture](#) I added in this article!

### The new bio-terrorist

## COVID-19 Positive Man Charged for Allegedly Coughing on Hospital Staff

Source: <https://www.ibtimes.com/covid-19-positive-man-charged-allegedly-coughing-hospital-staff-2957536>



Apr 13 – The police have charged a COVID-19 patient who allegedly coughed on hospital staff Saturday (April 11).

The officers were summoned to the St. Mary’s Hospital in Waterbury, Connecticut after the hospital reported the issue.

The investigators identified the coronavirus patient as Robert Gordon, 30, who wasn’t following rules and instructions issued by the hospital workers.

The disruptive person was reportedly noticed arguing with the hospital staff. The police reported that Gordon eventually removed his protective face mask and started to cough purposely in the direction of some of the hospital staff, Fox News reported. He was arrested and charged with five counts of breach of peace and was released on a promise to appear on his pending court appearance, as per NBC Connecticut.

In a similar incident, a Pennsylvania woman who claimed she was tested positive for COVID-19, allegedly spat and coughed on food at a local grocer. She was charged with criminal mischief, disorderly conduct, retail theft and terroristic threats and weapons of mass destruction, [Times-Tribune](#) reported. Due to this incident which occurred at Gerrity Supermarkets, an estimated \$35,000 worth of food had to be tossed out.

“I have the virus. Now everyone is going to get sick,” [Fox 19 Now](#) quoted 35-year-old Margaret Cirko who coughed and spat on food and merchandise at the local grocer as saying.



**Earlier, a video had also emerged from a CCTV that had recorded a man licking his hands and touching car door handles. The video comes as a warning asking people to disinfect their vehicle’s door handles.**

“I’m bringing to your attention guys, there are people walking around in the middle of the night, walking into people’s driveways and touching the door handles of cars. As you can see that guy there just gone into the neighbor’s driveway, now coming into my driveway and now you can see him coming towards my driveway, touching his mouth, and then touching the door handle,” [Daily Mail](#) quoted the video’s narration.

Coronaviruses can survive up to 3 days on surfaces and it is important that everyone takes precautionary measures such as wearing face masks, regular handwashing and disinfecting commonly touched surfaces such as doorknobs, lift buttons and car door handles, etc.

## COVID-19 and the Built Environment

Source: <http://www.homelandsecuritynewswire.com/dr20200413-covid19-and-the-built-environment>

Apr 13 – Social distancing has Americans mostly out of the places they usually gather and, in their homes, as we try to reduce the spread of COVID-19. But some buildings, such as hospitals and grocery stores, have to remain open, and at some point, most of us will go back to the office or workplace. What is the role of building design in disease transmission, and can we change how we design the built environment to make it healthier? Those questions are addressed in a review just published in the journal [mSystems](#) by David Coil, project scientist, and



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Professor Jonathan Eisen at the UC Davis Genome Center and School of Medicine; and colleagues at the [Biology and the Built Environment Center](#), University of Oregon.

Among the simplest suggestions for healthier buildings: opening windows to improve air circulation and opening blinds to admit natural daylight.

While more research needs to be done on the effect of sunlight on SARS-CoV-2 indoors, “Daylight exists as a free, widely available resource to building occupants with little downside to its use and many documented positive human health benefits,” the authors write.

We spend almost all of our daily lives inside human-built environments whether homes, vehicles or workplaces. Built environments provide lots of opportunities for people to come into contact with viruses and bacteria — through air flow, from surfaces and also from the way buildings make us interact with each other.

So far, the only documented route of transmission of SARS-CoV-2 is directly from person to person. But viruses also settle on surfaces, which can become heavily contaminated quite quickly. How long SARS-CoV-2 survives on surfaces is still up for debate. Estimates range from a couple of hours to a few days, depending on the material and conditions. Regularly cleaning surfaces and thorough handwashing are important.

### Air flow and Humidity

UC Davis [says](#) that viral particles are too small to be blocked by HEPA and MERV air filters, but ventilation strategies can still play a role in reducing disease transmission, the authors write. Increasing the amount of air flowing in from outside and the rate of air exchange can dilute virus particles indoors. This can include “perimeter ventilation” — opening a window, when outdoor temperatures allow it. However, high air flow could also stir up settled particles and put them back in the air — and it also uses more energy.

Virus particles like drier air, so maintaining a high relative humidity can help. Virus-bearing droplets get bigger in humid air, meaning they settle out more quickly and don’t travel as far. Humidity also seems to interfere with the lipid envelope around viruses such as SARS-CoV-2. Too much humidity, however, can promote mold growth.

Modern buildings are generally designed to promote social mixing — from open plan living areas in homes to open offices where many workers share space. By promoting interaction and chance encounters, these layouts are thought to generate more creativity and

teamwork. At the same time, they are probably also really great for spreading viruses around.

It may not be practical in the short term to make big changes in office layout. But understanding how layout and the ways people use shared spaces affect disease transmission could help in developing effective social distancing measures and making decisions about when people can go back to work.



## Aberdeen-Based NovaBiotics to Test Life-Saving Cystic Fibrosis Drug on COVID-19 Patients

Source: <http://www.homelandsecuritynewswire.com/dr20200413-aberdeenbased-novabiotics-to-test-lifesaving-cystic-fibrosis-drug-on-covid19-patients>

Apr 13 – Aberdeen life sciences firm [NovaBiotics](#) plans to test one of its drugs on Covid-19 patients with secondary lung infections. Hamish Burns writes in [Insider](#) that [Nylexa \(cysteamine\)](#) ‘supercharges’ antibiotics to help them tackle difficult to treat and drug-resistant bacteria. Many of the lung infections in Covid-19 patients do not respond to antibiotics and more than half of the patients who died in Hubei province, the epicenter of the pandemic in China, succumbed to a secondary bacterial infection or sepsis.

NovaBiotics could begin making Nylexa for trials in May and in partnership with the NHS and subject to regulatory approvals, clinical studies could get under way soon after on patients hospitalized with Covid-19.

The active ingredient of Nylexa has proven to be safe and effective in clinical studies carried out across the UK, Italy and the US for bacterial lung infections associated with cystic fibrosis (CF). Nylexa could be repositioned as a Covid-19 therapy and tested on patients in the second half of 2020, ahead of any vaccine being available.

## Next potential shortage: Drugs needed to run ventilators

Source: <http://www.homelandsecuritynewswire.com/dr20200413-next-potential-shortage-drugs-needed-to-run-ventilators>

Apr 13 – As hospitals scour the country for scarce ventilators to treat critically ill patients stricken by the new coronavirus, pharmacists are beginning to sound an alarm that could become just as urgent: Drugs that go hand in hand with ventilators are running low even as demand is surging.

Michael Ganio, of the American Society of Health-System Pharmacists, told Michael Rezendes and Linda A. Johnson of the [Associated Press](#) that demand for the drugs at greater New York hospitals has spiked as much as 600 percent over the last month,

Drug	Formulation	Dose	Onset of action, min	Time to peak effect, min	Frequency of use, number of times/day
$\beta_2$ agonist					
Fenoterol hydrobromide	Solution: 5 mg/mL	5-8 drops	5-10	15	3-6
	Aerosol: 100 $\mu$ g/jet	1 jet every 5 min			
Albuterol	Aerosol: 100 $\mu$ g/jet	2 jets	5-15	30-60	4-6
Anticholinergic agent					
Ipratropium bromide	Solution: 0.25 mg/mL	20-40 drops	15	90-120	4-6
	Aerosol: 20 $\mu$ g/jet	4 jets			

even though hospitals have stopped using them for elective surgery.

“These ventilators will be rendered useless without an adequate supply of the medications,” Society CEO Paul Abramowitz said in an April 1 letter to Vice President Mike Pence, who is leading President Donald Trump’s coronavirus task force.

Nationwide, demand for the drugs surged 73 percent in March, according to Dan Kistner, a pharmaceuticals expert at Vizient, Inc., which negotiates drug prices for hospitals throughout the country. Supplies, according to Vizient data, have not kept pace.

## Palliative care and the COVID-19 pandemic

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30822-9/fulltext?dgcid=raven\\_jbs\\_etoc\\_email](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30822-9/fulltext?dgcid=raven_jbs_etoc_email)

Apr 11 – Palliative care services are under-resourced at the best of times. The 2017 *Lancet* Commission on Palliative Care and Pain Relief described the widespread lack of access to inexpensive and effective interventions as a [travesty of justice](#). And these are not the best of times. As health systems become strained under COVID-19, providing safe and effective palliative care, including end-of-life care, becomes especially vital and especially difficult.



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Some doctors, short of resources, might have to decide who can receive critical care and who cannot. For patients who won't survive, high-quality palliative care needs to be provided at least. But COVID-19 makes this more difficult. Time is short when patients deteriorate quickly, health professionals are overworked, isolation is mandated, and families are advised not to touch or even be in the same room as loved ones. This scenario will be compounded most in low-income and middle-income countries where shortages of both critical care and palliative care services are greatest. Continuing community-based palliative care is also harder to do safely. Many patients who need it are at heightened risk from COVID-19, protective equipment is running short, and surging deaths could overwhelm usual service provision.

WHO has issued [guidance](#) on how to maintain essential health services during the pandemic, highlighting immunisation, maternal care, emergency care, and chronic diseases among others, **but there was no mention of palliative care**. This was an oversight. Indeed, palliative care ought to be an explicit part of national and international response plans for COVID-19. Practical steps can be taken: ensure access to drugs (such as opioids) and protective equipment, consider a greater use of telemedicine and video, discuss advance care plans, provide better training and preparation across the health workforce, and embrace the role of lay carers and the wider community.

A pandemic is a cause and powerful amplifier of suffering, through physical illness and death, through stresses and anxieties, and through financial and social instability. Alleviation of that suffering, in all its forms, needs to be a key part of the response.

## Beware of the second wave of COVID-19

Source: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30845-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30845-X/fulltext)

Apr 08 – The outbreak of coronavirus disease 2019 (COVID-19), which began in Wuhan, China, in late 2019, has spread to 203 countries as of March 30, 2020, and has been officially declared a global pandemic.

With unprecedented public health interventions, local transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) appears now to have been contained in China. Multiple countries are now experiencing the first wave of the COVID-19 epidemic; thus, gaining an understanding of how these interventions prevented the transmission of SARS-CoV-2 in China is urgent.

In *The Lancet*, Kathy Leung and colleagues report their assessment of the transmissibility and severity of COVID-19 during the first wave in four cities and ten provinces in China outside Hubei. The study estimated the instantaneous reproduction number in the selected locations decreased substantially after non-pharmaceutical control measures were implemented on Jan 23, 2020, and has since remained lower than 1. The transmission of SARS-CoV-2 in these locations was mainly driven by imported cases from Hubei until late January, which is, to some extent, similar to the transmission in January in several countries. The epidemics in Chinese provinces outside Hubei were believed to be driven by local transmission dynamics after Jan 31; therefore, the findings of Leung and colleagues' study highlight the fact that the package of non-pharmaceutical interventions in China has the ability to contain transmission—not only imported cases, but also local transmission. The epidemic is accelerating rapidly in multiple countries, indicating shortfalls in preparedness. Given that multiple countries imposed travel restrictions against China in late January, there is a need to model whether earlier implementation of interventions such as social distancing, population behavioural change, and contact tracing would have been able to contain or mitigate the epidemic.

Leung and colleagues also modelled the potential adverse consequences of premature relaxation of interventions, and found that such a decision might lead to transmissibility exceeding 1 again—ie, a second wave of infections. The finding is critical to governments globally, because it warns against premature relaxation of strict interventions. However, the effect of each intervention, or which one was the most effective in containing the spread of the virus, was not addressed in the study. While interventions to control the spread of SARS-CoV-2 are in place, countries will need to work toward returning to normalcy; thus, knowledge of the effect of each intervention is urgently required. Air travel data were used to model the effect of travel restrictions on delaying overall epidemic progression, and were found to have a marked effect at the international scale, but only a 3–5-day delay within China.

A study focused on the effects of extending or relaxing physical distancing control measures in Wuhan has suggested that if the measures are gradually relaxed in March, a second wave of cases might occur in the northern hemisphere mid-summer. Country-specific models of the effects of travel restrictions and social distancing, as well as the alternative strategies after the relaxation of these interventions, such as the use of face masks, temperature checks, and contact tracing, are now needed.

Case fatality rate (CFR) is one of the important unknowns of COVID-19. Leung and colleagues estimated the confirmed CFR (cCFR) outside Hubei was 0.98% (95% CI 0.82–1.16), which was consistent with the report from the Chinese Center for Disease Control and Prevention.

Since the epidemics in the studied locations did not overwhelm the health-care capacities, the data on the number of confirmed cases are believed to be reliable. Leung and colleagues



also found the cCFR was correlated with provincial per capita gross domestic product and the availability of hospital beds per 10 000. In Wuhan, the CFR was up to 5.08% by March 28, 2020.

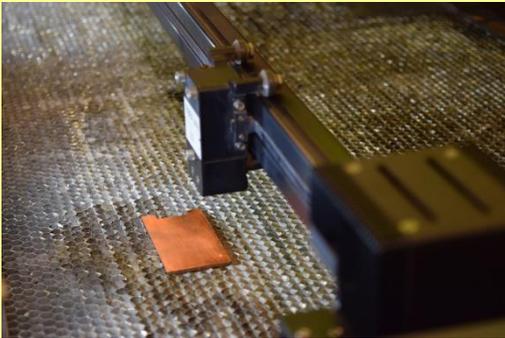
The remarkable difference in the CFRa between these locations and Wuhan might be attributed to the difference in the degrees of health-care capacity. Therefore, consideration should be given to the variations in health-care capacity when implementing interventions. While the epidemic is growing exponentially, the health-care system will face severe burdens. Governments should act and prepare immediately to ensure that the health-care system has adequate labour, resources, and facilities to minimise the mortality risk of COVID-19.

## Simple laser treatment boosts copper's antibacterial effect

Source: <https://newatlas.com/health-wellbeing/laser-treatment-copper-antibacterial/>

Apr 13 – We already knew that copper kills bacteria on contact, as it releases ions that rupture bacterial cell membranes. The material could soon do so faster than ever, however, thanks to a new laser-based surface treatment.

One of the things that keeps copper from having more of an antibacterial effect than it does is its smooth surface texture, which provides relatively few points of contact between the microbes and the metal. As a result, it takes several hours for a sufficient



quantity of ions to flow from the copper into the bacteria.

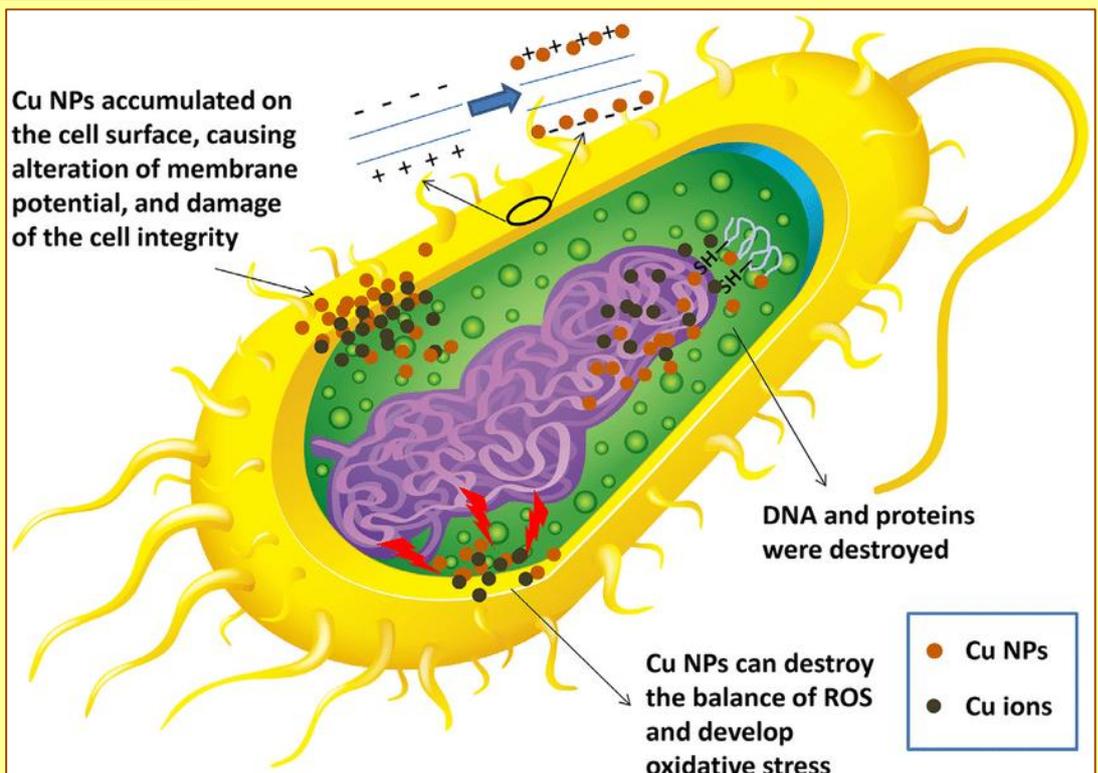
Led by Asst. Prof. Rahim Rahimi, scientists at Indiana's Purdue University set out to speed things up, utilizing a laser to etch nanoscale patterns onto samples of copper. Doing so gave the metal a rugged texture with considerably more surface area, greatly increasing the ion flow. When tested alongside untreated control samples, the laser-treated copper thus completely eradicated harmful bacteria (such as *E. coli* and MRSA) in as little as 40 minutes.

The single-step treatment process leaves the bulk of the underlying copper unchanged, so it retains all of its existing mechanical properties. Additionally, it doesn't involve the application of a separate antibacterial substance, that might

leach off into the environment over time.

And as a side benefit, the technique also makes metal surfaces of any type more hydrophilic, or water-attracting. This means that if the technique were used on orthopedic implants that need to integrate with the surrounding bone tissue, bone cells would be more likely to migrate in and attach themselves to the surface of the implant.

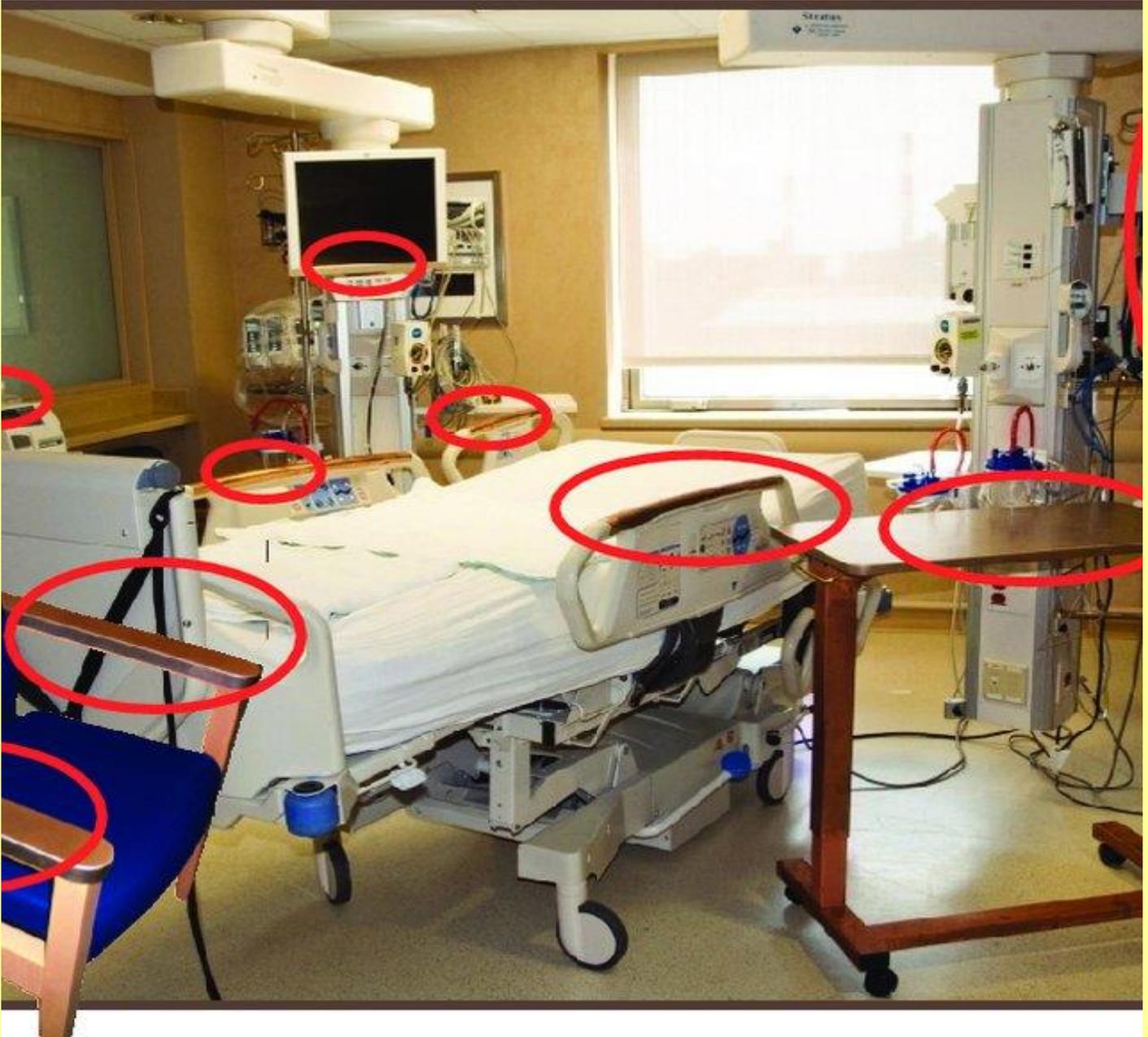
It is believed that the technology could easily and inexpensively be scaled up for use in the manufacturing of medical devices or commonly touched items.



►► A paper on the research was recently published in the journal [Advanced Materials Interfaces](#).



**EDITOR'S COMMENT:** Think on replacing certain parts often touched in ICU rooms with copper – **it really works!**



## **COVID-19 - Clinical Guidelines**

- [COVID-19 Enforcement Policy for Sterilizers, Disinfectant Devices, and Air Purifiers \(FDA, 2020\)](#) 2020 COVID-19 guidance for industry and FDA staff
- [OSHA Guidance on Preparing the Workplace for COVID-19 \(2020\)](#) 2020 guidance on preparing the workplace for coronavirus disease 2019 (COVID-19) by the Occupational Safety and Health Administration (OSHA)
- [COVID-19 Breast Cancer Patient Triage Guidelines \(CPBCC\)](#) Guidelines on surgical triage of patients with breast cancer by the COVID 19 Pandemic Breast Cancer Consortium



- [Procedures in Known/Suspected COVID-19 \(ASA, 2020\)](#) 2020 guidelines on performing procedures on patients with known or suspected COVID-19 by the American Society of Anesthesiologists (ASA)
- [COVID-19–Related Airway Management Clinical Practice Guidelines \(SIAARTI/EAMS, 2020\)](#) 2020 clinical practice guidelines from the SIAARTI Airway Research Group and the European Airway Management Society on coronavirus disease 2019 (COVID-19)–related airway management.
- [Belgium Task Force on Supportive Care and Antiviral/Immunologic Treatment of Hospitalized Patients With Suspected or Confirmed COVID-19 \(2020\)](#) 2020 interim clinical guidance by the Belgium Task Force for supportive care and antiviral/immunologic therapy for adults with suspected or confirmed coronavirus disease 2019 (COVID-19).
- [COVID-19 Ventilation Clinical Practice Guidelines \(2020\)](#) COVID-19 ventilation clinical practice guidelines by the European Society of Intensive Care Medicine and the Society of Critical Care Medicine
- [Guidance on Obstetric COVID-19 \(ISUOG, 2020\)](#) Guidance on the management of COVID-19 infection during pregnancy, childbirth, and the neonatal period, from the International Society of Ultrasound in Obstetrics and Gynecology
- [Control of COVID-19 in Nursing Homes Guidelines \(CMS, 2020\)](#) 2020 guidelines on infection control and prevention of COVID-19 in nursing homes by the Centers for Medicare & Medicaid Services (CMS)
- [FDA Face Mask and Respirator Policy in COVID-19 \(2020\)](#) 2020 guidelines on enforcement policy for face masks and respirators by the US Food and Drug Administration (FDA)
- [Rapid COVID-19 Clinical Practice Guidelines \(2020\)](#) Rapid COVID-19 clinical practice guidelines by Wuhan University Novel Coronavirus Management & Research Team and China International Exchange & Promotive Association for Medical and Health Care.
- [Guidance on Cardiac Implications of COVID-19 \(ACC, 2020\)](#) 2020 guidance by the American College of Cardiology regarding the cardiac implications of COVID-19
- [COVID-19 Guidance for Ophthalmologists \(AAO, 2020\)](#) 2020 COVID-19 guidance for urgent and nonurgent patient care in ophthalmology.
- [Guidance on Containing Spread of COVID-19 \(CMS, 2020\)](#) Guidance for hospitals on how to identify at-risk patients, screen for COVID-19, and monitor or restrict health care facility staff, from the Centers for Medicare & Medicaid Services
- [COVID-19 Sample Collection and Testing: Clinical Practice Guidelines \(CDC, 2020\)](#) 2020 clinical practice guidelines from the Centers for Disease Control and Prevention on the collection, handling, and testing of specimens for the diagnosis of coronavirus disease 2019 (COVID-19).
- [Guidelines for Evaluating and Testing Persons Under Investigation for COVID-19 \(CDC, 2020\)](#) 2020 clinical practice guidelines on evaluating and testing persons under investigation for coronavirus disease 2019 (COVID-19) by the Centers for Disease Control and Prevention (CDC)

## **Cancer Prevalence Among COVID-19 Patients May Be Higher Than Previously Reported**

Source: <https://www.medscape.com/viewarticle/928628>

Apr 14 – **An early report pegged the prevalence of cancer among COVID-19 patients at 1%, but authors of a recent meta-analysis found an overall prevalence of 2% and up to 3% depending on the subset of data they reviewed.**

However, those findings are limited by the retrospective nature of the studies published to date, according to the authors of the meta-analysis, led by Aakash Desai, MBBS, of the University of Connecticut, Farmington.

Nevertheless, the results do confirm that cancer patients and survivors are an important at-risk population for COVID-19, according to Dr. Desai and colleagues.

"We hope that additional data from China and Italy will provide information on the characteristics of patients with cancer at risk, types of cancer that confer higher risk, and systemic regimens that may increase COVID-19 infection complications," the authors wrote in [JCO Global Oncology](#).

More than 15 million individuals with cancer and many more cancer survivors are at increased risk of COVID-19 because of compromised immune systems, according to the authors.

Exactly how many individuals with cancer are among the COVID-19 cases remains unclear, though a previous report suggested the prevalence of cancer was 1% (95% confidence interval, 0.61%-1.65%) among COVID-19 patients in China ([Lancet Oncol. 2020](#))



[Mar:21\[3\]:335-7](#)). This "seems to be higher" than the 0.29% prevalence of cancer in the overall Chinese population, the investigators noted at the time.

That study revealed 18 cancer patients among 1,590 COVID-19 cases, though it was "hypothesis generating," according to Dr. Desai and colleagues, who rolled that data into their meta-analysis of 11 reports including 3,661 COVID-19 cases.

Overall, Dr. Desai and colleagues found the pooled prevalence of cancer was 2.0% (95% CI, 2.0%-3.0%) in that population. In a subgroup analysis of five studies with sample sizes of less than 100 COVID-19 patients, the researchers found a "slightly higher" prevalence of 3.0% (95% CI, 1.0%-6.0%).

However, even that data wasn't robust enough for Dr. Desai and colleagues to make any pronouncements on cancer prevalence. "Overall, current evidence on the association between cancer and COVID-19 remains inconclusive," they wrote.

Though inconclusive, the findings raise questions about whether treatments or interventions might need to be postponed in certain patients, whether cancer patients and survivors need stronger personal protection, and how to deal with potential delays in cancer clinical trials, according to Dr. Desai and colleagues.

"As the evidence continues to rise, we must strive to answer the unanswered clinical questions," the authors wrote.

Dr. Desai and colleagues reported no potential conflicts of interest related to the study.

## Study finds evidence of COVID-19 in air, on hospital surfaces

Source: <https://www.cidrap.umn.edu/news-perspective/2020/04/study-finds-evidence-covid-19-air-hospital-surfaces>



Apr 13 – A [study](#) published late last week in *Emerging Infectious Diseases* found a wide distribution of COVID-19 virus genetic material on surfaces and in the air about 4 meters (13 feet) from patients in two hospital wards in Wuhan, China, posing a risk to healthcare workers.

While the findings of the environmental sampling study do not indicate the amount of live virus, if any, or precisely determine the distance of aerosol transmission, the authors say that they confirm that the virus spreads in aerosols in addition to large respiratory droplets.

The researchers tested surface and air samples from an intensive care unit (ICU) and general coronavirus ward at Huoshenshan Hospital from Feb 19 to Mar 2 to detect evidence of SARS-CoV-2, the coronavirus that causes COVID-19.

Fifteen patients were in the ICU, while 24 were housed in the general ward. The investigators used quantitative real-time polymerase chain reaction to identify virus in swabs of floors, computer mice, trash bins, bed handrails, patients' face masks, health workers' personal protective equipment, and air vents.

Nearly all (54 of 57) positive samples (94.7%) were from contaminated areas of the ICU and general ward (9/9 [100%]). Rate of positive samples was much higher for the ICU than for the general ward (54/124 [43.5%] vs. 9/114 [7.9%]).

### Virus aerosols in ICU

Fourteen of 40 air samples from the ICU (35%) tested positive for coronavirus, while 2 of 16 from the general ward (12.5%) were positive. Eight of 12 ICU air vent swabs (66.7%) tested positive, as did 1 of 12 (8.3%) general ward swabs, results that the authors said "confirm that SARS-CoV-2 aerosol exposure poses risks."

**COVID-19 aerosol was found near air vents (5/14 [25.7%]), in patient rooms (8/18 [44.4%]), and in the doctor's office area (1/8 [12.5%]),** indicating that aerosolized virus was concentrated near and downstream of patients. However, the upstream area also posed a risk and that, based on the detection of virus in the doctor's office, "the maximum transmission distance of SARS-CoV-2 aerosol might be 4 m," they said.

Using the aerosol test results, the researchers identified the patient care area of the ICU as high risk because of the high positivity rate (13/32 [40.6%]). "Thus, stricter protective measures should be taken by medical staff working in the ICU," the authors said.

### Contaminated shoes, computer mice, bedrails

The relatively high rate of positivity for floor samples in the ICU (7/10 [70%]) and general ward (2/13 [15.4%]) may have been due to gravity and air flow causing most respiratory droplets to fall to the ground and spread via clinicians' shoes, the authors surmised, noting a 100% positivity rate on the pharmacy floor, where no patients were housed and three samples were taken.

Half of the swabs from the soles of clinicians' shoes tested positive, indicating that the virus may spread this way. "We highly recommend that persons disinfect shoe soles before walking out of wards containing COVID-19 patients," they said.



The highest rates of positivity from objects came from computer mice (6/8 [75%] in the ICU; 1/5 [20%] in the general ward), trash cans (3/5 [60%] in the ICU; 0/8 in the general ward), bed handrails (6/14 [42.9%] in the ICU; 0/12 in the general ward); and doorknobs (1/12 [8.3%] in the general ward).

Patient masks had a high rate of positivity because they contained exhaled droplets and saliva, which the authors said suggests that the masks should be disinfected before disposing of them. Some positive results came from clinicians' sleeve cuffs and gloves, which the researchers said indicates that staff should wash their hands immediately after patient contact.

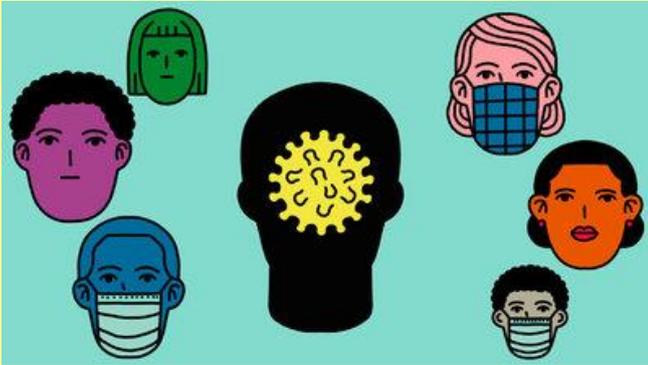
As of Mar 30, no hospital employees had tested positive for COVID-19, which may be partially attributed to China's use of mobile hospitals in Wuhan, "which ensured that all patients with suspected disease were cared for by professional medical staff and that virus transmission was effectively cut off," they wrote.

## What We Know About the Silent Spreaders Of COVID-19

By Pien Huang

Source: <https://www.npr.org/sections/goatsandsoda/2020/04/13/831883560/can-a-coronavirus-patient-who-isnt-showing-symptoms-infect-others>

Apr 13 – Is it possible to be infected with the coronavirus and show no symptoms? Or go through a period of several days before symptoms kick in?



And even in this stage with no cough, no fever, no sign of illness, could you be transmitting the virus to others?

"There is evidence that [SARS-CoV-2](#) has this ability to spread silently," says [Shweta Bansal](#), an infectious disease modeler at Georgetown University.

Indeed, cases of COVID-19 among [nursing home residents](#), [choir groups](#) and [families](#) fuel a growing concern about people who are infected, yet feel generally OK and go about their daily lives, giving the virus to friends, family members and strangers without knowing that they themselves have it.

But there are wide gaps in our understanding of how many people fit

this category of "silent spreaders" — as they're called by some public health researchers — and how much they contribute to transmission of the disease.

Silent spreaders can be divided into three categories: asymptomatic, presymptomatic and very mildly symptomatic. Here's what we know about these variations.

### Asymptomatic: people who carry the active virus in their body but never develop any symptoms

"Nothing at all," says [Tara C. Smith](#), an epidemiologist at Kent State University's College of Public Health. "No fever, no gastrointestinal issues, no breathing issues, no coughing, none of that."

As you might imagine, it's hard to figure out when someone has a disease but shows no signs of it.

Some cases of asymptomatic carriers have been confirmed by finding and testing people who were in close contact with COVID-19 patients. For those who tested positive without symptoms, follow-up exams confirmed that about 25% continued to show no signs, World Health Organization officials said on [April 1](#), citing data from China.

No one can truly determine the impact of asymptomatic cases on spread until there's more testing. But so far, they have made up a sliver of the total number of people who've tested positive. And the affected individuals seem to skew young. A [small clinical study](#) from Nanjing, China, followed 24 people who tested positive but didn't show overt symptoms at the time. In the one to three weeks after diagnosis, seven continued showing no symptoms. Their median age was 14.

"Can those people who are completely asymptomatic, who never develop any symptoms, transmit the infection? That's still kind of an open question," says Smith.

### Presymptomatic: people who have been infected and are incubating the virus but don't yet show symptoms

After infection, symptoms might not develop for five to six days — or even two weeks, according to the [Annals of Internal Medicine](#). The time between catching the virus and showing symptoms is called the presymptomatic phase.

How do these individuals figure into transmission?



## HZS C<sup>2</sup>BRNE DIARY – April 2020

People appear to be most infectious right around the time when symptoms start, said Maria Van Kerkhove, technical lead for the WHO's Health Emergencies Programme, at an April 1 [news conference](#). However, "we do have evidence, from testing and modeling studies, that suggest people who are presymptomatic can definitely transmit this virus," says Smith, the epidemiologist, most likely in the [one to three days before](#) they start showing symptoms, according [to the WHO](#).

So far, presymptomatic is a much more common category than asymptomatic. About 75% of people who test positive without showing symptoms turn out to be presymptomatic, displaying coughing, fatigue, fever and other signs of COVID-19 in a later follow-up exam, [said Van Kerkhove](#).

At a nursing home in King County, Washington, about a third of its 82 residents tested positive for the coronavirus in mid-March. Half of those were free of fever, malaise and coughing when they were swabbed for the virus, though most went on to develop symptoms. The coronavirus spread rapidly through the facility just two weeks after it was introduced by a health care provider, despite the nursing home's policy of isolating residents with signs of COVID-19. This suggests that "transmission from asymptomatic and presymptomatic residents, who were not recognized as having SARS-CoV-2 infection and therefore not isolated, might have contributed to further spread," according to [research published](#) in the CDC's April 3 "Morbidity and Mortality Weekly Report."

A [study in Singapore](#) found similar evidence of presymptomatic spread among people who went to church, took singing classes or pattered at home with their spouses.

### Very mildly symptomatic: people who feel a little unwell from a COVID-19 infection but continue to come in close contact with others

"We're very lucky that this isn't a severe infection for everyone, but because of that, some people feel a little sick and power through," says [Seema Lakdawala](#), a flu researcher at the University of Pittsburgh.

Spreading COVID-19 while having a cough or very mild fever doesn't fully count as silent transmission, says [Bansal](#), the infectious disease modeler: "There's some signal there at least."

But people who continue to frequent communal and public places with a light cough or mild fever may unwittingly spread the disease in the early days of symptom onset — the time they're thought to be most infectious.

Even when a person's own symptoms remain mild, others they infect can become very sick. In mid-January, a man returned to his home in Nanjing from a trip to Hubei province, the epicenter of China's epidemic. Ten days later, his wife started running a fever and vomiting; soon, she developed severe pneumonia and required care in the intensive care unit. The man was tested for the coronavirus, and the test came back positive; he's presumed to have spread the virus to his wife. X-ray scans showed signs of the virus in his lungs — but he consistently reported feeling fine, according to epidemiological research published in [Science China Life Sciences](#).

### What we don't yet know

#### *How many people are mingling in the population without knowing they've been infected with the coronavirus?*

It's simply too soon to say. In one of the places where there has been extensive testing, the [nursing home](#) in Washington state, 56% of those who tested positive had no symptoms when they got tested. Aboard the Diamond Princess cruise ship docked in Japan, [February data](#) showed that up to 50% of the people who tested positive showed no symptoms at the time and that an estimated 18% remained asymptomatic.

#### *Are asymptomatic and presymptomatic cases responsible for a lot of transmission?*

Uncertainties abound.

Dr. Robert Redfield, director of the Centers for Disease Control and Prevention, told NPR in an interview on April 9 that while he thinks "asymptomatic spread was and is more significant than was appreciated back in January, the relative contribution of asymptomatic spread to symptomatic spread has not been clearly defined."

A modeling [paper in Science](#) suggests that in China before the lockdown, undiscovered cases — mainly people with "mild, limited or no symptoms" — were less infectious than known cases but were still possibly responsible for 79% of transmission, because so many of them continued to congregate or travel while contagious. Other papers from [Singapore](#) and [China](#) suggest that presymptomatic cases account for 6% to 13% of transmission.

To start answering these questions about spread, "we really need more testing and more follow-up," says Smith.

The National Institutes of Health announced Friday that it's recruiting up to 10,000 volunteers for blood testing to look for antibodies to COVID-19 — a sign that a person was infected in the past. "This study will ... [tell] us how many people in different communities have been infected without knowing it, because they had a very mild, undocumented illness or did not



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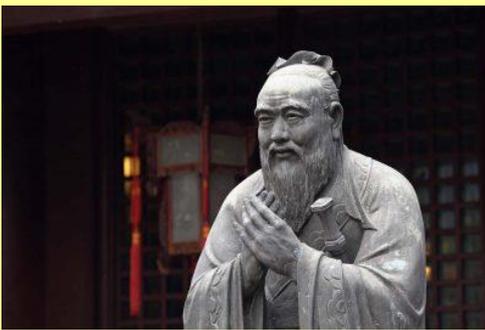
access testing while they were sick," said Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, in a news release.

Even though there is still much to learn about silent spreading, the concerns about this mode of transmission give more weight to the advice we've been hearing all along: Keep a 6-foot distance from others, wash hands often and wipe down surfaces. "Don't wait for symptoms to protect those around you," Bansal of Georgetown University says, because there's mounting evidence that a person with the coronavirus could look and feel as healthy as ever but still be spreading it to others.

*Pien Huang is a global health and development reporter on the Science desk. She was NPR's first Reflect America Fellow, working with shows, desks and podcasts to bring more diverse voices to air and online. She's a former producer for WBUR/NPR's On Point and was a 2018 Environmental Reporting Fellow with The GroundTruth Project at WCAI in Cape Cod, covering the human impact on climate change. As a freelance audio and digital reporter, Huang's stories on the environment, arts and culture have been featured on NPR, the BBC and PRI's The World. Huang's experiences span categories and continents. She was executive producer of Data Made to Matter, a podcast from the MIT Sloan School of Management, and was also an adjunct instructor in podcasting and audio journalism at Northeastern University. She worked as a project manager for public artist [Ralph Helmick](#) to help plan and execute [The Founder's Memorial](#) in Abu Dhabi and with [Stoltze Design](#) to tell visual stories through graphic design. Huang has traveled with scientists looking for signs of environmental change in Cameroon's frogs, in Panama's plants and in the ocean water off the ice edge of Antarctica. She has a degree in environmental science and public policy from Harvard.*

## Confucius Is Winning the Covid-19 War

By Pepe Escobar, April 14, 2020



Seoul went for fast mobilization of scientific expertise, immediate massive testing, extensive contact tracing, and social distancing, as well. But, crucially, most of it voluntary, not imposed by the central power. Because these moves were organically integrated, South Korea did not need to restrict movement drastically or to close down airports.

Hong Kong's success is due in large part to a superb health care system. People in the frontline, with institutional memory of recent epidemics such as SARS, were willing to go on strike if serious measures were not adopted. Success was also due in large part to myriad professional links between Hong Kong's and Taiwan's healthcare and public health systems.

## Specifications of Covid Rapid Tests

### UK Medicinal & Healthcare products Regulatory Agency (HMRA)

Source: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/878659/Specifications\\_for\\_COVID-19\\_tests\\_and\\_testing\\_kits.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878659/Specifications_for_COVID-19_tests_and_testing_kits.pdf)

## The Power of Light

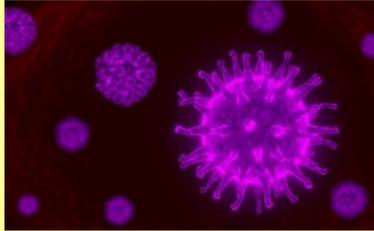
Source: <https://www.news.ucsb.edu/2020/019860/power-light>

Apr 14 – As COVID-19 continues to ravage global populations, the world is singularly focused on finding ways to battle the novel coronavirus. That includes [UC Santa Barbara's Solid State Lighting & Energy Electronics Center](#) (SSLEEC) and member companies. Researchers there are developing ultraviolet LEDs that have the ability to decontaminate surfaces — and potentially air and water — that have come in contact with the SARS-CoV-2 virus.

**“One major application is in medical situations — the disinfection of personal protective equipment, surfaces, floors, within the HVAC systems, et cetera,”** said materials doctoral researcher Christian Zollner, whose work centers on advancing deep ultraviolet light LED technology for sanitation and purification purposes. He added that a small market already exists for UV-C disinfection products in medical contexts.



Indeed, much attention of late has turned to the power of ultraviolet light to inactivate the novel coronavirus. As a technology, ultraviolet light disinfection has been around for a while. And while practical, large-scale efficacy against the spread of SARS-CoV-2 has yet to be shown, UV light shows a lot of promise: SSLEEC member company Seoul Semiconductor in early April reported a [“99.9% sterilization of coronavirus \(COVID-19\) in 30 seconds”](#) with their UV LED products. Their technology currently is being adopted for automotive use, in UV LED lamps that sterilize the interior of unoccupied vehicles.



It's worth noting that not all UV wavelengths are alike. UV-A and UV-B — the types we get a lot of here on Earth courtesy of the Sun — have important uses, but the rare UV-C is the ultraviolet light of choice for purifying air and water and for inactivating microbes. These can be generated here only via man-made processes.

**“UV-C light in the 260 – 285 nm range most relevant for current disinfection technologies is also harmful to human skin, so for now it is mostly used in applications where no one is present at the time of disinfection,”** Zollner said. In fact, the World Health Organization warns against using ultraviolet disinfection lamps to sanitize hands or other areas of the skin — even brief exposure to UV-C light can cause burns and eye damage.

Before the COVID-19 pandemic gained global momentum, materials scientists at SSLEEC were already at work advancing UV-C LED technology. This area of the electromagnetic spectrum is a relatively new frontier for solid-state lighting; UV-C light is more commonly generated via mercury vapor lamps and, according to Zollner, “many technological advances are needed for the UV LED to reach its potential in terms of efficiency, cost, reliability and lifetime.”

In a [letter](#) published in the journal ACS Photonics, the researchers reported a more elegant method for fabricating high-quality deep-ultraviolet (UV-C) LEDs that involves depositing a film of the semiconductor alloy aluminum gallium nitride (AlGaIn) on a substrate of silicon carbide (SiC) — a departure from the more widely used sapphire substrate.

According to Zollner, **using silicon carbide as a substrate allows for more efficient and cost-effective growth of high-quality UV-C semiconductor material than using sapphire.** This, he explained, is due to how closely the materials' atomic structures match up.

“As a general rule of thumb, the more structurally similar (in terms of atomic crystal structure) the substrate and the film are to each other, the easier it is to achieve high material quality,” he said. The better the quality, the better the LED's efficiency and performance. Sapphire is dissimilar structurally, and producing material without flaws and misalignments often requires complicated additional steps. Silicon carbide is not a perfect match, Zollner said, but it enables a high quality without the need for costly, additional methods. In addition, silicon carbide is far less expensive than the “ideal” aluminum nitride substrate, making it more mass production-friendly, according to Zollner.

Portable, fast-acting water disinfection was among the primary applications the researchers had in mind as they were developing their UV-C LED technology; the diodes' durability, reliability and small form factor would be a game changer in less developed areas of the world where clean water is not available.

The emergence of the COVID-19 pandemic has added another dimension. As the world races to find vaccines, therapies and cures for the disease, disinfection, decontamination and isolation are the few weapons we have to defend ourselves, and the solutions will need to be deployed worldwide. In addition to UV-C for water sanitation purposes, UV-C light could be integrated into systems that turn on when no one is present, Zollner said.

“This would provide a low-cost, chemical-free and convenient way to sanitize public, retail, personal and medical spaces,” he said. For the moment, however, it's a game of patience, as Zollner and colleagues wait out the pandemic. Research at UC Santa Barbara has slowed to a trickle to minimize person-to-person contact.

“Our next steps, once research activities resume at UCSB, is to continue our work on improving our AlGaIn/SiC platform to hopefully produce the world's most efficient UV-C light emitters,” he said.

Other research contributors include Burhan K. SaifAddin (lead author), Shuji Nakamura, Steven P. DenBaars, James S. Speck, Abdullah S. Almogbel, Bastien Bonef, Michael Iza, and Feng Wu, all from SSLEEC and/or the Department of Materials at UC Santa Barbara.

## A debate

### 'Such a simple thing to do': Why positioning Covid-19 patients on their stomachs can save lives

Source: <https://edition.cnn.com/2020/04/14/health/coronavirus-prone-positioning/index.html>



## Experts: know your limits!

By Norman Lewis

Source: <https://www.spiked-online.com/2020/04/14/experts-know-your-limits/>



Apr 14 – In our new age of social distancing, it has been almost impossible not to notice the self-important experts basking in the sunlight of public recognition. ‘We have been vindicated’, they smirk. ‘You plebeians who thought you could do without experts, look at you now’, they seem to say. Perhaps we should be grateful that the experts have been willing to put their bruised egos aside and have come to the rescue.

This was the point made by Nobel prize-winning geneticist Sir Paul Nurse in an interview in [The Times](#). ‘Boris knows he is out of his depth. Suddenly experts are useful again’, read the headline.

We should recall that Nurse is one of the experts who attacked Michael Gove’s questioning of the poor track record of economic predictions during the 2016 referendum. Nurse castigated Gove on [Newsnight](#) for deriding experts and opening the floodgates of scepticism ‘into all sorts of other areas where experts have an enormous contribution to make to the proper running of society’. But Sir Paul Nurse’s criticism was wrong then and is in danger of being even more dangerously wrong today.

As *spiked* has frequently argued, the idea that people have given up on experts [is a fiction](#). It was an elite invention of the [Brexit](#) era. The myth of the so-called post-truth society was peddled as a self-serving way of explaining why ordinary people turned their backs on elite values and followed their own instincts instead. The need for expertise in a technologically advanced society has never seriously been called into question – and nor is there any need for it to be.

What has been called into question is the *elevation* of the expert, particularly in relation to elected politicians or to public opinion. Those calling for rule by experts fail to understand that while experts’ views are critical in the fight against [Covid-19](#), the decisions reached must be political ones which require judgement based not just on expert opinion or on scientific facts. The inherent danger of the elevation of the expert occurs when this expertise becomes a substitute or a crutch for the exercise of political judgement.

The example of Sir Paul Nurse is important to dwell on because it demonstrates the problem so clearly. As the director of the Francis Crick Institute – the largest biomedical laboratory in Europe – he, along with a team of researchers, is working flat out to increase the UK’s testing capabilities for Covid-19. The institute is also going to repurpose its London laboratory as a mass screening centre. This is a great effort which we should acknowledge and cheer. All power to their elbows.

The skills and expertise of Nurse and his researchers give weight to many of his insights. For instance, he has made damning criticisms of contemporary risk aversion and over-regulation, arguing that these have slowed down the introduction of new treatments and innovations, with dire consequences for the fight against Covid-19. These comments are poignant and powerful.

But Nurse is wrong to describe [Boris Johnson](#) as being uniquely ‘out of his depth’. Yes, the prime minister is not an epidemiologist. But the uncertainty and newness of Covid-19 mean that even epidemiologists are necessarily out of their depths, too.

We trust that they have the skills and experience to offer good advice on mitigating the spread of the disease, and, ultimately, to find a cure. This is precisely why Johnson needs people like Sir Paul Nurse. But we cannot forget that Johnson is an elected head of a government with responsibility to govern society as a whole, not just for sectional or specialised interests. For this, Johnson needs more than epidemiologists. He needs sound political judgement – and the input of experts ought to be only one element of the process through which political decisions are made.

If Sir Paul Nurse were to apply his own criticisms to himself, he might ask why a ‘yeast specialist’, as he rather humbly describes himself, is pontificating about politics with such confidence and certainty. Nurse has strong opinions on Brexit, which he vigorously opposed; he also thinks it will harm the fight against Covid-19. He warns about a coming ‘double whammy’ in the economy – ‘trashed by Covid and... by Brexit, so we’re going to be in some very difficult times’. Nurse says with absolute certainty that the Brexit transition period should be extended.

The problem here is not the views he is expressing and whether they are right or wrong. Everyone is free to sermonise on any subject they like. We can agree or disagree. No, the danger is the weight given to someone with the gravitas of Sir Paul Nurse, especially at a time when he is at the coalface of the Covid-19 crisis. We should certainly listen carefully to his ideas and approaches to Covid-19 testing. If he achieves what he has set out to do, we should shower him with plaudits. If he fails, we should salute his efforts and encourage him to return to the battlefield and hopefully get it right next time.

But on the [economy](#) or the EU, Nurse’s opinion is simply another view in a sea of differing opinions which we should judge like everyone else’s. Being a ‘yeast specialist’ does not mean his views on subjects outside of his specialist knowledge should be accorded any more authority than your local bookie or taxi driver.



What Sir Paul Nurse and many of his colleagues are guilty of is expertise slippage. There is a tendency of experts in one field to pass judgement on matters which fall outside their area of expertise. The authority they possess in their fields of expertise should not give their non-expert opinions authority, too. For instance, mathematicians seem to think that because they know about exponential curves, they can preach about social distancing. Some of the most vocal early proponents of a lockdown to combat Covid-19 had very little relevant expertise. Take the 229 ‘experts’ [boosted by the BBC](#) who urged tougher measures. This list of experts turned out to include specialists in a range of disciplines, from mathematics to genetics, but not a single expert in the science of the spread of diseases.

The title of ‘expert’ does not accord experts, or the governments relying on them, with untouchable superpowers. It does not mean they can talk authoritatively about anything outside of their specialist knowledge. Nor do they possess magical powers to dissolve criticism. ‘Shut up’, we are told, ‘they are experts, they know what is right’. A new tyrannical moral order of experts, socially distanced from ordinary people, has emerged, and it is fast becoming a foil behind which bad judgements are being insulated from public opinion.

It is important to recognise that experts have a legitimate and critical role to play in contributing to decision-making. But expertise should never trump the political judgment needed to make decisions which have ramifications way beyond the specialists’ spheres of knowledge. Epidemiologists can explain how Covid-19 might spread, but their specialist knowledge should be only one input into any decision regarding social distancing or the shutting down of the economy. Decisions like these are extremely difficult. They require economic, moral and social judgements about death, life and freedom, as well as a sense of proportion.

Yes, scientists will certainly have opinions on all manner of issues – just like hairdressers and nurses do. But science cannot pass political judgement on a policy because science cannot answer moral truths. To suggest otherwise is not simply to hide behind science — it is also to denigrate both the science and the decisions reached. It justifies catastrophic decisions like shutting down the entire economy which, in all likelihood, could end up in the longer term being a greater threat than Covid-19 itself.

Bad decision-making is not a crime. Governments, businesses and citizens make bad decisions all the time. Being open, as Johnson was, especially with his experts flanking him at the start of this process, was the right thing to do. But now bad political judgements are being defended increasingly through recourse to expert input. This not only deauthorises experts when we need them most — it also makes a mockery of freedom.

In a democracy, judgement, or the conscious application of perspective to decision-making, is part of freedom. This is not an abstract principle. It is an infinitely practical principle. If we are not free to dissent, to [question the experts](#), the government and the policies they present, then we are no longer free citizens. A fundamental source of expert accountability is lost, too. Elevating the expert at the expense of dissent means we have been cast as supplicants – objects, not active subjects.

Sir Paul Nurse is especially wrong about Brexit. The only real counterweight to the expert-led displacement of judgement is the wisdom of the demos. We might not all be experts, but we all live at the sharp end of bad judgements. It is not we, the people, who need to know our place and limits. It is the experts who need to keep to theirs. We, collectively, with all our diversity of opinion and experience, are best placed to forge judgements to get us through this crisis. Instead of using experts to substitute for judgement, politicians should be searching for ways to bring the demos into decision-making, not marshalling us [out of parks](#), treating us like naughty children playing truant. It is the experts who need reining in, not the people.

*Dr Norman Lewis is a writer and managing director of Futures Diagnosis.*

## **UN Warns of Measles Spike as COVID-19 Halts Vaccination Campaigns**

Source: <http://www.homelandsecuritynewswire.com/dr20200414-un-warns-of-measles-spike-as-covid19-halts-vaccination-campaigns>

Apr 14 – Essential measles vaccination programs around the world are being postponed indefinitely for more than 100 million children as healthcare systems focus on coronavirus and countries enforce lockdowns and social distancing. The UN urges governments to keep track of unvaccinated children.

## **How the Hunt for a Coronavirus Vaccine Could Go Horribly Wrong**

By Rachel M. Cohen (*Daily Beast*)

Scientists are racing to develop a [vaccine](#) for the [novel coronavirus](#), and [anti-vaxxers](#) are waiting in the wings, ready to pounce if the furious push for a COVID-19 fix runs into trouble.



## HZS C<sup>2</sup>BRNE DIARY – April 2020

The global movement of vaccine opponents and skeptics—who organize under banners of “choice” and “informed consent”—view attempts to expedite COVID-19 research and trials with suspicion, and in recent weeks, they’ve been raising the alarm over expedited development.

The anti-vaxxers have amassed considerable political power over the last several decades, and scientists say their propaganda is a major reason the U.S. has seen a [recent resurgence of measles](#). In 2019, the World Health Organization ranked “vaccine hesitancy” as one of the top 10 global health threats.

The conspiracy-fueled anti-vaccine movement may well cause delays in developing a vaccine for COVID-19. Urgent as the need is, public health leaders warn, moving too quickly could have disastrous consequences not only for reining in COVID-19, but for vaccines more broadly. If a vaccine is released that doesn’t work well or yields dangerous side effects—especially in the face of an historic pandemic—it could empower anti-vaccine activists and reduce support for other longstanding vaccines that have gone through rigorous and exhaustive testing.

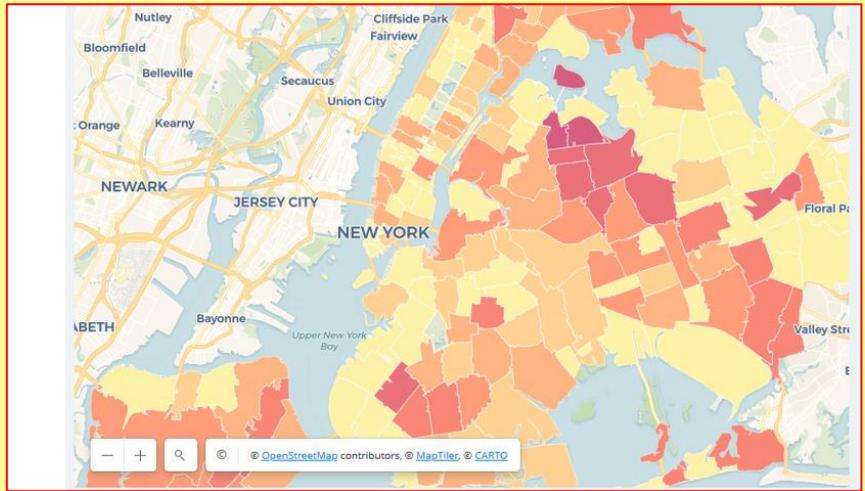
### **Why We Can’t Trust Positive COVID Test Counts to Track the Pandemic in NYC**

By Ben Wellington (*IQuantNY*)

After much delay, the New York City Department of Health recently released [data](#) on the number of tests given and the number of positive COVID-tests in each ZIP Code. And what followed was a flurry of maps and analysis by news organizations hoping to pinpoint which neighborhoods were hardest hit.

Given that there are many caveats and qualifications in unpack all this information, it would be great to see the city release data on the number of patients who have been hospitalized in each ZIP Code - not just ER visits. That number would be the cleanest to understand the potential inequities associated with this outbreak. I applaud the Department of Health in releasing this data, but would love to see more.

In the end, it’s necessary that we understand how New Yorkers across income demographics may be subject to different levels of risk. And to do that better, we need more refined data.



### **COVID-19 Detection via New Approach, Plasmonic Sensing, Shows Promise**

Source: <https://www.genengnews.com/news/covid-19-detection-via-new-approach-plasmonic-sensing-shows-promise/>

Apr 15 – COVID-19 testing leans heavily on reverse transcription polymerase chain reaction (RT-PCR) technology. Although RT-PCR is currently the most sensitive method for detecting viral RNA—such as the viral RNA unleashed by COVID-19’s viral particles—it is showing signs of strain. With RT-PCR, reagent supplies can be overstretched, trained personnel can be overtasked, and processing times can be overlong.

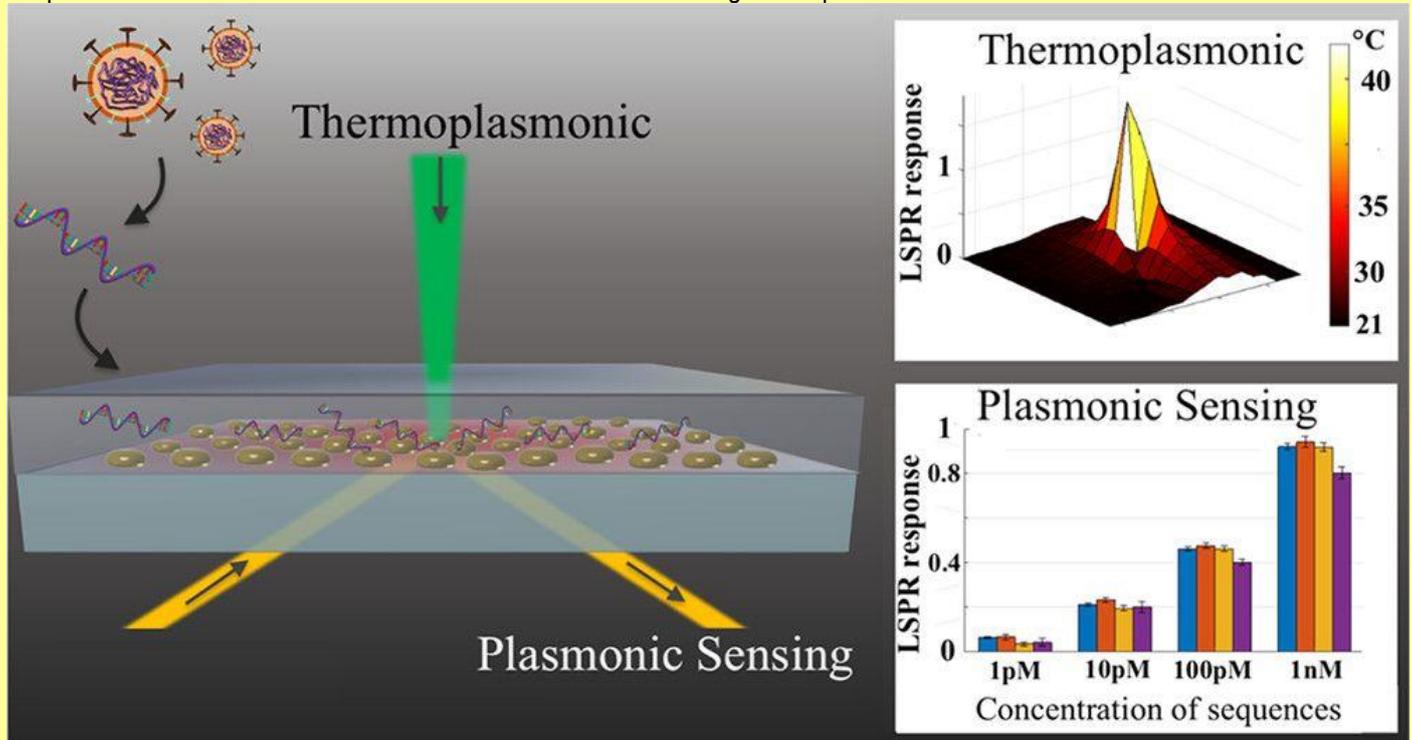
Some of the strain could be shouldered by an alternative technology, localized surface plasmon resonance (LSPR) sensing. According to researchers based at ETH Zurich, when LSPR is tasked with detecting COVID-19 RNA, the technology demonstrates a high degree of accuracy and sensitivity—and speediness.

The researchers presented a proof-of-concept study that appeared April 13 in *ACS Nano*. The study, titled, “[Dual-Functional Plasmonic Photothermal Biosensors for Highly Accurate Severe Acute Respiratory Syndrome Coronavirus 2 Detection](#),” describes a dual-functional plasmonic photothermal (PPT)-enhanced LSPR biosensing system.

Like other LSPR systems, the ETH researchers’ system detects interactions between molecules on the surface of a constructed metallic nanostructure, and it registers interactions as a local change in refractive index. The ETH researchers’ system, however, has the distinction of incorporating DNA probes that recognize specific SARS-CoV-2 RNA sequences.



The probes are attached to gold nanoparticles—actually, two-dimensional gold nanoislands, or AuNIs—and they detect SARS-CoV-2 RNA through nucleic acid hybridization. Essentially, the DNA probes attach to complementary viral RNA like a zipper being closed. “For better sensing performance, the thermoplasmonic heat is generated on the same chip-based AuNIs when illuminated at their plasmonic resonance frequency,” the article’s authors noted. “The localized PPT heat is capable to elevate the in situ hybridization temperature and facilitate the accurate discrimination of two similar gene sequences.”



In other words, the ETH Zurich researchers (led by Jing Wang, PhD) used a laser to heat up the nanoparticles, making it more difficult for imperfectly matched sequences to remain attached, reducing false-positive results. For example, a nucleic acid “zipper” missing a couple of teeth—indicating a partial mismatch—would unzip under these conditions. In this way, the researchers could discriminate between SARS-CoV-2 and its close relative, SARS-CoV-1.

“Our dual-functional LSPR biosensor,” the article’s authors declared, “exhibits a high sensitivity toward the selected SARS-CoV-2 sequences with a lower detection limit down to the concentration of 0.22 pM and allows precise detection of the specific target in a multigene mixture.”

The assay detected amounts of viral RNA below those present in respiratory swabs in a matter of minutes. “Under the outbreak background of COVID-19,” the authors concluded, “this proposed dual-functional LSPR biosensor can provide a reliable and easy-to-implement diagnosis platform to improve the diagnostic accuracy in clinical tests and relieve the pressure on PCR-based tests.”

Before that happens, the system will need to be tested on intact viral RNA from patient samples. Also, certain practical limitations of SPR systems will need to be addressed. Such limitations were discussed in an article (“[The Role of Surface Plasmon Resonance in Clinical Laboratories](#)”) that appeared last year in *Clinical Laboratory News*:

“[The instrumentation is expensive, ranging anywhere from \$50,000 to \$300,000 depending on the throughput or number of channels in the instrument. In addition, only a handful of companies make the instruments. Several firms supply the instruments, and these companies primarily design and market their instruments for academic and pharmaceutical laboratories. Vendors’ focus on research and pharmaceutical applications partly explains why clinical laboratorians are not very familiar with the instruments and may have the perception that the technique is too complex for their needs.”

The same article also noted that SPR technology has several advantages: “It can be automated, requires few biological reagents for method development, and generates results in just a few minutes.” In these respects, SPR may outshine other RT-PCR alternatives. For example, computed tomography scanning and culturing, does not provide quick or real-time results.

The impetus to overcome LSPR’s difficulties may come from the desire to bring the coronavirus under control. Health experts agree that expanded testing is crucial for controlling the spread of COVID-19. However, testing in many countries, including the United



States, has lagged because of limited supplies of some reagents and a backlog of samples awaiting available PCR machines and laboratory personnel. In addition, RT-PCR methods have been known to produce false-negative and -positive test results.

## Top Israeli Prof Claims Simple Stats Show Virus Plays Itself Out after 70 Days

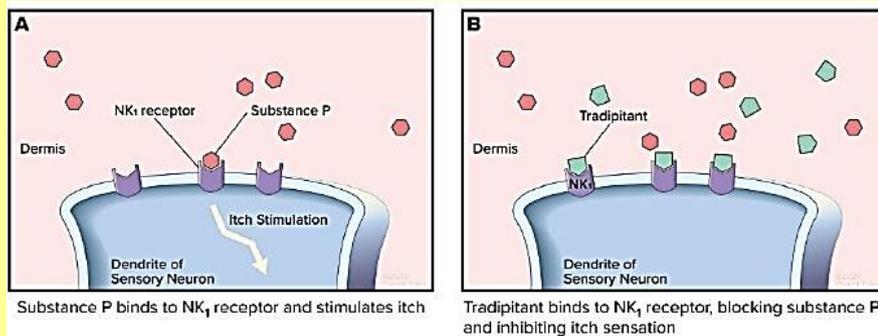
Source: <http://www.homelandsecuritynewswire.com/dr20200415-top-israeli-prof-claims-simple-stats-show-virus-plays-itself-out-after-70-days>

Apr 15 – A prominent Israeli mathematician, analyst, and former general, claims simple statistical analysis demonstrates that the spread of COVID-19 peaks after about 40 days and declines to almost zero after 70 days — no matter where it strikes, and no matter what measures governments impose to try to thwart it. Prof. Isaac Ben-Israel, head of the Security Studies program in Tel Aviv University and the chairman of the National Council for Research and Development, told Israel's Channel 12 that in Israel, about 140 people normally die every day. **To have shuttered much of the economy because of a virus that is killing one or two a day is a radical error** that is unnecessarily costing Israel 20 percent of its GDP, he charged. **He said the policy of lockdowns and closures was a case of "mass hysteria." Simple social distancing would be sufficient, he said.**

## Vanda Pharmaceuticals Starts Phase III COVID-19 Trial of Tradipitant

Source: <http://www.homelandsecuritynewswire.com/dr20200416-vanda-pharmaceuticals-starts-phase-iii-covid19-trial-of-tradipitant>

Apr 16 – Vanda Pharmaceuticals has partnered with The Feinstein Institutes for Medical Research's arm Northwell Health to conduct



a Phase III clinical trial of tradipitant to treat severe Covid-19 pneumonia. [Clinical Trials Arena](#) reports that enrolment for the trial, called ODYSSEY, has begun. The first patient was enrolled on 15 March at Lenox Hill Hospital, New York City. Tradipitant is a neurokinin-1 receptor (NK-1R) antagonist licensed by the company from Eli Lilly. The drug is being developed to treat gastroparesis, motion sickness, and **atopic dermatitis**. The double-blind, placebo-controlled, randomised

ODYSSEY trial will assess the safety and efficacy of oral, 85mg twice-daily dose of the drug in treating neurogenic inflammation of the lung caused by Covid-19.

## British Firm that Can Deliver 1 Million Coronavirus Tests Per Week Left Waiting for Public Health England Order

Source: <http://www.homelandsecuritynewswire.com/dr20200416-british-firm-that-can-deliver-1-million-coronavirus-tests-per-week-left-waiting-for-public-health-england-order>

Apr 16 – One million coronavirus tests a week can be delivered by a British company, but Public Health England (PHE) has not taken up the offer, it has emerged, amid [growing concerns that the Government's 100,000-a-day target is now unreachable](#). Sarah Knappton writes in [The Telegraph](#) that Berkshire-based Apacor Ltd has already gained approval from the Medicines & Healthcare products Regulatory Agency (MHRA) to supply coronavirus antigen tests and said the first 150,000 could be delivered overnight. The South Korean test, made by Wells Bio, is already being used by Germany, but the **PHE laboratory at Colindale has still not sent for a sample so it can be verified and has said it cannot find time to talk to the company until next week.**



**EDITOR'S COMMENT:** Unfortunately, there is no receptor on bureaucratic brain cells for Covid-19 to be connected!

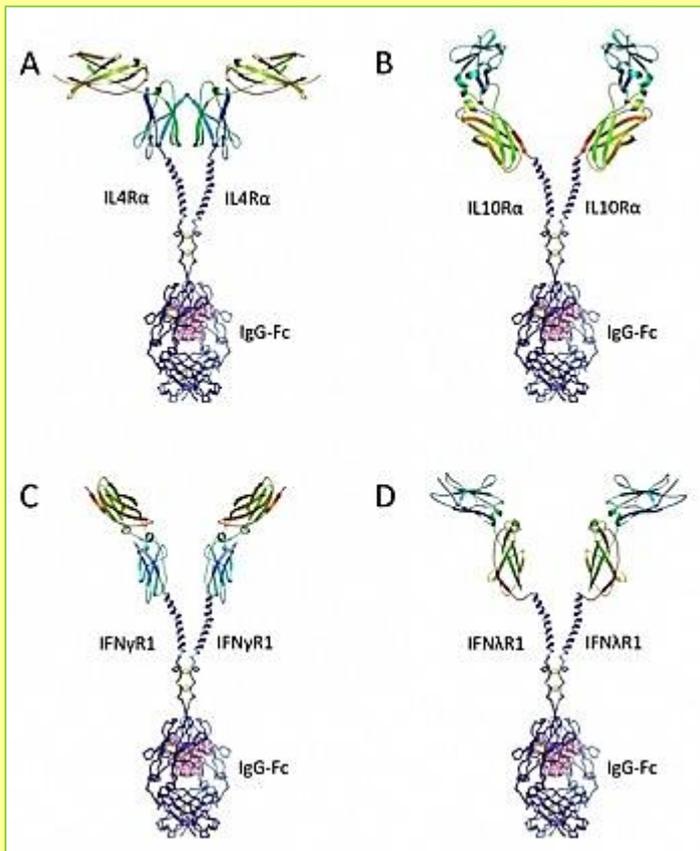


## Engineered proteins calm "cytokine storms" caused by severe infections

Source: <https://newatlas.com/medical/proteins-cytokine-storms-infections-treatment/>

Apr 16 – When it's working properly, the immune system is a powerful ally to keep us healthy – but when it turns against us, the results can be devastating. A "cytokine storm" is a dangerous kind of immune overreaction that can be triggered by infection or other treatments. Now, MIT researchers have engineered proteins that show early promise in mopping up these overzealous immune cells. Inflammatory cytokines are tiny molecules that trigger inflammation in response to injury or pathogens, helping the body begin to heal. However, the body can get trapped in a feedback loop of releasing more and more these molecules, leading to cytokine release syndrome (CRS) – sometimes called a cytokine storm. The condition can be fatal.

[Cytokine storms](#) can be triggered by serious infections such as sepsis, Ebola, bird flu, HIV, hepatitis, and more recently, in severe cases of [COVID-19](#). The condition can also arise when the body rejects transplanted tissue, so it's often a toxic side effect of cancer immunotherapy such as [CAR T-cell therapy](#).



But now, the MIT team may have found a way to treat this potentially deadly condition. Using a method called the QTY code, the researchers created water-soluble proteins that can bind to cytokines.

"The idea is that they can be injected into the body and bind to the excessive cytokines as generated by the cytokine storm, removing the excessive cytokines and alleviating the symptoms from the infection," says Rui Qing, senior author of the study.

**The proteins work by mimicking six different cytokine receptors, allowing them to bind to a wide range of cytokines, such as interferon, interleukin, and a class called chemokines.** An antibody segment known as the Fc region is also attached, which helps the engineered proteins last longer in the bloodstream without degrading or being cleared out by the immune system.

[Schematic illustrations of the newly developed proteins – MIT](#)

In lab tests, the team found that the proteins bind to cytokines about as strongly as the natural receptors do, which raises hope that they may eventually work as a treatment for cytokine storms.

But the team warns about getting too excited at this very early stage. The technique has yet to be tested in animals, let alone humans. The next steps, according to the researchers, are to

test the proteins in human cell cultures and animal models of COVID-19 infection.

Any treatment that may arise from this research will be many years away, so it won't exactly help our current pandemic crisis. That said, it's still crucial work – tackling this dangerous condition would improve the safety of cancer immunotherapy, with CRS being one of the main problems holding back this promising treatment.

►► The research was published in the journal [Quarterly Review of Biophysics](#).

## Study Identifies 275 Ways to Reduce Spread of Coronavirus Following Lockdown

Source: <http://www.homelandsecuritynewswire.com/dr20200417-study-identifies-275-ways-to-reduce-spread-of-coronavirus-following-lockdown>

Apr 17 – Phased re-opening of schools, businesses and open spaces should be considered alongside a range of practical ways to keep people physically apart, say the authors of a new study on how lockdown can be eased without a resurgence of coronavirus infections.



The [University of Cambridge](#) says that The [study](#) identified 275 ways to reduce transmission of the coronavirus. Medical possibilities were not considered. It does not offer recommendations: a shortlist of the most appropriate options for specific regions and contexts should be considered in the context of their likely effectiveness, cost, practicality and fairness.

## Coronavirus Vaccine Prospects

By Derek Lowe

Source: <https://blogs.sciencemag.org/pipeline/archives/2020/04/15/coronavirus-vaccine-prospects>

Apr 15 – Time for another look at the coronavirus vaccine front, since we have several recent news items. [Word has come](#) from GSK and Sanofi that they are going to collaborate on vaccine development, which brings together two of the more experienced large organizations in the field. It looks like Sanofi is bringing the spike protein and GSK is bringing the adjuvant (more on what that means below). Their press release says that they plan to go into human patients late this year and to have everything ready for regulatory filing in the second half of 2021. For its part, Pfizer [has announced](#) that they're pushing up their schedule with BioNTech and possibly starting human trials in August, which probably puts them on a similar timeline for eventual filing.

"But that's next year!" will be the reaction of many who are hoping for a vaccine ASAP, and I can understand why. The thing is, that would be absolutely unprecedented speed, way past the [current record](#) set by the Ebola vaccine, which took about five years. More typical development times are ten years or more. But hold that thought while you peruse another [news item](#) today from J&J. They have an even more aggressive timeline proposed for their own vaccine work: they have [already announced](#) that they have a candidate, and they say that they plan first-in-human trials in September. Data will be available from those in December, and in January 2021 they say that they will have the first batches of vaccine ready for an FDA Emergency Use Authorization. Now *that* is shooting for the world record on both the scientific and regulatory fronts.

So let's talk vaccine development, because everything is going to have to work *perfectly* for any such timetable to be realized. Here's [a good overview](#) of the coronavirus vaccine world in *Nature Reviews Drug Discovery*. The official WHO list is [here](#), and at BioCentury they have constantly updated open-access summaries of the vaccines and other therapies that [are in the clinic](#) and the ones that are [still preclinical](#). They have also just published [this excellent overview](#) of the vaccine issues; I recommend reading that one after you've picked up some background from this post.

NRDD counts 115 (!) vaccine programs, of which 37 are unconfirmed (no further information available on them) and 78 are definitely real. Of those 78, five of them are in the clinic, although that number will be climbing rapidly. You have Moderna's mRNA1273, which as the name tells you is an mRNA candidate, and Inovio's INO4800, which is a DNA plasmid, There are two cellular candidates from Shenzhen Geno-Immune Medical Institute: LV-SMENP-DC, a dendritic cell vaccine that's been modified with lentivirus vectors to express viral proteins, and an artificial antigen-presenting cell (aAPC) vaccine along the same lines. And finally there's a more traditional protein-fragment vaccine, Ad5-nCoV from CanSino.

Let's go into what all those mean. You will note the diversity of approaches in that list, and that's not even the whole spread. When you go back into the preclinical candidates, you have in addition "virus-like particles", viral vectors, both replicating and non-replicating, live attenuated viruses, inactivated viruses, and more. From this you may deduce correctly that there are a lot of ways to set off the immune response. What are the differences between them?

### Types of Vaccines

For starters, "Live attenuated virus" is just what it sounds like, although as always there's room to argue about whether the word "live" should ever be used when talking about viruses at all. At any rate, this would be a real infectious virus that just doesn't give you much of a disease but does give you immunity to the wild-type virus. The smallpox, chickenpox, rotavirus, and MMR vaccines are all of this type, and they can be very effective – in fact the most effective vaccines are mostly of this type. The protection comes on more quickly and completely, with less need for booster shots and with longer-lasting effects. The tricky part is developing one of those attenuated viruses in the range where it produces effective immunity on infection but is definitely *not* effective at putting people in the hospital. There is a process of getting milder with time that happens with many viruses in general as they co-exist with their hosts, and the idea here is to [speed that up](#) in the lab by passaging the virus through human cells again and again and letting it mutate. Ideally, you want a strain that has ended up with a very long path to mutating back to virulence, of course!

The next class are the inactivated virus types. In that case, even if you think virii are alive (I don't), these are dead, having run down the curtain and joined the bleedin' choir invisible. This was originally done by exposing pathogen preparations to high temperatures, but now is often done by through nasty denaturing disinfectants like formalin or beta-propiolactone,



## HZS C<sup>2</sup>BRNE DIARY – April 2020

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things that alter the proteins enough to keep the virus from working, but perhaps not so much that they don't set off the right immune response. That's a bit of an art form, of course, and this generally has to be tried a number of times in order to get a reproducible immune response and a reproducible way to manufacture the inactive virus. As you would imagine administering a pile of disabled protein pieces in this manner is often not as effective as the live-virus approach above, which makes the human cells crank out viral proteins on their own. You're into big ol' injection plus booster shot territory for the most part. The hepatitis A vaccine and the seasonal flu vaccine are of this type.

Yet another common sort of vaccine uses just a particular protein, protein fragment or subunit piece of a pathogen. (For some bacterial diseases, you can also try to raise antibodies to some protein toxin that the bacteria produce, rather than to the bacteria themselves). The key is to pick one that provokes a strong immune response, and since there are a lot of possibilities, working through them can be a process all its own. The good part is that you can then produce the protein recombinantly and in quantity, once you've narrowed down. There are other possibilities, of course – this could be a glycoprotein, or even just a piece of polysaccharide from an organism's outer coating, since those can be quite distinctive. The tricky part here is getting enough response – the immune system can be very sensitive to pathogen attack, but these pathogen pieces can be less effective in triggering antibody production, and generally need adjuvants to work well (see below!) Vaccines of this class include the ones for shingles, hepatitis B, HPV, meningococcus, and more.

A more recent approach is a [DNA vaccine](#). This uses a circular DNA plasmid, coding for some antigen protein, which has been engineered with strong promoter signals and stop signals at both ends of the sequence. The plan is that this will be taken up by cells, where the DNA may well then be transcribed into RNA and that then translated into protein, which sets off the immune response. A nice feature, as with the attenuated-virus technique, is that you're taking advantage of all the cellular machinery to make your antigen proteins for you, so they come out folded correctly and with the necessary post-translational modifications already done for you. If you want to really stack the deck for protein production, you can take a known virus (which doesn't have to be related to the pathogen you're vaccinating against) and re-engineer its nucleic acid payload to deliver just the piece you want. In that case, you're back into the "live attenuated virus" technique, but by sort of cobbling one together from different parts. This may sound pretty similar to gene therapy, which also generally uses viral vectors, and if so your intuition is right on target – the two fields have had a lot to teach each other. There is no human vaccine yet that uses any DNA technique, although there is a Zika DNA vaccine for horses. Some candidates have been tried, but haven't elicited enough of a response. Another tricky part is stability of the DNA plasmid, both on storage and on injection, but these problems have had a lot of money poured into them from the gene therapy end, and the situation has improved over the years. Overall, though, I would say that a DNA vaccine for SARS-CoV2 would be a real come-from-behind story.

Similar, the [mRNA vaccine idea](#) has had a great deal of work put into it in recent years. That's conceptually similar to the DNA vaccine idea, only you're jumping in at the messenger RNA stage. I wrote a bit about it in [the CureVac post](#) – basically, the immunogenicity was noticed as an unexpected side effect in experiments giving mRNA to animals, and people have gradually taken it from there. As with the DNA vaccines, you can actually get two kinds of immune response – the innate immune system can recognize foreign nucleic acid sequences floating around as a sign of infection, and the adaptive immune system can generate antibodies to the resulting proteins. One of the challenges has been getting a bit less of the innate response and a bit more of the adaptive one (which is what counts for the long-term immunity that you want from a vaccine). The mention the other day of younger recovering Covid-19 patient who don't seem to have developed antibodies is an example of that very problem: a really robust innate response could clear the virus in an infected person, but leave them without much long-term immunity.

mRNA has some potential advantages over DNA, and (perhaps) over all the virus and protein techniques laid out above. It's pretty much the most stripped-down vector that you can imagine, so you don't run into so much immune-response-to-the-vector trouble, which can be a problem on repeat dosing with other vaccine technologies, and it can't possibly be inserted into the genome. A big problem over the years has been getting the mRNA species to last long enough on dosing, to be taken up into the cells efficiently, and to be well translated into protein once that happened. The first link in the preceding paragraph has a great deal of information on this, with links to yet more reviews, and I won't even try to summarize it all. But there have been extensive modifications made to the RNA sequences themselves and to the formulations that they're dosed in (a lot of this by pretty brutal trial-and-error work), and the technique might be ready for prime time. We don't quite know that yet, though. The DNA vaccines have been around longer and (as mentioned) haven't produced a human therapy yet. Are the mRNA ones better, or is it that we just don't know about the disappointments to come? We're going to find out more quickly than we had planned.

### Adjuvants

There's another key vaccination technique that I haven't mentioned, and it applies to all of the techniques above: [adjuvants](#). Obviously, the big thing you want from a vaccination is a



robust, long-lasting immune response, and it turns out that various additives can provoke just that. These are all about that balance between the innate and adaptive immune response mentioned above; the idea is to get the best carryover from the immediate innate mechanisms to drive the antibody-centric adaptive ones. [See this post](#) for a quick immune-system primer, and there are of course many other places to learn about this – the key here is the handoff to the [antigen-presenting cells](#) and the helper T cells.

The adjuvant field started out, frankly, as about the closest thing to voodoo that you'll find in infectious disease treatment. Antibodies were generated by injecting horses and extracting their plasma, and a veterinarian (Gaston Ramon) noticed in the 1920s that the yields were higher from animals that had developed a strong reaction at the original injection site. He started experimenting with additives to induce such reactions, including things like tapioca starch. In the same era, Alexander Glennie was formulating various diphtheria vaccines and noticed that the ones that included aluminum salts were much more effective. No one really knew the details of how these things did what they did, but aluminum salts are still very common in vaccines nearly a century later. We've learned more about what's going on – in the 1990s, the first new adjuvants in decades began to show up, and more have been added. For example, the GSK shingles vaccine (Shingrix) has lipoproteins from Salmonella bacteria added to it along with [terpene glycosides](#) from the [Chilean soap-bark tree](#), which seems to be an especially powerful combination. I can tell you that the reaction at the site of injection for that one is very impressive, especially on the second shot! GSK's expertise in this field is in fact what they're bringing to the collaboration with Sanofi mentioned in the first paragraph, and they're collaborated with many others as well.

### Developing a Covid-19 Vaccine: Efficacy

OK, back to the broad picture of developing a coronavirus vaccine: the question is, which of all these possible techniques is the most effective and safe? That we are only going to find out, in the end, by dosing people. Lots of people. With therapies targeting the immune system, there is in the end no other way to know, because of the complexities of the human immune response and its wide variation in the human population. Rushing the process is going to take a vast amount of effort, and some of the steps are going to have to be done on a scale never before attempted. There's another point that can't be ignored, either: if we want this done as quickly as we would like, there are going to have to be some shortcuts.

To that point, one reason that the Moderna vaccine got off the mark so quickly is that the mRNA route can be intrinsically faster, but a bigger reason is the step of seeing how well it works in animals was [entirely skipped](#), a very unusual step indeed. That's partly because it's still unclear which animal model will be the most informative. We have a bit of a head start thanks to the work that's been done on the earlier human coronavirus pathogens [for SARS and MERS](#), but you may recall [Monday's post](#) talking about how SARS and the nCoV-19 virus do show real differences in various tests (there are many lines of evidence for that). We can expect those differences to carry over to the animal models as well. One approach that I know that people are taking is to breed animals that have been engineered with the human form of the ACE2 protein which seems crucial for viral entry – one way or another, we should be able to find a small animal (mouse, hamster, etc.) that can be useful, but will it be found in time to actually *be* useful? My guess is that several other clinical vaccine candidates will end up going the same route as Moderna's, and skip past animal efficacy entirely. Believe me, that's a shortcut, and there will be others.

Fortunately, testing for vaccine efficacy can be (fairly) straightforward, and it involves many of the same issues that are being frantically beaten on for antibody testing: does a vaccinated patient develop antibodies? How many? Are they the right kinds to neutralize the virus? And how long do they last? Those first three are the subject of a huge amount of work right now, and although it's nerve-wracking at the moment I have no doubt that these are questions that can be and will be resolved. We're going to have a lot to think about with what endpoints we'll be measuring for efficacy, to be sure – surrogate ones will be faster, but will regulatory agencies want to see more patient-focused clinical endpoints as well?

[Here is a review](#) from the dear, long-gone days of 2016 of the standard development process for a new preventative vaccine. Take a look at the lengthy, detailed, overlapping, interlocking system of trials that such vaccines have undergone in the past, and reflect that we're not going to be able to do all of that if we want a vaccine on the timelines stated at the beginning of this post. Ideally, you want to study these efficacy questions in Phase II trials in different populations (age, gender, pre-existing health conditions and range of medications being taken), all with different dosing schedules, and carefully tune things up for bigger Phase III runs. We'll be able to deal with some of that by running a lot of simultaneous trials instead of doing things more sequentially, but that's not going to cover every issue. Not by a long shot. Remember, there are at least 78 of these things under development right now – there will be fierce attrition, and only a few (low single digits) will make it deep into the process, but it's still a fearsome process to get all this organized. And some things cannot be accelerated by any means known to humanity. The last point above, how long immunity lasts, is a big question for both people naturally infected by SARS-Cov2 and for those given a vaccine, and unfortunately there is no way to answer that one other than time, which is in short supply these days. The field provides many examples of vaccines whose protection has not held up as well as expected as the years went on. My



guess is that we may end up with a first-round vaccine that doesn't last as long as it might, but will provide enough immunity to do the job and provide cover for us to collect more data on an optimized candidate.

### Developing a Covid-19 Vaccine: Safety

But that takes us to the second question for any new therapy: safety, and its balance with efficacy. This is an especially fraught question with any therapy that's targeting the immune response, because the downsides are gigantic: a runaway immune reaction can disable someone for life or even kill them within minutes where they stand. [Guillain-Barré syndrome](#) is an example: your body reacts to an antigen (a viral infection or a vaccination) by deciding that the myelin sheaths around your nerves are also the enemy, and starts destroying them. Very bad news, and although most people recover, a few die. Roughly estimated, even a seasonal flu vaccine might kill about one out of every ten million recipients though such a reaction – we give it to everyone possible, though, because far more people will die if we don't. The [1976 swine flu debacle](#) shows what can happen, both in perception and in reality, when you get this balance wrong. But you can't avoid the problem: the huge person-to-person variation in everyone's immune system means that these severe events can *never be ruled out* at some low level if you're dosing enough people.

Now you see the exact bind that vaccine development has always been in, because the whole point is to treat millions, even billions of people *who are not currently sick*, to protect them against disease while not doing more harm along the way by setting off the body's fiercest and most alarming biological responses. I have no doubt that the companies and regulatory agencies involved will be doing everything they can to address safety issues, but if you're looking at a vaccine getting an EUA early next year, well. . .

### Developing a Covid-19 Vaccine: Logistics

Another big problem is going to be manufacturing and distribution. Many readers will have heard about the difficulties that sometimes occur during the flu-vaccine production process, leading to shortages. Depending on what vaccine technology comes out on top, manufacturing enough doses in a reproducible fashion could be quite challenging – space and finger fatigue don't permit going into all the details, but they are many and complex. Keep in mind as well that many vaccines need "cold chain" distribution and storage, which is always a layer of complexity. What if an eventual vaccine needs more than one round of administration, as many of the adjuvant-formulated ones do? Keeping track of that and following up on it is yet another issue.

My guess is that scale-up and manufacturing could well be the biggest chance for the timelines mentioned earlier to blow up, so there is going to be a massive effort to front-load the work on these problems – this is why, for example, Bill Gates has [already indicated](#) willingness to fund factories for up to seven vaccines up front. The live-virus, attenuated virus, recombinant protein, and nucleic acid vaccines will all involve completely different production methods and formulations, and since we don't know which way we'll be going, this would seem the only way to address the issue. Pfizer and others have already said that they're going to be working on production even before the efficacy data come in, which needless to say is not the usual business practice. I think we'll get vaccine efficacy, one way or another, although it sure won't be characterized as thoroughly as it normally would. And I think we're already agreeing to cut corners on safety, whether anyone says so in as many words or not. But producing the vaccine on scale could be a bigger issue yet, and as the process goes on, that's where I would keep an eye out for trouble.

It is a tightrope, folks, and we're going to be trying to run across it. Watch closely; with any luck we will never see anything quite like this again.

*Derek Lowe, an Arkansan by birth, got his BA from Hendrix College and his PhD in organic chemistry from Duke before spending time in Germany on a Humboldt Fellowship on his post-doc. He's worked for several major pharmaceutical companies since 1989 on drug discovery projects against schizophrenia, Alzheimer's, diabetes, osteoporosis and other diseases.*

## How does coronavirus kill? Clinicians trace a ferocious rampage through the body, from brain to toes

By Meredith Wadman, Jennifer Couzin-Frankel, Jocelyn Kaiser, Catherine Maticic (Apr. 17, 2020)

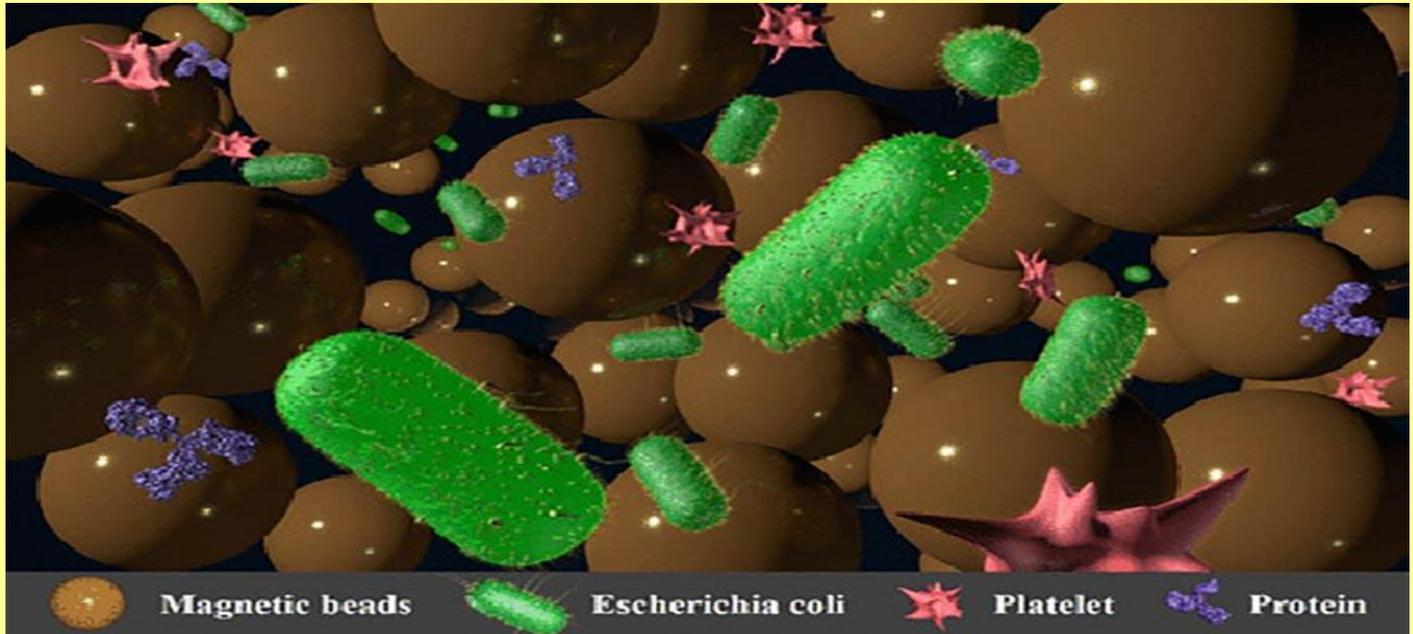
Source: <https://www.sciencemag.org/news/2020/04/how-does-coronavirus-kill-clinicians-trace-ferocious-rampage-through-body-brain-toes#>



**Keep this bat in mind:** Flying fox *Pteropus giganteus* (Bangladesh – 58 viruses)

## Next-Generation Lab Nanodevice Designed to Detect Bacteria and Viruses

Source: <https://www.genengnews.com/news/next-generation-miniature-lab-nanodevice-designed-to-detect-bacteria-and-viruses/>



An enlarged image of the different bioparticles found in a specimen including the micro-beads to better isolate bacteria – RIT

Apr 17 – Scientists say they have developed a next-generation miniature lab device that uses magnetic nano-beads to isolate minute bacterial particles that cause diseases. Using this new technology improves how clinicians isolate drug-resistant strains of bacterial infections and difficult-to-detect micro-particles such as those making up Ebola and coronaviruses, according to the team, which published its work “[Rapid \*Escherichia coli\* Trapping and Retrieval from Bodily Fluids via a Three-Dimensional Bead-Stacked Nanodevice](#)” in *ACS Applied Materials and Interfaces*.

Ke Du, PhD, and Blanca Lapizco-Encinas, PhD, both faculty-researchers in Rochester Institute of Technology’s Kate Gleason College of Engineering, worked with an international team to collaborate on the design of the new system—a microfluidic device, aka, a lab-on-a-chip. Drug-resistant bacterial infections are causing hundreds of thousands of deaths around the world every year, and this number is continuously increasing. Based on a report from the United Nations, the deaths caused by antibiotics resistance could reach to 10 million annually by 2050, Du explained.

“It is urgent for us to better detect, understand, and treat these diseases. To provide rapid and accurate detection, the sample purification and preparation is critical and essential, that is what we are trying to contribute. We are proposing to use this novel device for virus isolation and detection such as the coronavirus and Ebola,” said Du, an assistant professor of mechanical engineering whose background is in development of novel biosensors and gene editing technology.

The lab team is interested in the detection of bacterial infection, especially in bodily fluids. One of the major problems for detection is how to better isolate higher concentrations of pathogens. The device is a sophisticated lab environment that can be used in field hospitals or clinics and should be much faster at collecting and analyzing specimens than the commercially available membrane filters. Its wide, shallow channels trap small bacteria molecules that are attracted to packed, magnetic microparticles.

This combination of the deeper channels on the nano-device, increased flow rate of fluids where bacteria are suspended, and the inclusion of magnetic beads along the device channels improves upon the process of capturing/isolating bacterial samples. Researchers were able to successfully isolate bacteria from various fluids with a microparticle-based matrix filter. The filter trapped particles in small voids in the device, providing a larger concentration of bacteria for analysis. An added advantage of a smaller device such as this allows for multiple samples to be tested at the same time.



“A novel micro- and nanofluidic device stacked with magnetic beads has been developed to efficiently trap, concentrate, and retrieve *Escherichia coli* (*E. coli*) from the bacterial suspension and pig plasma. The small voids between the magnetic beads are used to physically isolate the bacteria in the device. We used computational fluid dynamics, three-dimensional (3D) tomography technology, and machine learning to probe and explain the bead stacking in a small 3D space with various flow rates. A combination of beads with different sizes is utilized to achieve a high capture efficiency (~86%) with a flow rate of 50  $\mu\text{L}/\text{min}$ ,” write the investigators.

“Leveraging the high deformability of this device, an *E. coli* sample can be retrieved from the designated bacterial suspension by applying a higher flow rate followed by rapid magnetic separation. This unique function is also utilized to concentrate *E. coli* cells from the original bacterial suspension. An on-chip concentration factor of  $\sim 11\times$  is achieved by inputting 1300  $\mu\text{L}$  of the *E. coli* sample and then concentrating it in 100  $\mu\text{L}$  of buffer. Importantly, this multiplexed, miniaturized, inexpensive, and transparent device is easy to fabricate and operate, making it ideal for pathogen separation in both laboratory and point-of-care settings.”

“We can bring this portable device to a lake which has been contaminated by *E. coli*. We will be able to take a few milliliters of the water sample and run it through our device so the bacteria can be trapped and concentrated. We can either quickly detect these bacteria in the device or release them into certain chemicals to analyze them,” said Du, whose earlier work focused on devices that use the CRISPR gene-editing technology and the fundamental understanding of fluidic dynamics.

Teaming up with Lapizco-Encinas, a biomedical engineer with expertise in dielectrophoresis—a process that uses electrical current to separate biomolecules—their collaboration provided the increased capability toward better pathogen detection, specifically for bacteria and microalgae isolation and concentration.

“Our goal is not only isolating and detecting bacteria in water and human plasma, but also working with whole blood samples to understand and detect blood infection such as sepsis. We already have a concrete plan for that. The idea is to use a pair of the nano-sieve devices for sequential isolation,” said Lapizco-Encinas, an associate professor in RIT’s biomedical engineering department.

Du and Lapizco-Encinas were part of a team that consisted of mechanical and biomedical engineers from Rutgers, University of Alabama, SUNY Binghamton, and Tsinghua-Berkeley Shenzhen Institute in China to address the global challenges of disease pandemics.

## New universal vaccine targets all four Ebola species that infect humans



Source: <https://newatlas.com/medical/new-ebola-universal-vaccine-candidate/>

Apr 19 – While much of the world is focused on [COVID-19](#), it’s easy to forget that other deadly viruses are out there. Now, researchers have tested a novel vaccine candidate for Ebola in animals, which doesn’t contain live vectors and appears to be effective against all four species of the virus that infect humans.

[Vaccines and treatments](#) for the Ebola virus have been in development for decades, but efforts were accelerated after the worst outbreak on record occurred between 2013 and 2016, centralized in West Africa.



The most promising vaccine so far is [rVSV-ZEBOV](#), which has been shown to have an almost [100-percent effectiveness](#) rate against the Zaire species of Ebola virus. It’s made by genetically engineering a harmless virus to express a glycoprotein that the Zaire Ebola virus uses, which trains the patient’s immune system to fight off the deadly bug.

Although this vaccine is very effective against this most dangerous Ebola species, it has limited ability to fight off the other three species. The new vaccine candidate, on the other hand, can target all four known types of Ebola.

**Instead of using live vectors, the researchers created a spherical virus-like particle (VLP) that’s made with glycoproteins from the Zaire and Sudan Ebola viruses. These particles induce an immune reaction against Ebola, but because they don’t have genetic material and don’t multiply, they won’t cause illness as a side effect.**

**In tests on rabbits, the team found that the new Ebola VLP vaccine generated antibodies that fought off all four Ebola species. Tests on rhesus macaques achieved similarly strong immune responses.**

“This could be a significant advancement in the global effort to prevent or manage Ebola outbreaks, especially if this vaccine used alone or in combination with another Ebola vaccine results in long-term and durable protective immunity against different Ebola viruses,” says Karnail Singh, co-principal investigator on the study.



Of course, the work is still in the very early stages, so there's no guarantee that the results will translate to humans. The team says that further preclinical testing will need to be conducted before clinical trials can begin.

▶▶ The research was published in the [Journal of Virology](#).

## How Advanced Military Medical Technology Could Help in the Fight Against COVID-19

By Rebecca Lee and Jeremy Pamplin

Source: <https://warontherocks.com/2020/03/how-advanced-military-medical-technology-could-help-in-the-fight-against-covid-19/>

Mar 20 – The deadly and gruesome realities of war have long both aided and accelerated medical innovation. World War I, the first mass killing of the 20th century, led to the development of [modern ambulances, antiseptics, and anesthesia](#). The next world war brought about the development of [penicillin and blood banks](#). More recently, the proliferation of improvised explosive devices in Operations Enduring Freedom and Iraqi Freedom have led to [innovations in treating hemorrhagic shock and traumatic brain injuries](#). Looking ahead, the Department of Defense has focused investments in recent years on addressing near peer competition under the rubric of [multi-domain operations](#). Wars against great powers are expected to result in mass casualties across a dispersed battlespace, leading to delayed evacuation times, further strain on resources, and additional pressure on the ability to scale training and deployment of trained combat medics. As such, the department is seeking out technologies to help mitigate these challenges. Since it is not new for military investments in technology to ultimately accrue benefits for civilians, we should not be surprised that recent military research and development into medical technologies for the next generation of warfare could be accelerated and applied in tackling COVID-19 and future pandemics.

### The Problem

The [recent report on COVID-19](#) published by the Society of Critical Care Medicine outlines perceived resource constraints of the U.S. medical system that will have severe ramifications as the number of cases [continue to climb](#). Unlike bed space and equipment, which can be improvised and manufactured with shorter notice, staffing — especially relatively scarce specialties — is a far more difficult resource to scale. Not only are we unable to scale the training and staffing of medical professionals, but the current workforce is also dwindling as hospital staff have been and will be [disproportionately affected by the virus](#). Hospitals in both the United States and globally find themselves lacking sufficient personal protective equipment: gloves, aprons, and fluid resistant surgical masks. The latter are in particularly short supply. All of these obstacles, in addition to the high patient-to-provider ratios during a pandemic, make it difficult for the few available expert physicians to interact with every patient showing symptoms of the virus. In their report, the Society of Critical Care Medicine encourages civilian hospitals to adopt a tiered staffing strategy to prepare for an influx of patients who will require intensive care and respiratory therapy, and to leverage telemedicine to reach the more experienced physicians as needed.

### Leveraging Military Advances in Telemedicine

This concept of pushing expertise far forward into the front lines and, in particular, [leveraging telemedicine](#) as a force multiplier has been a [focus in military medicine for decades](#). Why is this exactly? The first hour following any traumatic event is the most critical and clinically complex; in theatre, that burden falls on young combat medics with limited medical training and resources. They not only lack the expertise to deal with complex poly-trauma cases but are also often providing care in dangerous environments. In order to provide medics with remote expertise, the Defense Department has invested in the [research and acquisition of telemedicine and data systems](#) that can not only assist medics with care, but can also [prepare the receiving medical facility in the upper echelons of care for incoming casualties](#).

Telemedicine programs such as the Army's [Advanced Virtual Support for Operational Forces](#) (known as 'ADVISOR') provides both synchronous (real time) and asynchronous on demand tele-consultative services to special operations forces in Africa and the Middle East. The program connects operational forces to critical care physicians at Brook Army Medical Center's Virtual Medical Center at Ft. Sam Houston, Texas over either voice or video teleconference lines. Through ADVISOR, special operations medics were able to text, email, talk, and even send images to these remote experts who advised on combat traumas, as well as disease and non-battle injuries. However, the U.S. armed forces expect to face constrained communication capabilities and high patient-to-provider ratios in a war against a peer adversary. This would limit the utility



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of the telemedicine systems that have been or will be deployed. In response, research organizations are [now focusing on leveraging advancements in artificial intelligence and computer capabilities](#) to develop clinical decision support systems that would provide the expertise needed on a small device that can operate offline. These systems will act as virtual assistants that can make clinical inferences and decisions without connectivity or a remote physician.

### Critical Care Goes Autonomous

Severe hypoxic respiratory failure, which demands mechanical ventilation to allow patients to breathe, is the most common reason intensive care units admit COVID-19 patients. The problem is, the United States does not have nearly enough ventilators to cope with the coming wave of patients who will need them. Furthermore, mechanical ventilation requires specialized training, and each patient will ideally be managed by a physician, respiratory therapist, or critical care nurse. So, even if [more ventilators are manufactured](#), shortages of qualified critical care personnel will limit the ability to care for patients on ventilators.

[Technologies being developed by the Defense Department](#) aim to provide AI-based or remotely controlled mechanical ventilation. The military is interested in providing these solutions so wounded service members could be kept stable from the point of injury to arrival at a medical treatment facility, even in the absence of a bedside expert clinician. This could help fill this staffing gap and allow a single clinician to manage a larger number of patients.

As the COVID-19 virus spreads and federal and local governments continue to [extend restrictions](#) and take more extreme precautions to limit its spread, there is clearly a need to invest in military medical technologies developed for future near peer battles and multi-domain operations to address the issue of scale. Some of the technologies such as [telemedicine solutions](#) and [rule-based ventilators](#) that follow narrow guidelines and protocols have already been developed and fielded. However, rule-based ventilators cannot be used in clinically complex cases. Nor can they employ data driven models to predict events, [resulting in earlier interventions and better outcomes](#).

Bringing together the data, data scientists, regulators, and other stakeholders to accelerate the development and availability of these advanced AI and machine learning solutions will require deliberately shifting priorities as well as dedicating funding and loosening regulatory barriers, real or perceived. This has already [begun](#) in response to COVID-19, but there is more to do before fielding such data-driven ventilator systems that lack the [transparency and explainability](#) needed in [critical decision-making systems](#). There are technological, regulatory, ethical, and political hurdles to overcome and unless things start moving faster, it will take several years before they are ready for patient use. To get things moving, the Department of Defense and other stakeholders will need to recognize and continue to support [investments in AI-enabling infrastructure and data collection, and a desire to accelerate and deliver AI capabilities](#).

The last few weeks show the urgency of these solutions, not just for a future war, but for pandemics. In order to help everyone from the combat medic or infantryman performing “buddy aid” in a megacity to the respiratory therapist at a rural clinic managing dozens of patients with a dwindling number of beds, masks, and ventilators, it is time to leverage the expertise and current work going on at organizations such as the U.S. Army Medical Research and Development Command’s Telemedicine and Advanced Technology Research Center and the Joint AI Center’s Warfighter Health National Mission Initiative.

This could save lives everywhere from hospitals in your hometown to the future battlefield.

*Rebecca Lee is a project manager and researcher at the Medical Intelligent Systems Lab at the U.S. Army Medical Research and Development Command’s Telemedicine and Advanced Technology Research Center. She focuses on clinical decision support systems in support of combat casualty care. She holds degrees from the Johns Hopkins University and the George Washington University.*

*Col. Jeremy Pamplin is the director for the Telemedicine and Advanced Technology Research Center. Prior to this assignment, he was the director of Virtual Critical Care at Madigan Army Medical Center where he began the first Army Tele Critical Care service and integrated it into the Joint Tele Critical Care Network. He has deployed in support of Operation Iraqi Freedom and Operation Enduring Freedom, once to Iraq as the chief of critical care for the 86th Combat Support Hospital and once to Afghanistan as the deputy deployed medical director for the 33rd Field Hospital and the American contingent’s physician leader.*

## Specially Trained Dogs Are Being Tested for Sniffing Out Coronavirus Cases

Source: <https://www.sciencealert.com/medical-detection-dogs-being-tested-to-see-if-they-can-help-identify-coronavirus-cases>

Apr 20 – Specially trained medical detection dogs could be the solution to the crisis in the lack of testing that many countries are facing during the coronavirus pandemic.



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The dogs are capable of sniff testing 750 people an hour, according to the head of a non-profit which trains medical dogs.



The potential for the dogs to respond to the coronavirus pandemic is being explored by the London School of Hygiene and Tropical Medicine (LSHTM), Durham University, and the Medical Detection Dogs organisation. [LSHTM published a press release in late March](#) describing the experimental project, which is seeking to establish whether the dogs can reliably detect COVID-19 in the way they can other disease.

Freya detects a malaria sample on March 27 in Milton Keynes, UK. (Leon Neal/Getty Images)

They plan to train six dogs if the initial trials are successful, [according to an April 17 report by Britain's Daily Mirror tabloid](#).

The training involves the dogs being given coronavirus patients' face masks to sniff to discover if COVID-19 has a unique odor that can be identified by a dog's enhanced senses of smell, the Mirror said.

It will take several weeks of experimentation before it will be known if dogs are able to identify the coronavirus.

James Logan, the head of the department of disease control at LSHTM, said: "It's early days for COVID-19 odor detection. We do not know if COVID-19 has a specific odor yet, but we know that other respiratory diseases change our body odor so there is a chance that it does.

"And if it does, dogs will be able to detect it. This new diagnostic tool could revolutionise our response to COVID-19."

Medical detection dogs are already used to help screen for a range of conditions including cancer, malaria and [Parkinson's](#).

Claire Guest, CEO of the Medical Detection Dogs charity, told the Mirror: "There have already been so many fantastic achievements in the dogs' work to detect human disease, and I believe they can be trained to sniff out COVID-19."

"When resources and testing kits are low, hundreds of people can't be tested in one go. But the dogs can screen up to 750 people really quickly. By identifying those who need to be tested and self-isolate, they can stop the spread."

**EDITOR'S COMMENT:** (1) What if dogs get infected by virus droplets on the masks? (2) If masks are stored for a period of time in order to naturally kill the virus, will odor remain? How ethical the entire experiment is? Cancer or Alzheimer is not transmitted by droplets; but Covid-19 is!



The negative pressure shuttle used to transport Covid-19 patients. Courtesy: Dubai Media Office

**EDITOR'S COMMENT:** This is why I like the UAE medical services. Having the money is good. Know how to make the best of it, it is great. A fine example is the EpiShuttle capsule shown in the photo above.



## Two Months of COVID-19 Lockdown Will Cost France €120 Billion, Report Says

Source: <http://www.homelandsecuritynewswire.com/dr20200420-two-months-of-covid19-lockdown-will-cost-france-120-billion-report-says>

Apr 20 – France’s nearly two-month-long coronavirus lockdown is expected to cost the country some €120 billion in lost revenue while “forced savings” are estimated to reach €55 billion, the state-funded French Economic Observatory said on Monday. “During the lockdown, the Gross Domestic Product (GDP) was cut by 32 percent, corresponding to five points of GDP for the whole of 2020,” [the state-funded French Economic Observatory \(OFCE\) wrote](#). The observatory went on to say that “almost 60 percent of the drop in national income was absorbed by public administrations” and 35 percent by businesses. France’s economic recovery depends on how much the French spend once lockdown is lifted, it said. [France24 notes](#), however, that although the French are expected to have shored up €55 billion in so-called forced savings during the planned 17 March to 11 May lockdown period – meaning they will have spent less than they earned – they are not expected to spend these savings “completely or rapidly” once lockdown is lifted given the continuing uncertainties over Covid-19.

## After Repeated Failures, It’s Time to Permanently Dump Epidemic Models

Source: <http://www.homelandsecuritynewswire.com/dr20200420-after-repeated-failures-it-s-time-to-permanently-dump-epidemic-models>

Apr 20 – Since the AIDS epidemic, people have been pumping out such models with often incredible figures. For AIDS, the Public Health Service announced (without documenting) [there would be 450,000 cases by the end of 1993](#), with 100,000 in that year alone. The media faithfully parroted it. [There were 17,325](#) by the end of that year, with about 5,000 in 1993. SARS (2002-2003) was supposed to kill [perhaps “millions,”](#) based on analyses. [It killed 744](#) before disappearing. CDC predicted 1.4 million would die from Ebola, but the final death toll was 8,000. Michael Fumento writes in [Issues & Insights](#) that Oxford University Neil Ferguson predicted 200 million bird flu deaths, and 50,000 BSE death – but the actual number of deaths were 440 and 200, respectively. In the current crisis, Ferguson is the author of the [most alarming model](#), and the one most influential in the implementation of the draconian quarantines worldwide, projecting a maximum of 2.2 million American deaths and 550,000 United Kingdom deaths unless there were severe restrictions for 18 months or until a vaccine was developed. “Assuming it’s possible to model an epidemic at all,” Fumento writes, **“any that the mainstream press relays will have been designed to promote panic.”**



## Israel Launches New “Contactless” Roadside CPVID-19 Testing Booths Which Have Zero Contact between Nurse and Patient

Source: <http://www.homelandsecuritynewswire.com/dr20200420-israel-launches-new-contactless-roadside-cpvid19-testing-booths-which-have-zero-contact-between-nurse-and-patient>



Apr 20 – Israel has launched a network of new ‘contactless’ roadside covid-19 testing booths which have zero contact between nurse and patient. The [Daily Mail](#) reports that the country has offered to share the design, which is relatively cheap and easy to produce, with other countries as part of the fight against the coronavirus pandemic. The booths, produced by healthcare companies together with civilian and military partners, provide an entirely sealed, sterile environment for the medic, and can be quickly disinfected between patients. Tests are carried out using two rubber gloves which are attached to the outer wall with airtight seals. Results are processed in a matter of hours and reported directly via the patient’s electronic health record.



## Gulf States Use Coronavirus Threat to Tighten Authoritarian Controls and Surveillance

Source: <http://www.homelandsecuritynewswire.com/dr20200421-gulf-states-use-coronavirus-threat-to-tighten-authoritarian-controls-and-surveillance>

Apr 20 – Governments across the Middle East have moved to upgrade their surveillance capabilities under the banner of combatting COVID-19, the disease linked to the new coronavirus. Matthew Hedges (Associate Vice President at the U.S. Institute of Peace) writes in [The Conversation](#) that overtly [repressive policies](#) have been commonplace across the Middle East for years, notably in Egypt, Iraq and Syria, where violent measures have been taken to control populations. As a result of technological advances, an increase in political engagement and changes of leadership, the states of the Gulf Cooperation Council (GCC) – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE) – have also [upgraded their form of authoritarianism](#) in recent years. This has seen policies of partial economic liberalization and market-based reforms used to obscure an increase in repression and surveillance, for example by containing the work of civil society groups. Following the pattern in which authoritarian states tend to exploit common threats, some of the GCC states are now manipulating the current pandemic to enhance their social power and control.

**EDITOR'S COMMENT:** Perhaps MH should ask people in GCC countries if they would like to change their ruling system with the perfect Western type governance model.

## What the Pandemic Teaches Us about Nursing Home Care

Source: <http://www.homelandsecuritynewswire.com/dr20200421-what-the-pandemic-teaches-us-about-nursing-home-care>

Apr 21 – Nested in communities across the US, nursing homes serve as a societal safety net. Nursing homes provide essential care to individuals unable to live in the community. Roughly [1.3 million](#) residents live in nursing homes receiving assistance with daily activities of living such as meals, dressing, and socialization. Additionally, more than [3 million](#) older adults are discharged annually to nursing homes following a hospital stay to receive rehabilitative services like physical therapy and skilled nursing care. The [University of Pennsylvania](#) says that more than 2,000 nursing homes in the US have reported Covid-19 cases within their facilities, often accompanied by [heart-wrenching rates of death](#). Combatting the avalanche of death posed by the novel coronavirus in nursing homes requires concerted effort to align several conflicting priorities that have afflicted nursing homes for years. Covid-19 puts into full view the regulatory structures and payment models that jeopardize care for long term care residents and those receiving post-acute care.

**EDITOR'S COMMENT:** I hate the word “teach” for things that we should have already know! Nursing home is not a US problem alone; it is universal! So, what we do about it? We lock the elderly at home; we even accuse them that because of them the rest of us are quarantined and we do tests and disinfections when a number of these people are found in their beds dead in agony and alone. Include old and very old people (and those who are disabled) in your emergency response planning teams because younger planner think that they will stay young and health for ever! Caring for the elderly in good times and in bad times is a hallmark of civilization.

## Coronavirus: Could the Pandemic Be Controlled Using Existing Vaccines Like MMR or BCG?

Source: <http://www.homelandsecuritynewswire.com/dr20200421-coronavirus-could-the-pandemic-be-controlled-using-existing-vaccines-like-mmr-or-bcg>

Apr 21 – The race is on to develop a vaccine that can protect us from the COVID-19 pandemic. An impressive [115 vaccine candidates](#) are currently being investigated, but it is still many months before a vaccine might be approved. Sarah L Caddy writes in [The](#)



[Conversation](#) that we already have hundreds of licensed vaccines for over 25 different viruses and bacteria that infect humans. We can protect ourselves against infections ranging from cholera to rabies. The common aim of all vaccines is to induce an immune response that prevents future disease. Is it possible that one of these existing vaccines could also induce protection against SARS-CoV-2, the virus causing COVID-19? Repurposing drugs is a popular strategy for treating COVID-19, as exemplified by the [many trials](#) using the Ebola drug remdesivir, or the antimalarial drug hydroxychloroquine. If an already-approved vaccine could reduce the severity of COVID-19, this would be really good news. The BCG vaccine has received recent attention for being a widely used vaccine that [may help control COVID-19](#). A handful of studies identified an interesting association between the severity of COVID-19 in a country and how many of the population were vaccinated with BCG. The BCG vaccine apparently reduces the damage caused by COVID-19.

## The Next Pandemic Might Not Be Natural

Source: <http://www.homelandsecuritynewswire.com/dr20200421-the-next-pandemic-might-not-be-natural>

Apr 21 – Was the new coronavirus cooked up in a lab? That’s the current conspiracy theory spreading across the globe. From [Iran](#) to [Russia](#) to the [United States](#), conspiracy theorists and scheming political operatives are making wild accusations with absolutely no evidence to back them up, whether they blame Chinese researchers or the U.S. military. **Max Brooks** (author of [World War Z](#) and the upcoming [Devolution](#)) writes in [Foreign Policy](#) that, at present, all the data suggests that this virus—which has [sickened](#) more than 2.4 million people, killed over 167,000, [devastated](#) the entire world economy, and pulled off a trick the Soviet Navy only dreamed of by [neutralizing](#) a U.S. nuclear-powered aircraft carrier—originated in the natural world. But what if the next one doesn’t?

Brooks writes that germs have killed more people than all the wars in history, and people have been trying to make use of them throughout all those wars. On a smaller scale, in the United States we’ve seen bioterrorist attacks such as the [Rajneeshee](#) poisoning of restaurants in 1986 and the [Amerithrax](#) letters that were mailed in 2001 to specific targets around the country.

He adds:

*The years running up to this current coronavirus pandemic not only saw the gutting of U.S. national health [institutions](#) but also a cultural groundswell of science denial in the [anti-vaccination](#) movement.*

*Today the United States in particular is paying for that denial in livelihoods and lives. The [warnings](#) were clear. The danger was real. And instead of using the precious calm before the bio-storm to prepare a vulnerable population, U.S. President Donald Trump not only responded with feckless, [token gestures](#) but made a very public point of [downplaying](#) the threat of the virus as a [hoax](#). How much damage could have been prevented had the world’s richest, most powerful nation behaved differently? How many lives could have been saved? If 9/11 was a “[failure of imagination](#),” then history will no doubt judge the Trump administration’s response to COVID-19 as a failure of [courage](#), [compassion](#), and, most of all, [competence](#).*

*And if the next administration doesn’t reverse course, and fast, the next pandemic, whether naturally occurring or the result of a genuine attack, could make this one look like the seasonal sniffles.*

*Right now, as the world struggles with a naturally occurring bug, there are still massive germ warfare stocks all around the globe. Even if we could trust that the Russians abided by the [Biological Weapons Convention](#) of 1972 and destroyed their arsenals, what about China or North Korea, which never ratified the treaty? And these are just the nation-states.*

*What about the terrorist groups, the nonstate actors with no land to defend and nothing to lose?*

**EDITOR’S COMMENT:** What is the novelist fear of? A bio-terrorism attack with a pathogen for which there is no vaccine; spreads globally; with high mortality and even higher morbidity that will affect global economy and change our way of living? The scenario reminds me something! My question is: CRISPR-made or from outer space?



## Terrorist Targets Changing Due to COVID-19 Crisis

Source: <https://i-hls.com/archives/100704>

Apr 20 – The nature of domestic and international terrorist threats may be changing due to the global COVID-19 pandemic. In the US, the potential terrorist threat environment has changed, with public gathering areas shifting to new targets. The Cybersecurity and Infrastructure Security Agency, a division within the Department of Homeland Security, issued a nationwide notice warning grocery stores, gas stations, and even COVID-19 testing sites to be aware that they could be targeted by terrorists. The alert noted that while “there are currently no imminent or credible threats, there has been an increase in online hate speech intended to incite violence and/or use the ongoing situation as an excuse to inflict hate.”

“Now is the time to engage community businesses and other stakeholders to encourage vigilance and awareness,” the Department of Homeland Security’s assistant director for infrastructure protection, Brian Harrell told abcnews.go.com.

It was the second such warning in as many weeks. The FBI, DHS and National Counterterrorism Center issued [a joint intelligence bulletin](#) that similarly mentioned grocery stores and still-operational businesses as potential targets.

The recent alerts are among many coronavirus-related warnings that U.S. counterterrorism agencies have distributed in the past two months, with the pandemic posing new challenges for authorities to protect communities.

“Unfortunately, during circumstances such as a pandemic, individuals may be triggered by stressors (e.g., isolation, layoff, etc.) caused by the pandemic to ... commit attacks,” the second alert said.

In the global arena, terrorists are trying to use the resulting chaos to their benefit. In fact, with so many people home and on the Internet all day, jihadist groups see this as an opportunity for recruitment and radicalization.

Yoram Schweitzer of the Tel Aviv-based Institute for National Security Studies (INSS) and a former senior military intelligence officer in Israel, believes that Salafist-jihadist organizations are outright mocking the West for its supposed weakness and ignorance. “Al-Qa’ida and Islamic State have emphasized the futile reliance by the West on its economic might,” Schweitzer told themedialine.org. a senior State Department official who kept his anonymity said: “While we cannot comment on specifics, terrorist groups like ISIS, al-Qa’ida and others will take advantage of whatever tools and opportunities they perceive in order to harm the United States and its allies.”

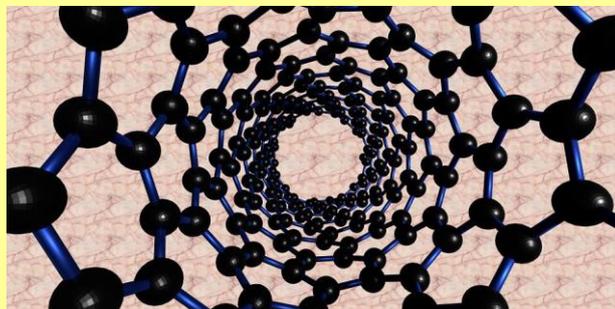
## Revolutionary Filtration System Developed by Israel-UK Team to Help Protect Against COVID-19

Source: <https://i-hls.com/archives/100693>

Apr 20 – An Israel-UK collaboration in the development of a revolutionary technology for coping with the coronavirus. An innovative air filter that captures and destroys coronavirus particles has been developed by Cambridge and Israel scientists. The system will provide an additional tool to protect people against COVID-19.

The revolutionary new carbon-based material captures and destroys an animal coronavirus, a close relative of the SARS-CoV-2 virus that causes COVID-19.

The team of scientists and engineers from Cambridge, UK, and Tortechnology, Israel, have developed the Active Virus Filter in the form of a thin carbon nanotube mat (TorStran), that has the filtration properties which allow it to capture free virus molecules and those contained in airborne aerosolized droplets.



Both filtration and virus disruption take place at the same time allowing the filter to reduce the risk of infection by removing contamination from the air. It could be particularly useful in confined situations such as emergency vehicles, hospitals, transportation, waiting areas and wards. The innovation could help with shortages of personal protective equipment due to the pandemic.

In Israel, development and manufacturing efforts are being led by Dr. Shuki Yeshurun (CEO) and Meir Hefetz, Tortechnology (CTO). “We are

throwing our full resources behind the project and we are meeting the initial challenges of achieving the correct properties in order to move on to the final virus-free air system.”



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Dr. Shuki Yeshurun, Joint CEO of Q-Flo and Tortechnics sums up progress and points the way to the future deployment of this potentially life-saving product: “Our teams in Israel and the UK, including colleagues at Cambridge University, have worked flat out over the past few weeks to demonstrate the effectiveness of the TorStran Active Virus Filter in catching and ‘killing’ the virus. We are looking for partners who can work with us and move at speed to bring Active Virus Filter units into service.”

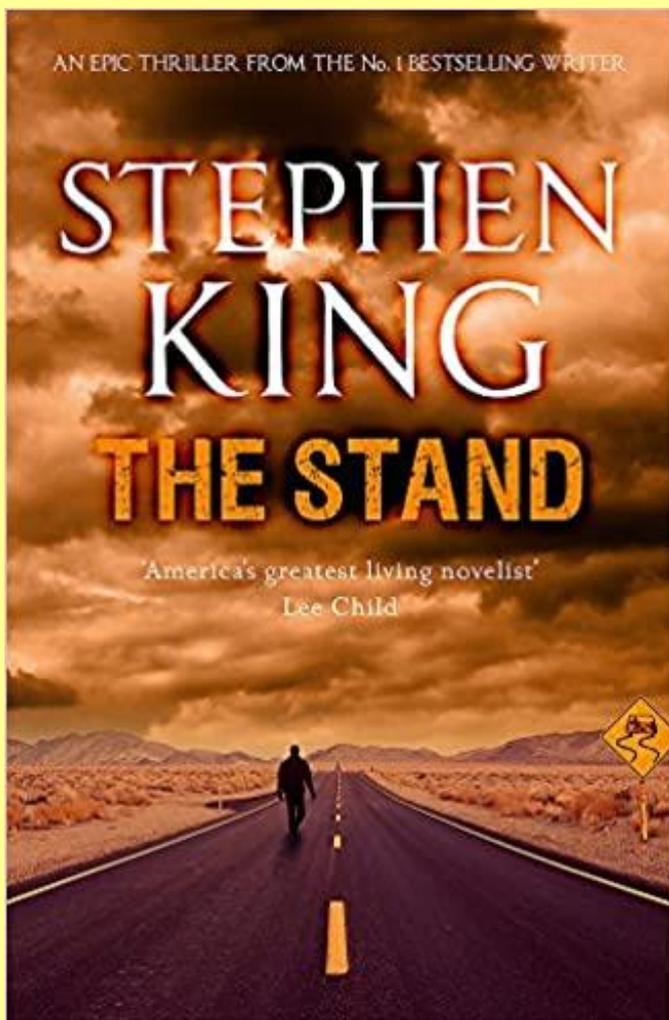
According to the press release, research at the University of Cambridge involved the Department of Engineering, the Department of Materials Science & Metallurgy and the Department of Pathology.

In the UK, the project team is led by Q-Flo who are delivering a broad Innovate UK-funded grant. Rapid response from Q-Flo and Innovate UK allowed some funds to be switched to this project and have resulted in proof of principle being achieved within a remarkably short time. “Our challenge now is to turn our membrane (TorStran) into an effective Active Virus Filter Module,” said Martin Pick, COO of Q-Flo.

Q-Flo Limited and Tortechnics Nano Fibers Ltd are both members of the Plasman Sasa Group.

## Stephen King apologizes to people who feel like they’re living in a Stephen King novel

Source: <https://www.theloop.ca/stephen-king-apologizes-to-all-the-people-who-feel-like-were-living-in-a-stephen-king-novel/>



Apr 09 - Novelist Stephen King saw a virus like COVID-19 coming a long way off — like, way back in 1978, when he wrote his pandemic-themed horror *The Stand*. “[It was] bound to happen,” King told NPR in a recent interview. “There was never any question that in our society, where travel is a staple of daily life, that sooner or later, there was going to be a virus that was going to communicate to the public at large.”

Novelist Stephen King saw a virus like COVID-19 coming a long way off — like, way back in 1978, when he wrote his pandemic-themed horror *The Stand*. “[It was] bound to happen,” King told NPR in a recent interview. “There was never any question that in our society, where travel is a staple of daily life, that sooner or later, there was going to be a virus that was going to communicate to the public at large.”

We really should have been listening to Stephen King. Of course, fans of the hugely successful writer were. And many of them have been reaching out to tell him how they feel: like they’re trapped inside one of his novels. “I keep having people say, ‘Gee, it’s like we’re living in a Stephen King story,’” he said. “And my only response to that is, ‘I’m sorry.’”

For King, it isn’t panic or terror that’s tormenting him right now. “It’s a kind of gnawing anxiety where you say to yourself, I shouldn’t go out. If I do go out, I might catch this thing or I might give it to somebody else.” It’s also anger over the way his government has been handling the crisis. The author’s Twitter feed is a stream of criticism detailing the ways that the Trump administration has been endangering the lives of Americans since the earliest days of the outbreak. That, and a ZZ



Top-inspired recommendation to mask up if you have to leave the house.

**EDITOR’S COMMENT:** Include a novelist when you revise your emergency CBRN response plans! They see and foresee things that we do not – although we should!



## EU standards for protective equipment – available now for free

Source: <https://advisera.com/13485academy/blog/2020/04/01/eu-standards-for-protective-equipment-available-now-for-free/>

Apr 01 – In light of the COVID-19 crisis, some of the European standards for certain medical devices and personal protective equipment can now be downloaded for free. This includes the 11 standards developed by the European Committee for Standardization (CEN) and 3 additional ones developed jointly with ISO.



Providing free access to these standards during the Coronavirus outbreak enables companies that produce filtering masks, medical gloves, gowns, and other protective supplies to speed up the manufacturing process and enter the EU market quicker to help those in need.

Here is the list of CEN standards available for free download:



- [EN 149 + A1:2009 Respiratory protective devices – Filtering half masks to protect against particles – Requirements, testing, marking \(commonly referred to as 'FFP masks'\)](#)
- [EN 14683:2019 + AC:2019 Medical face masks – Requirements and test method](#)
- [EN 166:2003 Personal eye-protection – Specifications](#)
- [EN 14126:2003 Protective clothing – Performance requirements and tests methods for protective clothing against infective agents](#)
- [EN 14605 + A1:2009 Protective clothing against liquid chemicals – performance requirements for clothing with liquid-tight \(Type 3\) or spray-tight \(Type 4\) connections, including items providing protection to parts of the body only \(Types PB \[3\] and PB \[4\]\)](#)
- [EN 13795-1:2019 Surgical clothing and drapes – Requirements and test methods – Part 1: Surgical drapes and gowns](#)
- [EN 13795-2:2019 Surgical drapes, gowns and clean air suits, used as medical devices for patients, clinical staff and equipment – Part 2: Test methods](#)
- [EN 455-1:2001 Medical gloves for single use – Part 1: Requirements and testing for freedom from holes \(MDD\)](#)
- [EN 455-2:2015 Medical gloves for single use – Part 2: Requirements and testing for physical properties \(MDD\)](#)
- [EN 455-3:2015 Medical gloves for single use – Part 3: Requirements and testing for biological evaluation \(MDD\)](#)
- [EN 455-4:2009 EN Medical gloves for single use – Part 4: Requirements and testing for shelf life determination \(MDD\)](#)
- [EN ISO 374-5:2016 Protective gloves against dangerous chemicals and micro-organisms – Part 5: Terminology and performance requirements for micro-organisms risks](#)
- [EN ISO 13688:2013 Protective clothing – General requirements](#)
- [EN ISO 10993-1:2009 Biological evaluation of medical devices – Part 1: Evaluation and testing within a risk management process](#)



## Nicotine May Lower Risk of Catching Coronavirus

**It'd be stupid to start smoking. But researchers are investigating whether nicotine patches could help.**

Source: <https://futurism.com/neoscope/smoking-cigarettes-lower-risk-coronavirus>



Apr 25 – According to a major Paris hospital study, [The Guardian reports](#), tobacco could be preventing smokers from catching COVID-19. “Our cross-sectional study strongly suggests that those who smoke every day are much less likely to develop a symptomatic or severe infection with Sars-CoV-2 compared with the general population,” [the study](#) reads. The researchers did have to state the obvious: Smoking is often-fatal, and almost certainly outweighs the negative effects of COVID-19 itself. But the finding gave them an intriguing idea, which they plan to test soon: provide patients and frontline workers with nicotine patches, to see whether they still catch the disease. The researchers found that

out of 350 hospitalized COVID-19 patients at a Paris hospital with a median age of 65, only 4.4 percent were smokers. In 130 patients who were allowed home with less serious symptoms, the median age was 44 and only 5.3 percent smoked. By comparing these numbers to the number of people who smoke in the general population, about 40 percent for people between the ages of 44 and 53 and 9 to 11 percent for 65-75, they found that far fewer smokers seem to have been infected — Or at least experienced serious symptoms as a result of being infected that resulted in hospitalization. Jean-Pierre Changeux, a renowned French neurobiologist, told *The Guardian* that nicotine may be hindering the coronavirus from entering cells in the body, stopping the thread.

## NIST Tool Could Help Hospitals Repurpose Rooms for Disinfecting N95 Masks

Source: <http://www.homelandsecuritynewswire.com/dr20200423-nist-tool-could-help-hospitals-repurpose-rooms-for-disinfecting-n95-masks>

Apr 23 – In response to the COVID-19 pandemic, hospitals across the United States are disinfecting N95 masks by placing them in repurposed rooms or shipping containers injected with a disinfectant known as [vaporized hydrogen peroxide](#), or VHP. A [new](#)

Company	Products	Technology	Technology of delivery	Existing Use for N95 Sterilization
Bioquell	Bioquell Clarus C; Bioquell Z-2; Bioquell ProteQ	<b>HPV</b> <i>Hydrogen Peroxide Vapor</i>	30-35% liquid H <sub>2</sub> O <sub>2</sub> vaporized and delivered into a chamber; saturated H <sub>2</sub> O <sub>2</sub> condenses on surfaces <sup>6,14,15,18</sup>	EUA granted (3/28/2020) to Batelle to use Bioquell as part of its Critical Care Decontamination System for up to 20 cycles of N95 mask reuse <sup>21</sup>
Steris Corporation	STERIS V-PRO 1 Plus, maX and maX2 Low Temperature Sterilization Systems	<b>VHP™</b> <i>Vaporized Hydrogen Peroxide</i>	30-35% liquid H <sub>2</sub> O <sub>2</sub> is vaporized and delivered into a dehumidified chamber; concentration is held below condensation point <sup>16</sup>	EUA granted (4/10/2020) to Steris Corporation for STERIS V-PRO 1 Plus, maX and maX2 Low Temperature Sterilization Systems for up to 10 cycles of single-user reuse <sup>22</sup>
Advanced Sterilization Products (ASP)	STERRAD 100S H <sub>2</sub> O <sub>2</sub> Gas Plasma Sterilizer; STERRAD NX H <sub>2</sub> O <sub>2</sub> Gas Plasma Sterilizer; STERRAD 100NX H <sub>2</sub> O <sub>2</sub> Gas Plasma Sterilizer	<b>HPGP</b> <i>Hydrogen Peroxide Gas Plasma</i>	58-60% liquid H <sub>2</sub> O <sub>2</sub> is vaporized into a chamber; radiation frequency energy is targeted into the chamber, exciting the H <sub>2</sub> O <sub>2</sub> to a low-temperature plasma state <sup>12,20</sup>	EUA granted (4/12/2020) to ASP for STERRAD 100S Cycle, STERRAD NX Standard Cycle, or STERRAD 100NX Express Cycle for up to two cycles in Tyvek pouching for single-user reuse <sup>23</sup>
TOMI	SteraMist Binary Ionization Technology (BIT)	<b>iHP™</b> <i>ionized Hydrogen Peroxide</i>	7.8% aqueous H <sub>2</sub> O <sub>2</sub> aerosolized. 0.05-3 μm droplets are pushed past a cold plasma field generated by two electrodes and ionized into hydroxyl radicals <sup>24</sup>	The topic of this study. Currently being investigated for sterilization of PPE for re-use in academic medical centers

[tool](#) from the [National Institute of Standards and Technology](#) (NIST) can help hospitals and medical professionals determine which rooms should be used to disinfect N95 masks. The tool estimates the amount of VHP masks would receive and suggests that larger rooms containing fewer objects, with less-reactive surfaces and slower ventilation, maintain VHP concentration the best.



**733,000 euros per week ... Saint-Germain entices Neymar to stay**

Source: [https://www.tellerreport.com/sports/2020-04-20-733-thousand-euros-per-week----saint-germain-entices-neymar-to-stay.ryXtqKci\\_8.html](https://www.tellerreport.com/sports/2020-04-20-733-thousand-euros-per-week----saint-germain-entices-neymar-to-stay.ryXtqKci_8.html)

Apr 21 – Paris Saint-Germain is heading to make a new offer for Brazilian star Neymar about 38 million euros annually, in an attempt to discourage the player from returning to Barcelona.



Sorry! Typing error! 09 Lessons ...

## 10 Lessons we have learned in the past few weeks.

1. Health professionals and key workers are worth more than sport stars, actors, musicians, reality TV stars and celebrities.
2. The planet regenerates quickly without human interference.
3. Oil and petrol is almost worthless in a society without consumption.
4. The majority of people can work comfortably at home.
5. Everyone can survive without junk food.
6. Media is full of nonsense.
7. You don't need to spend a lot of money to enjoy life.
8. How very important our friends and family are and spending time with them.
9. Our health is the most important thing we have.
10. How truly precious and fragile life is.



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you need!



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