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February 2022

PART A

The first CWA antidote that cross blood-brain barrier by LLNL

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Cover photo: National Ambulance Resilience Unit crew (UK)

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CBRNE-Terrorism Newsletter

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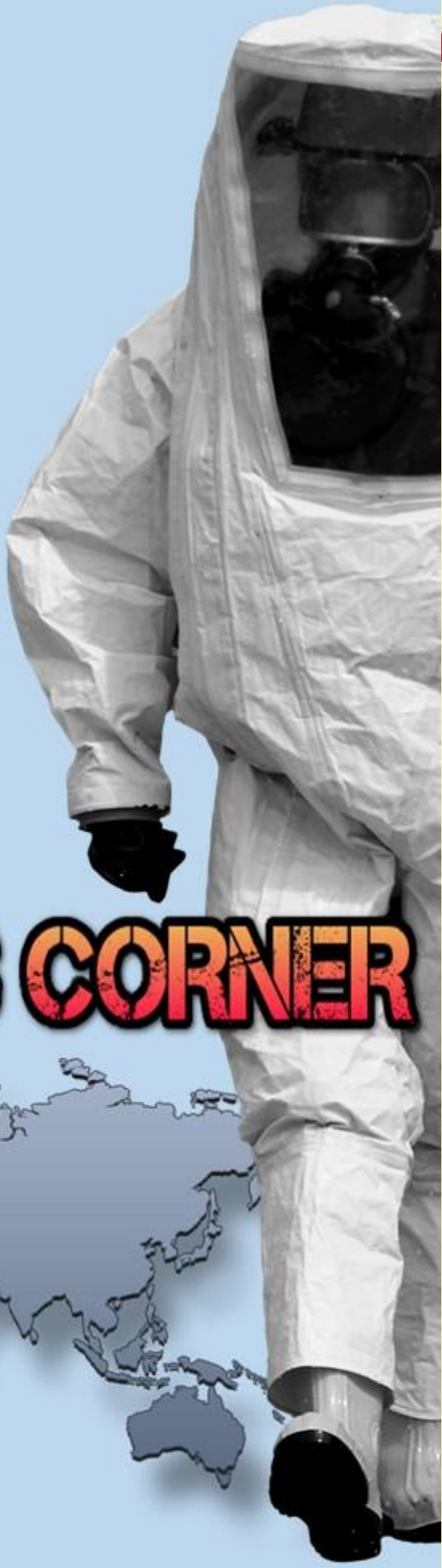

EDITOR'S CORNER

Editorial

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

Editor-in-Chief
C²BRNE Diary

Dear Colleagues,

The pandemic is still here. The effectiveness of available vaccines is questionable (against variants). Restrictive measures are taken back worldwide. Personal freedom and face masks are stupidly connected. It seems that it is up to the virus to decide if he had enough pain and lives or needs more and for a longer time.

The only **good thing** that happened in February is the fact that the Lawrence Livermore National Laboratory discovered the first antidote (LLNL-02) that crosses the blood-brain barrier to confer protection to the brain against nerve agents.

What else? A highly advertised war in our neighborhood. West recognizes the provocativeness of Russia in Ukraine but remains blind to Turkish aggressiveness in the Aegean Sea threatening Greece with casus belli. What is the most important thing for them is the price of their LNG!

No more news most probably because February has only 28 days!

The Editor-in-Chief

EU ministers to condemn Russian 'aggression'

Source: https://euobserver.com/world/154167?utm_source=euobs&utm_medium=email

Jan 24 – EU foreign ministers are planning to condemn "Russia's continued aggressive actions and threats against Ukraine", while calling for de-escalation at Monday's (24 January) meeting in Brussels. "Notions of 'spheres of influence' have no place in the 21st century," they are also planning to say, according to draft conclusions seen by EUobserver.

The "freedom of states to choose or change their own security arrangements", such as Ukraine's freedom to pursue Nato membership, was "non-negotiable", they aimed to add.

The violation of such principles by Russia "threatens peace and stability on our continent" and will be met with "massive consequences and severe costs ... [including] a wide array of sectoral and individual restrictive measures", the draft conclusions said. "The EU has accelerated the preparatory work in this direction," they noted.

The EU statement comes as the US, this weekend, ordered diplomats' families and non-essential embassy staff to leave Ukraine.

"Military action by Russia could come at any time" and the State Department "will not be in a position to evacuate American citizens in such a contingency, so US citizens currently present in Ukraine should plan accordingly," the US embassy in Kyiv said.

"Do not travel to Ukraine due to the increased threats of Russian military action," the US also advised its citizens.

"Do not travel to Russia due to ongoing tension along the border with Ukraine, the potential for harassment against US citizens," it added. For its part, the UK warned Russia was planning to topple Kyiv's pro-Western government to install a pro-Kremlin MP, Yevhen Murayev, in power as part of its plans.

"There'll be very serious consequences if Russia takes this move to try and invade but also install a puppet regime," British deputy prime minister Dominic Raab said on Sunday.

The UK and US have also sent lethal weapons to Ukraine to help it counter potential aggression, with some 90 tonnes of US arms unloaded in Kyiv on Saturday.

And the US is considering sending another 3,000 to 5,000 troops to the Baltic states and Romania as part of Nato's Russia-deterrent forces there. Meanwhile, the EU foreign ministers' statement comes after Russia excluded the EU from security talks with the US and Nato in recent weeks.

Its mention of "spheres of influence" referred to Russian demands for Nato to forbid Ukrainian membership and pull troops out of eastern Europe.

The foreign ministers were also to say they would send help to Ukraine to counter Russian "cyber and hybrid threats", such as disinformation, and to bolster Ukraine's "professional

military education". Estonia, Latvia, and Lithuania want to send US-made anti-tank and anti-aircraft missiles. **But most EU countries do not want to go down that path.**

The French president, Emmanuel Macron, last week, called for new EU-Russia security talks instead.

And a German naval commander aired thoughts on Russia which indicated that some in the German military establishment have more sympathy for Russia's ideas than the EU's diplomatic declarations suggest.

"What he [Russian president Vladimir Putin] really wants is respect," Schönbach said.

"And, my God, giving someone respect is low cost, even no cost ... It is easy to give him the respect he really demands - and probably also deserves," German vice admiral Kay-Achim Schönbach said while visiting India last week.

"The Crimea peninsula [which Russia seized from Ukraine in 2014] is gone, it will never come back, this is a fact," Schönbach also said, prior to tendering his resignation for what he himself called his "rash remarks".

EDITOR'S COMMENT: US to EU: "Say Russians are aggressive!" EU: "Russians are aggressive!" So sad! No policy!

Learn the story of the 8 Aselsan Defense Engineers who died in mysterious accidents

Source: https://www.nabamart.com/2021/11/learn-story-of-8-aselsan-defense.html

Nov 2021 – For some, traffic accidents, electric currents, stabbings, suicides These were just successive deaths due to chance or fate, while others see in them systematic assassinations that were intended to curb the Turkish defense industry's projects and independence.

In the wake of the traffic accident that killed Serdar Demir, head of marketing and communications at the Turkish Aerospace and Aerospace Industry Company "TUSAŞ", on Sunday, a lot of controversy arose on social media platforms in Turkey, with many describing it as "suspicious".

Demir was killed after a traffic accident in the Turkish capital, as he was driving his car back to Ankara after participating in the "SAHA EXPO" exhibition for defense and aerospace industries that was held in Istanbul, as a result of losing control of the steering wheel after his car collided with a truck on the road.

In fact, Demir's death in this way opened the door to suspicion in Turkey, especially since a large number of Turkish scientists and engineers died or were killed in similar incidents, which were ignored at the time as if they were accidents or cases of suicide.

Here are the stories of 8 Turkish engineers who were working on sensitive projects at Aselsan, who have lost their lives since 2006.

Background

In the wake of the Cyprus peace process implemented by the Turkish Armed Forces by order of the then Turkish Prime Minister Bulent Ecevit in 1974, and the subsequent US and Western sanctions banning arms sales to Turkey, the Turkish government encouraged the nationalization of defense industries in Turkey, and among these projects was the

establishment of a Turkish company It develops and manufactures military electronics and encrypted communication systems, called "ASELSAN", and today it is one of the largest defense industry companies in Turkey.
Since its establishment in 1975, ASELSAN has developed many security systems and technologies needed by the Turkish Armed Forces in military platforms such as drones, tanks, missiles, command and control systems for warplanes, etc., and to accomplish all this, it has employed the best Turkish minds to work on these promising national projects.
In order to achieve independence in the encrypted communications systems in the American "F-16" plane, which was subject to American control in one way or another, in 2006, "ASELSAN" company appointed a team of engineers to work on modifying the communication systems of the plane and enhancing its secrecy between the plane and the headquarters in the air bases. However, the project did not end at that time because 8 engineers were killed in a row in suspicious and mysterious ways.

Suspicious death accidents

1- A few months after the founding of the team, the news on the morning of August 5, 2006 shocked the Turkish community and the project, that the engineer in charge of the Aselsan National Tank Project, Hüseyin Bashbilan, was found dead in his locked car from the inside. He cut his throat and wrist 50 kilometers from his home in Ankara, to make it look like a suicide, despite the refusal of his family and colleagues to believe that he committed suicide, especially since the files of the project he was working on had been stolen and no trace left.
2- In another car, and on January 17, 2007, the electronics engineer, who started working at Aselsan 3 years before his graduation from the Middle East Technical University, Molesem Unal, was found dead inside his car due to a bullet fired to his head. He's the one who fired it.
3- Only 9 days had passed since Unal's death, when Turkey was shaken by the news of the death of another engineer, Evrim Yançkin, who at the time allegedly committed suicide by jumping from the sixth floor of his building in the Batikent district of the capital, Ankara, on January 26, 2007. It was alleged that Yançkin He was suffering from psychological problems.
4- On October 7, 2007, engineer Burhanuddin Volkan was found dead at the Pando Military School in the capital, Ankara, and reports revealed at the time that he had committed suicide by shooting himself with a rifle. Amid the suspicions of the Volkan family, his father claimed in the investigation that his son had tried to break away from the Koln terrorist organization, and that his death was a murder, not a suicide.
5- On May 10, 2008, while performing his military service in Istanbul, the electrical and electronics engineer who was working on one of the "Asilisan" projects, Zafer Uluk, died after being electrocuted while trying to repair the power transformer in the camp. While his death was recorded as an accident, his family refused to accept this claim.
6- On the road between Ankara and Eskisehir, engineer Hakan Oksuz, who was working on microelectronics projects and the photoelectric steering group project, died in a traffic accident on January 25, 2012.
7- As for the engineer Erdem Agurd, an expert in the magnetic field, who was working on many important projects such as drones and the "F-16" project, he was found dead with a gas tube in his mouth, at his home in Ankara on January 16, 2015. The incident was recorded as a suicide.
8- The recent death of Aselsan engineers was what happened in the capital, Ankara, on November 21, 2017, after Turkey woke up to the news of the suicide of Karim Balidar, an expert on local defense systems, who was found on the ground after he mysteriously fell from the floor. Fourteenth of the building in which he lives.

Many question marks

The families, friends and colleagues of the victims refused to accept the hypothesis of accidental deaths or suicides, and they saw from the start that the death of engineers in a row was the result of systematic and deliberate plans to rein in the national projects of Aselsan and other Turkish defense companies.
In the wake of the failed coup attempt organized by the Gulen terrorist organization in mid-2016, the files of the death of the eight "Aselsan" engineers and others were reopened, and the former public prosecutor, Murat Demir, who was arrested on charges of belonging to the Gulen terrorist organization, was investigated. At that time, he claimed in his testimony that the Gulen terrorist organization prevented the investigation of these incidents.
During the 15 years since the death of the first engineer, and especially after the failed coup attempt, many people within the "Aselsan" structure were punished for their affiliation with the Gulen terrorist organization, and many links were revealed. However, many question marks still hover over the cause of the death of these engineers, and the extent of communication between the Gulen terrorist organization and foreign intelligence networks.


In 2012, the photo monument was inaugurated at Fort Drum in NY to honor the 109 fallen of the 3rd Brigade of the 10th Mountain Division ("Spartans") in Iraq and Afghanistan.
3
SPARTANS
3rd Infantry Brigade Combat Team
10th Mountain Division
(Light Infantry)
SFC Jared Monti
2nd Battalion, 87th Infantry
3rd Squadron, 71st Cavalry
GALLANTLY FORWARD

Protection of Civilians in Urban Warfare: High-level Open Debate

Source: https://www.securitycouncilreport.org/whatsinblue/2022/01/protection-of-civilians-in-urban-warfare-high-level-open-debate.php

Jan 24 – Tomorrow (25 January), the Security Council will hold a high-level open debate on the protection of civilians (POC), under the theme "Wars in cities: protection of civilians in urban settings". The meeting, which is one of the signature events of Norway's Council presidency, will be chaired by Norwegian Prime Minister Jonas Gahr Støre. The expected briefers are Secretary-General António Guterres, ICRC President Peter Maurer and a civil society representative. Non-Council member states are invited to participate in person at tomorrow's open debate or submit a written statement to be included in the meeting's official record.

A presidential statement proposed by Norway on the protection of civilians in the context of urban warfare is a possible outcome of tomorrow's debate. At the time of writing, a draft of the presidential statement is being negotiated, and its adoption is not expected at tomorrow's meeting.

Norway has identified the protection of civilians, including in the context of urban warfare, as one of its priorities during its two-year Council membership. The concept note prepared by Oslo ahead of the meeting (S/2022/23) says that "armed conflicts are increasingly being

fought in urban areas, with devastating and unacceptable humanitarian consequences". It maintains that the cumulative and protracted civilian suffering in situations of armed conflict, which is exacerbated by urban warfare, tears apart communities' social fabric, increasing the risk of recurring violence and damaging prospects for achieving lasting peace and reconciliation.

The concept note focusses primarily on the long-term humanitarian effects of urban warfare, such as displacement, psychological trauma, disabilities, disruption of essential services, and explosive remnants of war. It notes that while the consequences of urban warfare are not unique, they tend to occur "on a significantly larger scale" than is occasioned by armed conflict in rural settings, because of urban areas' higher population density and greater dependency on critical infrastructure.

Council members discussed some of these issues during the Council's virtual open debate on "Critical Infrastructure: The Protection of Objects Indispensable to the Survival of the Civilian Population", which was organised by then-Council member Viet Nam in April 2021. At that meeting, several member states underscored the devastating toll of urban warfare on essential infrastructure and services. After the meeting, the Security Council unanimously adopted resolution 2573 on attacks against critical civilian infrastructure, which highlighted the humanitarian effects of the destruction of objects indispensable to the survival of the civilian population and expressed concern about "indiscriminate attacks and the establishment of military positions in densely populated areas, and their devastating impacts upon civilians".

According to the concept note prepared by Norway, the aim of tomorrow's meeting is to raise awareness of the compounding ways in which urban warfare affects civilian populations. It will also serve as a platform to identify concrete steps that states can take to mitigate these consequences and to ensure the protection of civilians and civilian objects, in line with international humanitarian law.

The concept note proposes several questions to help guide the discussion at tomorrow's open debate:

- How can the Security Council prevent and respond to the consequences of urban warfare on civilian populations and critical infrastructure?
- How can state parties to conflict ensure that the planning and conduct of military operations in urban settings are in line with international humanitarian law?
- How can authorities, together with humanitarian and development actors, improve their coordination and response to ensure the continuity of essential services during protracted conflicts in urban settings?
- How can humanitarian organisations, the UN system, non-governmental organisations and other relevant actors better provide sustainable humanitarian protection and assistance to civilians that better reflects the accumulated and protracted needs created by urban warfare?

At tomorrow's open debate, Guterres is likely to highlight the disproportionate effects of explosive weapons on civilian populations in urban settings. The Secretary-General's latest annual POC report, issued on 3 May 2021, noted that in 2020, 88 percent of those killed and injured by explosive weapons in urban areas were civilians, compared to 16 percent in other areas. The report described the devastating toll of such weaponry on essential civilian infrastructure, including disrupted access to vital resources and public services. While the report urged parties to conflict to abide by the rules of distinction and proportionality in international humanitarian law, it acknowledged that efforts to estimate and minimise collateral damage from explosive weapons may be ineffective in urban settings because of the unanticipated ways in which narrow streets and tall buildings channel blasts.

Many Council members and non-Council member states are likely to frame their remarks at tomorrow's meeting around compliance with international humanitarian law. Some speakers are also likely to condemn the use of explosive weapons with wide-area effects in populated areas and echo the call made by the Secretary-General in his POC report for states and all parties to armed conflict to avoid their use in populated areas. While all current Council members recognise that the planning and conduct of military operations in urban settings should reflect the international humanitarian law principles of distinction and proportionality, divisions remain over whether existing international humanitarian law provides an adequate framework to address the problem of explosive weapons.

Some Council members have expressed the view that the political declaration against the use of explosive weapons with wide-area effects in populated areas (often referred to as EWIPA) that Ireland is promoting in Geneva should seek to strengthen international humanitarian law. Others have argued against this approach. For instance, during the latest round of negotiations on the political declaration held on 3 March 2021 in Geneva, the US said that the political declaration "should not seek to introduce new interpretations of existing international humanitarian law, create new standards, or propose commitments based on novel terminology not reflected in existing international humanitarian law". The next round of in-person negotiations on the declaration is scheduled to take place from 2 to 4 February.

Maurer is expected to describe the challenges to providing adequate humanitarian assistance to civilians in urban warfare and the obstacles humanitarian actors face in such settings. He may argue that humanitarian actors should shift away from the traditional "relief-rehabilitation-development" paradigm and move towards one that combines long-term support, ensuring continuity in essential service delivery during armed conflict, while

reinforcing short-term support for individuals. He is also likely to note that the use of explosive weapons with wide-area effects in populated areas raises serious questions about the interpretation of and compliance with international humanitarian law.
Some Council members may express positions that were set out during the Council's April 2021 open debate on the protection of objects indispensable to the survival of civilian populations. At that meeting, some members stressed the need to adapt military manuals, strategies and ground rules to the new realities of urban warfare and to an interpretation of international humanitarian law that centres on the principle of humanity. Others raised the issue of cyber-attacks against critical civilian infrastructure, including on electrical and water systems and healthcare facilities, maintaining that such disruptions in urban settings could deprive a vast number of people of essential public services. (The effects of cyber activities on civilian populations were recently raised in a closed Arria-formula meeting organised by then-Council member Estonia and the UK in December 2021.) Some member states might also say that the mandates of relevant UN peacekeeping operations should better reflect the realities on the ground regarding the protection of civilians in urban settings.

Wind of Change: Citizenship, Post-oil economies and the Gulf

By Christina Chatzitheodorou
Source: http://cemmis.edu.gr/index.php?option=com_k2&view=item&id=677:wind-of-change-citizenship-post-oil-economies-and-the-gulf&Itemid=169

Jan 24 – Migrants make up a significant portion of the population of the area, accounting for one-third to more than three-quarters of the total. Many of these migrant workers are unskilled labourers in industries such as construction and hospitality, as well as domestic workers. Even though migrant workers make major contributions to the development of their destination countries in the Gulf, they experience discrimination, and exploitation at the hands of unscrupulous employers, as well as major barriers to justice and redress, while access to citizenship for them is out of the question. Migrants account for 88 per cent of the UAE's resident population and up to 95 per cent of its workforce in Dubai in 2017. The majority of expatriates came from Asia, particularly India, Nepal, Pakistan. However, approximately 70 per cent of them work in low-wage jobs. For example, even though the UAE boasts one of the highest GDP per capita rates in the world, low-income migrant workers in the UAE face harsh working conditions and have their rights infringed.[1]
However, while citizenship is intended to transcend the importance of race, religion, class and gender, in the Arab Gulf, citizenship serves to strengthen these categories. Gulf governments have continued to define different de facto tiers of citizenship, determining who is entitled to which levels of economic benefits based on ancestry, who is eligible to vote,

whether women can pass citizenship on to their children, and, in some cases, even stripping citizenship from dissidents deemed disloyal. Within the present framework, the legal concept of citizenship offers a small pool of individuals with restricted access to political rights. Nationality rules in the six nations are intended to guarantee that only a certain kind of resident may claim citizenship. Stringent qualifying requirements and restrictive interpretations of who qualifies for nationality limit the pool to individuals who may claim ethnic affiliation to the country via their family (*jus sanguinis*). Citizenship is nearly generally inherited from one's father's nationality across the Gulf nations, and in most circumstances, female nationals are unable to pass citizenship to their children. There are also excessive conditions that must be completed for citizenship procedures, rendering most prospective candidates ineligible.[2]
The UAE's workforce is strongly fragmented along national, ethnic, and racial lines, and nationals have several sorts of citizenship. In reality, barely half of all persons born in the country enjoy full citizenship rights. The other half is made up of second-class citizens who do not have access to the same advantages as full citizens: The first group is "full citizen Emiratis," who can trace their ancestry back to the "original" families that made up the nation at the time of its founding and who own the ancestry certificate, known as *khulasat al-qaid*.[3] The second group is people who have gained citizenship by marriage, which generally pertains to foreign women married to Emiratis, while those who have obtained citizenship via naturalisation fall into the third group. Nevertheless, there are also locals who have a passport but do not have the ancestry certificate, as well as *bidouns* who live in the UAE but do not have a passport or the *khulasat al-qaid*. Passport holders who are not considered 'full citizens' under the UAE citizenship law may be granted some or all the benefits given by the emirate in which they live, although this is not guaranteed. The story of Emirati "exclusive citizenship" is critical not only for retaining loyal residents but also for legitimising the state as the supreme defender of the national population.[4]
To summarise, a fundamental concept underpins all limiting practices: citizenship is a privilege bestowed upon a select few; This is a result of existing concerns among Gulf states that it will alter their national identity. Despite the clear need to increase their domestic labour forces, the GCC governments have been particularly hesitant to grant naturalised citizenship to their Arab neighbours. Given the advantages linked, and the desire not to dilute these benefits much by naturalising the foreign workers who make up the bulk of the region's population, this has also an economic basis. According to Longva, citizenship in Arab Gulf states includes access to social rights; social rights are strictly defined as preferential access to economic advantages and services supplied by the ruler to the population. For example, native Emiratis benefit from everything from lower mobile phone subscriptions to interest-free property loans. Furthermore, when they marry, some get rewards of up to 70,000 dirhams (approximately 17,000 euros).[5]
However, this situation has clearly started to change. For instance, the UAE declared in January that some foreigners, such as investors and scientists, might be considered for citizenship. In the same pattern, Saudi Arabia announced the naturalisation of an unspecified number of foreigners. Besides, many Gulf governments now provide long-term residency permits that do not require a job. A new programme in the UAE enables expats to retire in the nation rather than return home. Despite the first impression, the UAE will only naturalise 1000 individuals per year, while long-term visas are linked to wealth criteria, which excludes most employees.[6]
The citizenship offer is the most current expression of a policy implemented for expats seeking a long-term stay in the UAE. The Golden Visa programme, for example, offers a 10-year renewable residence to investors, entrepreneurs, chief executives, scientists, and excellent students who satisfy certain qualifications. Following its debut in 2019, the programme originally proved beneficial in providing more stability to people looking to develop long-term jobs in the UAE, but the COVID-19 pandemic has revealed its inherent weaknesses and limitations. As mobility limitations tightened and economic circumstances deteriorated, the absence of a social security net for foreigners led many employees who might have benefited from the programme to flee the country.[7]
The new legislation regarding citizenship is part of a mind-boggling reform package undertaken by the UAE during the last year. Unmarried couples can now live together lawfully. Muslims may use alcohol. The capital, Abu Dhabi, agreed to allow civil weddings for non-Muslims in November. On December 7, the UAE stated that the public sector will go from a Sunday-to-Thursday work week to a Monday-to-Friday work week, putting it in line with the majority of the rest of the globe. Furthermore, another element that showed a change of direction was in late 2019, when the UAE announced its intention to withdraw from Yemen. Due to a domestic economic slump, the UAE has finally chosen to withdraw from an obviously stalemated struggle against a determined opponent in Yemen.[8]
In the same pattern, Saudi Arabia's "Vision 2030," a vision for a post-oil economy, calls for major societal reforms in order to make the Kingdom more desirable to visitors and foreign corporations. The Kingdom recognised potential appeal in the country's wide terrain and proximity to the Red Sea as it sought to mimic Dubai and become an international centre for commerce and tourism. As a result, it has set aside $810 billion to expand the tourist industry in the future years. The industry is predicted to produce three million employment, with expatriates accounting for two-thirds of the workforce. As a result, the Saudi government announced new plans to offer foreigners permanent residence status and access to economic benefits, such as the opportunity to start a company and invest in and buy property, with the aim of expanding the number of foreigners who live and work in the Kingdom from 30 per cent to 50 per cent. These new developments spurred members

of the Shura Council, the consultative body selected by the monarch, to write a motion calling for a similar treatment to be extended to the offspring of Saudi women who marry non-Saudis.[9]

Despite decades of legislative attempts to diversify their economies, Gulf Arab countries have remained stubbornly reliant on earnings from oil and natural gas. A national economy that is entirely dependent on one source of revenue is fragile, particularly if that income is derived from nonrenewable resources. Thus, an economy's long-term prosperity is dependent on the proper implementation of economic diversification. One important factor behind the failure of diversification is that previous policy initiatives did not fully account for the ruling social compact; natural resource rents are passed on to residents in three ways: access to rich public benefits and services, access to high-paying public sector employment, and access to exclusive government contracts and licences. The transmission of economic rents via these channels has resulted in market distortions, undermining attempts to construct a competitive private sector capable of delivering sustainable economic development in a post-hydrocarbon future. These channels, however, are not irrelevant to the political context and serve a purpose: they enable residents to obtain their legal portion of their country's hydrocarbon riches. Hence, this social contract makes it difficult to renegotiate as oil revenues decrease. Future policy initiatives should reform these wealth-sharing channels to make them more transparent, economically efficient, socially fair, and mindful of the budgetary restrictions that Gulf governments face.[10]

Despite breaking a taboo by offering citizenship to certain high-skilled immigrants, Gulf rulers have not altered a social contract that regards citizenship as a gift granted to deserving people. They have recently broadened the pool of eligible subjects in order to recruit and retain skilled foreigners, as part of a larger effort to diversify oil-dependent economies. The route to citizenship will remain obstructed for the vast majority of poor immigrants and many locals. However, with the dwindling of oil earnings, both Saudi Arabia and the UAE have been forced to consider diversifying their economies by making their conservative and hierarchical regimes appealing to global investors - an awkward balance that threatens the stability of current social contracts. A post-oil Gulf will not necessarily herald the end of the state, but societal shifts that undermine the advantages on which the social compact is based may jolt inhabitants into an unpleasant reality as the nation prepares for future changes.[11]

In sum, in the near future, both the UAE and Saudi Arabia will need to focus on promoting trade, their economy and investments. Given the end of the oil era is nearby, it leaves the Gulf states with little alternative but to support the creation of a productive sector. This suggests that their foreign policies may stop being as assertive as it has been in the past. As it begins its post-oil period and lays the strategic foundations for the next years, the UAE appears to be focusing more on diplomatic solutions and soft power to consolidate its economic interests and trade partnerships. A more cautious shift can be seen in the Saudi foreign policy; a more careful pursuit of its interests, and restoration of Saudi diplomacy. The Vision 2030 initiative, which was implemented over the last decade, was intended to provide a roadmap for the country to address the challenges of sustaining economic prosperity in a changing and more competitive world, confronting the effects of climate change, and providing for a growing population. These interests will also serve as the cornerstones of its foreign policy.[12]

●▶ Links are available at the source's URL.

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Qatar maintains record as 'World's Safest Country'

Source: https://www.qatarday.com/News/qatar-maintains-record-as-worlds-safest-country/12486/0

Jan 26 – In a report from **Numbeo Crime Index by Country 2022**, Qatar has maintained its position as the world's "Safest Country" out of 142 countries evaluated. According to Numbeo, the country's crime score is 13.78, while its safety rating is 86.22.

Numbeo's crime index calculations are an approximation of the overall amount of crime in the city or country in question, whereas the safety index is an approximation of the general level of safety.

Numbeo also covers current information on living conditions, including the cost of living, housing indicators, healthcare, traffic, and pollution. According to the recently-released survey, the Gulf region boasts three countries in the top 10, with Qatar, the United Arab Emirates (UAE), Taiwan, Isle of Man, Oman, Switzerland, Hong Kong, Japan, Armenia, and Slovenia making up the list. Venezuela recorded the highest crime index rate at 83.58 and lowest safety index at 16.42, ranking as the least safe country.

Meanwhile, **Numbeo ranks Doha as the second safest city behind Abu Dhabi.** Doha's 13.83 crime index and 86.17 safety index fall just shy of the UAE capital, with 11.86 and

88.14, respectively. Other cities in the top 10 include San Sebastian (Spain), Sharjah (UAE), Taipei (Taiwan), Quebec City (Canada), Funchal (Portugal), Dubai (UAE), Zurich (Switzerland), and Munich (Germany).

Numbeo surveyed 459 cities, with Venezuela's capital city Caracas the least safe city globally.

Rank	Country	Crime Index	Safety Index
1	Qatar	13.78	86.22
2	United Arab Emirates	15.14	84.86
3	Taiwan	15.87	84.13
4	Isle Of Man	18.63	81.37
5	Oman	19.99	80.01
6	Switzerland	21.68	78.32
7	Hong Kong	21.92	78.08
8	Japan	22.12	77.88
9	Armenia	22.13	77.87
10	Slovenia	22.65	77.35

In the quality-of-life index, Qatar ranked 27th and third in the Arab world, only behind Oman (13) and the UAE (24). Switzerland topped the 87 entries with the best quality of life index. In health, Qatar ranked 18th globally and first in the Arab world.

Qatar's position across the survey's indexes demonstrates its commitment to the safety and development of infrastructures to enable quality living for citizens and residents.

This also puts Qatar in a promising position ahead of the FIFA World Cup 2022, with visitors assured of a secure and booming environment. The Numbeo database has published its annual reports since 2009, based on measurement of the crime rate worldwide. The index of crimes in countries is measured according to the laws of those countries as it considers that there are acts that constitute crimes in some countries dissimilar to other countries, which gives an objective measure of the rate of crime in countries following applicable laws.

Dubai unveils world's fastest and most expensive ambulance first seen in 'Furious 7'

Source: https://www.thenationalnews.com/uae/transport/2022/01/28/dubai-unveils-worlds-fastest-and-most-expensive-ambulance-first-seen-in-furious-7/

Jan 28 – Dubai unveiled the world's fastest and most expensive ambulance at Expo 2020 on Friday.

Manufactured in the UAE, the **Lykan HyperSport** supercar is the creation of the Dubai-based company W Motors, an Emirati sports car company founded in Lebanon in 2012.

Valued at Dh13 million ($3.5m), the car will be used as a first responder.

One of only seven Lykan HyperSport cars in the world, the HyperSport Responder can accelerate from **zero to 100 kilometres an hour in 2.8 seconds and reach a top speed of 400kph**, powered by its twin-turbocharged 780-horsepower Porsche engine.

Its LED headlights are studded with 440 diamonds. The car also comes with a gold-plated interior roof and the interior is upholstered in gold-stitched leather.

"Dubai has become synonymous with everything that is unique and the first in the world," Khalifa bin Darrai, chief executive of the Dubai Corporation for Ambulance Services, said.

"The car's speed and capabilities can significantly reduce response time during emergencies and ensure timely intervention."

The supercar's exterior features the slogan "Dubai, the world's best city to live in" and the logo of DubaiDestinations, an initiative to highlight the emirate's unique experiences and activities.
It has a hand-made carbon-fibre body and is equipped with many futuristic features, including the world's first 3D hologram holographic mid-air display with interactive motion control, a satellite navigation and a system that connects to the internet.
The Lykan HyperSport car made its first appearance in 2015 Hollywood action blockbuster movie *Furious 7* – an instalment in the *Fast & Furious* franchise.
It is the latest addition to the DCAS fleet of 331 vehicles.

Guide on the Security of Major Sporting Events: Promoting Sustainable Security and Legacies

Source: http://www.unicri.it/Publication/Major-Events-Security-Sport-Violent-Extremism-Prevention

Oct 2021 – Major Sporting Events (MSEs) are collective celebrations of human achievements and a source of pride for those who participate in them or host them. In recent years, the range of countries which have been prepared to organize an MSE has extended across all continents. Satellite-supported live television has broadened the number of spectators to hundreds of millions of people. This allows an organizing country or city to place itself, as it were, on the mental map of global audiences. This, in turn, can bring increased tourism, new or improved infrastructure, foreign investments as well as other benefits to those countries which manage to successfully showcase a major sporting event.

However, if the organization is below the standards expected by athletes and the public, this might project a negative image of the country to the world. There are also external factors which can harm the image of an MSE and the way it will be remembered – its legacy. This could be prompted by a breakdown in security caused by an external threat: a terrorist assault or a criminal cyberattack, to name but two major risks.
With this in mind, the Guide on the Security of Major Sporting Events: Promoting Sustainable Security and Legacies contains an exhaustive analysis of all elements for consideration by key decision-makers when it comes to security at MSEs. Consistent with the relatively recent democratization of the access to organize and host MSEs outside traditional regions, this Guide is published in a context where the net is cast wider for those cities and countries looking to host MSEs. Intercultural and cross-regional complexities and particularities are dissected, providing a systemic overview of the main considerations for key decision-makers for the security elements of MSEs.
The Guide represents a cornerstone of the security component of the Global Programme on Security of Major Sporting Events, and Promotion of Sport and its Values as a Tool to Prevent Violent Extremism, and its aim to protect major sporting events as a common good of the international community.
This Guide has been produced within the framework of the United Nations Global Programme on the Security of Major Sporting Events and the Promotion of Sport and its Values as a Tool to Prevent Violent Extremism co-implemented by the United Nations Office of Counter-Terrorism (UNOCT), in association with the United Nations Interregional Crime and Justice Research Institute (UNICRI), the United Nations Alliance of Civilizations (UNAOC) and the International Centre for Sport Security (ICSS) in consultation with the Counter-Terrorism Committee Executive Directorate (CTED).
This publication greatly benefited from the contributions of Member States, international organizations, regional organizations, sports associations, the private sector and academia, with special thanks to the Counter-Terrorism Committee Executive Directorate (CTED); the International Criminal Police Organization (INTERPOL); the Fédération Internationale de Football Association (FIFA); the Council of Europe (CoE); the Confédération Africaine de Football (CAF); the Asian Football Confederation (AFC); and the Union of European Football Associations (UEFA).
The generous financial support of the People's Republic of China, through the United Nations Peace and Development Trust Fund, the State of Qatar and the Republic of Korea has made possible this publication.

The hallucinatory suggestion: a pillow fight instead of horseback riding at the Olympics?

Source: https://newsrnd.com/sports/2022-01-30-the-hallucinatory-suggestion--a-pillow-fight-instead-of-horseback-riding-at-the-olympics--%7C-israel-today.HyMwo5jX0F.html

Jan 30 – After the horse competition was expelled from Paris in 2024 following allegations of animal cruelty, the International Athletics Commission of the International Pentathlon Association (UIPM) proposed a list of eight disciplines proposed as possible substitutes
In recent years we have become accustomed to seeing more and more diverse sports, which appeal mainly to the younger generation, enter the Olympic Games, such as climbing, surfing, skateboarding and even breakdancing which will first appear in Paris 2024, but is that just the beginning?

Pillow fight (yes, yes, you read that right) and **drone racing** are among the sports that have been raised as possible alternatives to horse riding, which it was recently decided to replace with a modern five-fight (pantathlon), right after the upcoming Olympics in the French capital.

The decision stems mainly from the phenomenon of the refusal of a number of horses during the Tokyo 2020 Games, including the Saint-Boy (sacred child) horse, on which the German Anika rode who led the competition to the riding stage, which led to an intervention of animal cruelty.

As you may recall, German coach Kim Reisner was returned to the country by the German Olympic Committee following a video in which she was seen hitting St. Boy, while his rider was severely criticized for whipping back and sniping a horse that looked distressed.

According to a post published by the International Athletics Commission of the International Pentathlon Association (UIPM) on Instagram, eight disciplines have been proposed as a replacement for cycling.

The full list includes cycling - mountain biking, cross-motor or electric format, skating, water and land obstacle races, obstacles and hurdles.

The inclusion of cushion fighting, a martial art in which competitors beat each other with "special" cushions, would surely cause eyebrows to be raised among modern pantathletes and even more so in the Olympic movement and in reactions one could find athletes calling it a "joke".
Just yesterday, however, Professional Pillow Fight made its paid-up debut by watching an event organized by the Pillow Championship (PFC) in Florida in the United States.
The PFC event consisted mostly of amateur boxers competing over three rounds.
Skimmer races, include participants with monitors attached to their heads and have to complete a course while controlling small planes that are radio-controlled and equipped with cameras.
The pentathlon is currently left out of the initial Los Angeles 2028 Sports Program by the International Olympic Committee (IOC) in December and the new profession can be determined until early next year, but apparently as early as next March, starting with the season opening in Cairo in March, we will see the replacement for the time.

Surfing, Skateboarding, Sport Climbing Added to 2028 Olympics

Source: https://boardroom.tv/los-angeles-olympics-skating-surfboarding-climbing/

Feb 02 – The Los Angeles 2028 Olympic Games received approval to officially add surfing, skateboarding, and sport climbing—three quintessential West Coast sports— to its initial sports program, the organization announced Wednesday.
The three sports, which were tentatively added in December, made their debuts at last year's 2020 Games in Tokyo, but not on the initial program. They join aquatics, archery, athletics, badminton, basketball, canoe, cycling, equestrian, fencing, golf, gymnastics, handball, hockey, judo, rowing, rugby, sailing, shooting, soccer, taekwondo, tennis, table tennis, triathlon, volleyball and wrestling as confirmed sports for 2028.
"The LA28 Games have always been about bringing more freshness, youthful energy and creativity into the Olympic and Paralympic movement," LA28 chairperson Casey Wasserman said. "Los Angeles is a place unlike any other and it will be incredible to host surfing, skateboarding, and climbing as iconic West Coast sports alongside Olympic fan favorites."

Editor's proposal

Cooking

Gardening

Fishing

The hospital of the future won't be what you expect

By Rob Rohatsch
Source: https://www.statnews.com/2022/01/31/the-hospital-of-the-future-wont-be-what-you-expect/

Jan 31 – Close your eyes for a few seconds and imagine what a hospital will look like 10 years in the future. If medical robots, artificial intelligence, and other technologies come to mind, you are on the right track. But if you picture these innovations happening in a sprawling hospital campus, think again.
Radical changes afoot in health care philosophy, medical technology, and treatment capability will lead to hospital-quality care being administered outside of hospitals — in primary care and urgent care center and in people's homes. These changes will create more comfortable conditions for patients, yield better outcomes, and be more affordable.

Hospitalization is expensive — and dangerous

American health care costs are astronomical: The average American spends about $12,000 on health care each year, and the average hospital stay runs $2,607 per day. There should be little wonder that 2 out of every 3 bankruptcies in the U.S. have health care costs at their root.

What's more, the stress of hospitalization, the presence of antibiotic-resistant microbes, and other issues increase the risk of infection the longer someone is hospitalized. Unless hospitalization is absolutely imperative to receiving proper care, people are almost always better off avoiding a hospital stay.

Health care is shifting to a value-based model

Due to the health risks and economic burdens involved, doctors and insurance companies prefer to keep patients out of hospitals for conditions that are not life-threatening. Payers increasingly financially reward health care providers for delivering high-quality care that keeps their patients healthy at a reasonable cost and relying on inpatient treatment only when absolutely necessary.

But this so-called value-based care ethos has its own challenges. Failing to admit people to the hospital who *do* need inpatient care can have life-threatening consequences, as can discharging patients too soon. At least one in seven people are readmitted to the hospital within 30 days of being discharged. Clearly, health care providers need a way to deliver value-based care for acute and chronic conditions without compromising patient safety and breaking the bank.

What is the solution? Give patients hospital-quality care without the hospital.

Hospital care is going remote

Before Covid-19, telemedicine was seen by many as a niche service that would remain irrelevant to most patients and health care providers. The pandemic changed that entirely, driving 3,800% growth in telemedicine, now well on its way to $250 billion of market value, according to a report by McKinsey & Company. Video calls and asynchronous texts with health care providers have become commonplace health care modalities for everything from skin rashes to more serious conditions.

Diagnosing health conditions can also be done via devices that are portable, wearable, and affordable, such as the FDA-cleared Apple smartwatch and Owlstone Medical's cancer-detecting breathalyzers, which are now being tested in clinical trials. As devices like these continue to evolve, early diagnosis and preventive care for conditions such as heart disease, diabetes, and even pancreatic cancer will be done in the home during daily activities instead of in hospitals only after patients experience symptoms. This will save countless lives.

Care after hospital discharge is also now increasingly handled through digital devices. Remote continuous monitoring technology is used to observe breathing and heart rates, blood sugar, and other indicators, identifying early warning signs of relapse for stroke, heart failure, and other serious conditions. Digital health care company KenSci, for example, conducts remote monitoring of chronic obstructive pulmonary disease in people who have

been discharged from the hospital. The ability to prevent "bounce back" return hospital visits for conditions like this saves both lives and money, and will soon make post-acute care in clinical settings like long-term hospitals and inpatient nursing facilities the exception rather than the rule.

Hospital care is coming to the home

The most impressive element of the hospital of the future does not involve hospitals at all. Johns Hopkins, Mount Sinai, and other health care organizations will furnish an individual or family with the equipment needed to administer hospital-level care in the home. In this hospital-at-home model, doctors and nurses treat patients through a combination of telemedicine, digital diagnostics, and in-person visits by medics or registered nurses to administer medicine or draw blood, for example.

In addition to the added convenience and comfort, a review of nine hospital-at-home trials shows that people treated with this modality had a 26% lower risk of readmission, a lower need for long-term care, and lower rates of anxiety and depression, all at a cost of up to 38% less than conventional hospital inpatient care.

Obstacles to overcome

Most hospitals today are monolithic facilities made up of multiple buildings and floors where patients are admitted, treated, and monitored until they are well enough to go home. Going forward, nonemergency services will be pushed horizontally to outpatient clinics, patients' homes, and remote devices. This is reminiscent of what happened to financial services, which migrated from bank tellers to drive-thru windows to far-flung ATMs and then to mobile apps on the smartphones so many people carry that now take care of almost any financial transaction.

Before that can happen to hospital care, however, several things need to change:

- Patient records must be migrated from siloed medical records systems and securely into the hands (and phones) of patients themselves.
- Payers must complete their shift to value-based care using the Goldilocks principle that incentivizes health care providers to administer just the right amount of care.
- Doctors must relearn which patients to admit to the hospital, which ones can receive acute care at home, which ones can be treated by telemedicine, and which ones to discharge.

Work has gone remote. So has banking, grocery shopping, notary services, and pretty much everything else. Hospitalization is next. It won't be easy, but it will happen. Once health care providers, payers, and regulators catch up with the technology that already exists, the hospitals of tomorrow will expand to the home as they become smaller, more affordable, and better versions of what we have today.

Rob Rohatsch is an emergency medicine physician, chief medical officer of Solv Health, former CEO for the Banner Health System Urgent Care platform, and a faculty member at the Haslam School of Business at the University of Tennessee.

Energy Weapon Only 'Plausible' Explanation for Some Cases of Havana Syndrome

By Jeff Seldin

Source: https://www.homelandsecuritynewswire.com/dr20220204-energy-weapon-only-plausible-explanation-for-some-cases-of-havana-syndrome

Jan 04 – U.S. intelligence agencies may have ruled out the idea that a rash of mysterious illnesses plaguing American diplomats and other officials is part of a sustained campaign by one of Washington's adversaries, but they now say that in a small number of cases the only likely explanation is the use of some sort of weapon.

A report released Wednesday by a panel of experts assembled by U.S. intelligence officials finds that the core symptoms in these cases are "distinctly unusual and unreported elsewhere in the medical literature," making it highly unlikely the cause could be natural.

"Pulsed electromagnetic energy, particularly in the radiofrequency range, plausibly explains the core characteristics," the report said.

"Sources exist that could generate the required stimulus, are concealable, and have moderate power requirements," the report added.

"Using nonstandard … antennas and techniques, the signals could be propagated with low loss through air for tens to hundreds of meters, and with some loss, through most building materials."

The mystery illness was first reported in 2016 among diplomats and other employees at the U.S. Embassy in Havana, Cuba.

Since then, hundreds of cases have been reported in Russia, China, Poland, Austria and elsewhere, with symptoms ranging from nausea and dizziness to debilitating headaches and memory problems.
The U.S. government has been engaged in a yearlong effort to find the source of the anomalous health incidents, or AHI, commonly called Havana Syndrome.
An interim report issued last month by the U.S. Central Intelligence Agency (CIA), concluded most of the cases "can be reasonably explained by medical conditions or environmental and technical factors, including previously undiagnosed illnesses."
However, it warned that a smaller number of cases continued to defy explanation and that, in those cases, officials "have not ruled out the involvement of a foreign actor."
Wednesday's report appears to support that conclusion, though officials said the latest effort was not focused on assigning responsibility for the possible attacks.
"There are a small number of the cases we looked at that had no other plausible mechanism," according to one U.S. intelligence official familiar with the expert panel's work who spoke to reporters on the condition of anonymity.

Mystery Remains

Exactly how the possible attacks were carried out, though, remains a mystery.
"We don't have a specific device," said a second official, who like the first was familiar with the panel's work.
But the official said the idea that some cases of Havana Syndrome are the result of a weapon of some sort is "more than a theory."
"We had accounts of people that had been around RF [radio frequency] energy inadvertently and describe symptoms like that," the official added.
The notion that a directed, pulsed radio frequency mechanism was behind key symptoms of Havana Syndrome — the quick onset of pain or problems with the inner ear, including a loss of balance, dizziness and nausea — was first raised in 2020 the National Academy of Sciences, which called such as source "the most plausible mechanism in explaining" the growing number of cases.
Wednesday's report affirmed that finding, but also left open the possibility that some of the cases could have been caused by a device using ultrasound technology, though it said an ultrasonic device would only be able to produce the right combination of symptoms if deployed in close proximity to the victim.

Making Progress

In a statement Wednesday, the U.S. Director of National Intelligence Avril Haines and CIA Director William Burns said the effort to determine the cause of Havana Syndrome is making progress.
"We continue to pursue complementary efforts to get to the bottom of Anomalous Health Incidents (AHIs) — and to deliver access to world-class care for those affected," they said in a statement.
"We will stay at it, with continued rigor, for however long it takes," they added. "Nothing is more important than the wellbeing and safety of our colleagues."
Officials familiar with the work on Havana Syndrome said Wednesday "it's frustrating" not being able to get a clear-cut, definitive answer as to what has happened to as many as a couple of dozen of their colleagues and U.S. diplomatic personnel.
But they said that despite the many unknowns, the latest findings do offer hope for those who have been impacted.
"We've learned a lot," one of the officials said. "While we don't have the specific mechanism for each case, what we do know is if you report quickly and promptly get medical care, most people are getting well."
The report also recommended the U.S. create a central database to collect information on future reported cases, develop a set of so-called "bio-markers" to better identify new cases, try to develop technology capable of detecting an attack, and improve communications.
The White House Wednesday welcomed the report's findings.
"The [experts] panel undertook a rigorous, multi-disciplinary study that has identified important findings and recommendations," a National Security Council spokesperson said in a statement.
The findings "will inform intensive research and investigation moving forward as we continue our government-wide effort to get to the bottom of AHI," the spokesperson added.
U.S. President Joe Biden on Tuesday named a top official to lead the government's interagency response to Havana Syndrome.

Jeff Seldin is *VOA* national security reporter. VOA's Carla Babb and Patsy Widakuswara contributed to this report.

Shame on Spain! ¡Qué vergüenza España!

¡Cobardes!

450 deer and wild boar were slaughtered during a day's commercial hunting (€1,000/day) on a private estate in Villaviciosa de Córdoba, in the Sierra Morena hills of Andalucia, where the animals were penned in by fences.

Experts Suggest U.S. Embassies Were Hit with High-Power Microwaves – Here's How the Weapons Work

By Edl Schamiloglu

Source: https://www.homelandsecuritynewswire.com/dr20220204-experts-suggest-u-s-embassies-were-hit-with-highpower-microwaves-here-s-how-the-weapons-work

Feb 04 – Some of the cases of the mystery ailment that has afflicted U.S. embassy staff and CIA officers off and on since 2016 in Cuba, China, Russia and other countries most likely were caused by pulsed electromagnetic energy, according to a report by a panel of experts convened by national intelligence agencies.

The report's findings are similar to those of another report released by the National Academies in 2020. In that report, a committee of 19 experts in medicine and other fields concluded that directed, pulsed radiofrequency energy is the "most plausible mechanism" to explain the illness, dubbed "Havana syndrome."

Neither report is definitive, and their authors don't address who targeted the embassies or why they were targeted. But the technology behind the suspected weapons is well understood and dates back to the Cold War arms race between the U.S. and the Soviet Union.

High-power microwave weapons are generally designed to disable electronic equipment. But as the Havana syndrome reports show, these pulses of energy can harm people, as well.

As an electrical and computer engineer who designs and builds sources of high-power microwaves, I have spent decades studying the physics of these sources, including work with the U.S. Department of Defense. Directed energy microwave weapons convert energy from a power source – a wall plug in a lab or the engine on a military vehicle – into radiated electromagnetic energy and focus it on a target. The directed high-power microwaves damage equipment, particularly electronics, without killing nearby people.

Two good examples are Boeing's Counter-electronics High-powered Microwave Advanced Missile Project (CHAMP), which is a high-power microwave source mounted in a missile, and Tactical High-power Operational Responder (THOR), which was recently developed by the Air Force Research Laboratory to knock out swarms of drones.

Cold War Origins

These types of directed energy microwave devices came on the scene in the late 1960s in the U.S. and the Soviet Union. They were enabled by the development of pulsed power in the 1960s. Pulsed power generates short electrical pulses that have very high electrical power, meaning both high voltage – up to a few megavolts – and large electrical currents – tens of kiloamps. That's more voltage than the highest-voltage long-distance power transmission lines, and about the amount of current in a lightning bolt.

Plasma physicists at the time realized that if you could generate, for example, a 1-megavolt electron beam with 10-kiloamp current, the result would be a beam power of 10 billion watts, or gigawatts. Converting 10% of that beam power into microwaves using standard microwave tube technology that dates back to the 1940s generates 1 gigawatt of microwaves. For comparison, the output power of today's typical microwave ovens is around a thousand watts – a million times smaller.

The development of this technology led to a subset of the U.S.-Soviet arms race – a microwave power derby. When the Soviet Union collapsed in 1991, I and other American scientists gained access to Russian pulsed power accelerators, like the SINUS-6 that is still working in my lab. I had a fruitful decade of collaboration with my Russian colleagues, which swiftly ended following Vladimir Putin's rise to power.

Today, research in high-power microwaves continues in the U.S. and Russia but has exploded in China. I have visited labs in Russia since 1991 and labs in China since 2006, and the investment being made by China dwarfs activity in the U.S. and Russia. Dozens of countries now have active high-power microwave research programs.

Lots of Power, Little Heat

Although these high-power microwave sources generate very high power levels, they tend to generate repeated short pulses. For example, the SINUS-6 in my lab produces an output pulse on the order of 10 nanoseconds, or billionths of a second. So even when generating 1 gigawatt of output power, a 10-nanosecond pulse has an energy content of only 10 joules. To put this in perspective, the average microwave oven in one second generates 1 kilojoule, or thousand joules of energy. It typically takes about 4 minutes to boil a cup of water, which corresponds to 240 kilojoules of energy.

This is why microwaves generated by these high-power microwave weapons don't generate noticeable amounts of heat, let alone cause people to explode like baked potatoes in microwave ovens.

High power is important in these weapons because generating very high instantaneous power yields very high instantaneous electric fields, which scale as the square root of the power. It is these high electric fields that can disrupt electronics, which is why the Department of Defense is interested in these devices.

How It Affects People

The National Academies report links high-power microwaves to impacts on people through the Frey effect. The human head acts as a receiving antenna for microwaves in the low gigahertz frequency range. Pulses of microwaves in these frequencies can cause people to hear sounds, which is one of the symptoms reported by the affected U.S. personnel. Other symptoms Havana syndrome sufferers have reported include headaches, nausea, hearing loss, lightheadedness, and cognitive issues.

The report notes that electronic devices were not disrupted during the attacks, suggesting that the power levels needed for the Frey effect are lower than would be required for an attack on electronics. This would be consistent with a high-power microwave weapon located at some distance from the targets. Power decreases dramatically with distance through the inverse square law, which means one of these devices could produce a power level at the target that would be too low to affect electronics but that could induce the Frey effect.

The Russians and the Chinese certainly possess the capabilities of fielding high-power microwave sources like the ones that appear to have been used in Cuba and China. The truth of what actually happened to U.S. personnel in Cuba and China – and why – might remain a mystery, but the technology most likely involved comes from textbook physics, and the military powers of the world continue to develop and deploy it.

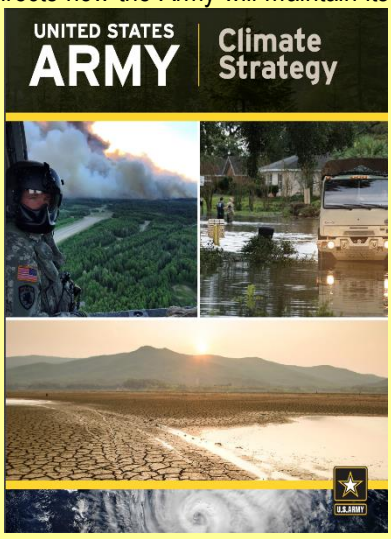
Edl Schamiloglu is Distinguished Professor of Electrical and Computer Engineering, University of New Mexico.

EDITOR'S COMMENT: It seems that Americans are obsessed with this Havana Syndrome most probably because they did not invent the microwave (?) weapon first.

U.S. Army Releases Its Climate Strategy

Source: https://www.homelandsecuritynewswire.com/dr20220208-u-s-army-releases-its-climate-strategy

Feb 08 – The U.S. Army announces the release of its first Climate Strategy that guides decision making in response to threats from climate that affect installation and unit sustainability, readiness, and resilience. The strategy directs how the Army will maintain its strategic advantage through deliberate efforts to reduce future climate impacts and risks to readiness and national security.



Experts have shown that climate change increases worldwide drought and insecurity, which places demands on fragile states and contributes to food scarcity, migration, and security concerns, and threatens U.S. national security interests and defense objectives. As a guide for future decisions, this strategy is the next step in the Army's decades-long effort to combat climate change in support of national security interests.

"The time to address climate change is now. The effects of climate change have taken a toll on supply chains, damaged our infrastructure, and increased risks to Army Soldiers and families due to natural disasters and extreme weather," said Secretary of the Army, Christine Wormuth. "The Army must adapt across our entire enterprise and purposefully pursue greenhouse gas mitigation strategies to reduce climate risks. If we do not take action now, across our installations, acquisition and logistics, and training, our options to mitigate these risks will become more constrained with each passing year."

The Army developed its Climate Strategy as a roadmap of actions that will enhance unit and installation readiness and resilience in the face of climate-related threats. Changing climate conditions requires the Army to meet new operational challenges, expand disaster response missions, and address risks to our people and lands. These Army-wide efforts include enhancing resilience and sustainability on our installations, reducing sustainment demand, and preparing a climate-ready force with the appropriate knowledge, skills, concepts, and plans necessary to operate in a climate-altered world.

"The Army will remain the dominant land fighting force by adapting to changing global conditions including climate change," the Army says. "This strategy will position our installations and supply chains to better withstand extreme weather, improve our training relevancy to a changing world, and our Soldiers will fulfill their missions under the harshest conditions."

●▶ **Read the full paper on climate strategy here.**

Greece protests to Turkey over disco band at Sumela monastery

Source: https://www.reuters.com/world/europe/greece-protests-turkey-over-disco-band-sumela-monastery-2022-02-07/

Feb 07 – Greece's foreign ministry said on Monday images showing a band dancing to electronic music at the former Orthodox Christian Sumela monastery in Turkey were "offensive" and "a desecration" of the monument.

The ministry called on Turkish authorities "to do their utmost to prevent such acts from being repeated" and to respect the site, a candidate for UNESCO's list of world heritage sites.

"The recent images that were displayed on social media, in which a foreign band seems to be dancing disco in the area of the Historical Monastery of Panagia Soumela, are a desecration of this Monument," it said.

Turkish officials were not immediately available for comment.

Founded in the 4th century, Sumela is a monastic complex built into a sheer cliff above the Black Sea forest in eastern Turkey. It was long ago stripped of its official religious status and operates as a museum administered by the Culture Ministry in Turkey.

Thousands of tourists and Orthodox Christian worshippers journey to the monastery annually.

In 2010, Turkish authorities allowed the first Orthodox liturgy since ethnic Greeks were expelled in 1923 as part of a population exchange between Greece and Turkey. In 2015, the Sumela monastery was shut for restoration and reopened to tourists in 2019.

A liturgy to mark the Feast Day of the Virgin Mary was allowed in 2020 and 2021.

"It is surprising that the permit was given to the band, as the Monastery of Panagia Soumela opens only for pilgrims," the Greek foreign ministry said. "These images are

offensive and add to a series of actions by the Turkish authorities against World Heritage Sites," its statement said, without elaborating.
Greece and Turkey disagree on a range of issues from airspace to maritime zones in the eastern Mediterranean and ethnically split Cyprus.
The two countries have in the past crossed swords over the conversion of the nearly 1,500-year-old Hagia Sophia in Istanbul into a mosque. In July 2020 Islamic prayers were held at the ancient site for the first time in nine decades.

Remember?

Aug 29, 2020: More than 300 rioters threw stones at police and burned tyres in the southern Swedish city of Malmö (Rosengård) on Friday night after a video circulated of followers of the far-right Danish politician Rasmus Paludan burning a copy of the Qur'an near one of the city's mosques.

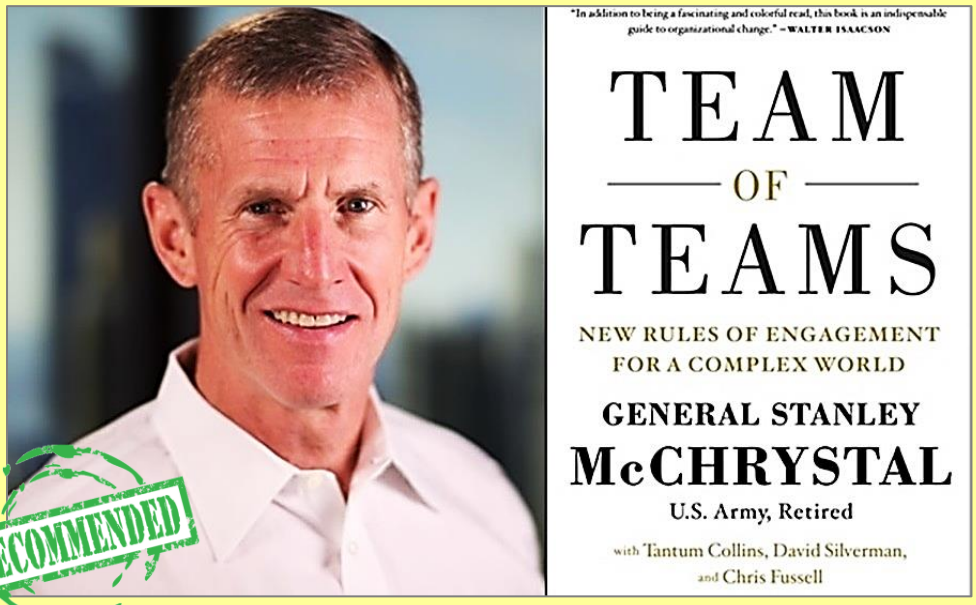
Lt. Éva 'Vivi' Horváth – A special helicopter pilot!

Click on photo to read why!

Team of Teams: New Rules of Engagement for a Complex World

Author: General Stanley McChrystal

Source: https://www.mcchrystalgroup.com/library/team-teams-new-rules-engagement-complex-world/



RECOMMENDED

From the *New York Times* bestselling author of *My Share of the Task* and *Leaders*, a manual for leaders looking to make their teams more adaptable, agile, and unified in the midst of change.

When General Stanley McChrystal took command of the Joint Special Operations Task Force in 2004, he quickly realized that conventional military tactics were failing. Al Qaeda in Iraq was a decentralized network that could move quickly, strike ruthlessly, then seemingly vanish into the local population. The allied forces had a huge advantage in numbers, equipment, and training—but none of that seemed to matter. To defeat Al Qaeda, they would have to combine the power of the world's mightiest military with the agility of the world's most fearsome terrorist network. They would have to become a "team of teams"—faster, flatter, and more flexible than ever.

In *Team of Teams*, McChrystal and his colleagues show how the challenges they faced in Iraq can be relevant to countless businesses, nonprofits, and organizations today. In periods of unprecedented crisis, leaders need practical management practices that can scale to thousands of people—and fast. By giving small groups the freedom to experiment and share what they learn across the entire organization, teams can respond more quickly, communicate more freely, and make better and faster decisions.

Drawing on compelling examples—from NASA to **hospital emergency rooms**—*Team of Teams* makes the case for merging the power of a large corporation with the agility of a small team to transform any organization.

Drayton calls the new model "team of teams." Instead of maintaining a traditional structure in which people work in hierarchies based on a function or a formal business unit, an organization operates as a constellation of teams that come together around specific goals.

The Einstein Effect: People Trust Nonsense More if They Think a Scientist Said It

By Conor Feehly

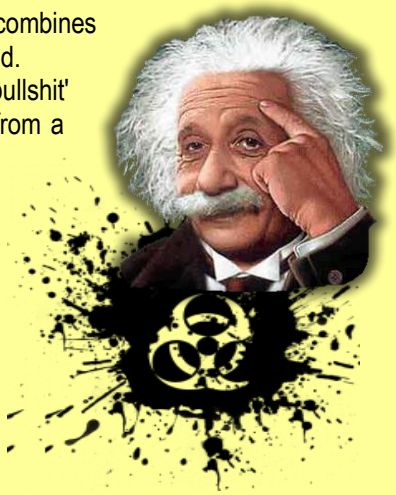
Source: https://www.sciencealert.com/the-einstein-effect-people-trust-nonsense-from-scientists-more-than-spiritual-gurus

Feb 13 – Discontinuity is the antithesis of inspiration. The complexity of the present time seems to demand an unveiling of our hopes if we are going to survive. This life is nothing short of a blossoming osmosis of mythic understanding. Sounds like bullshit? That's because it is.

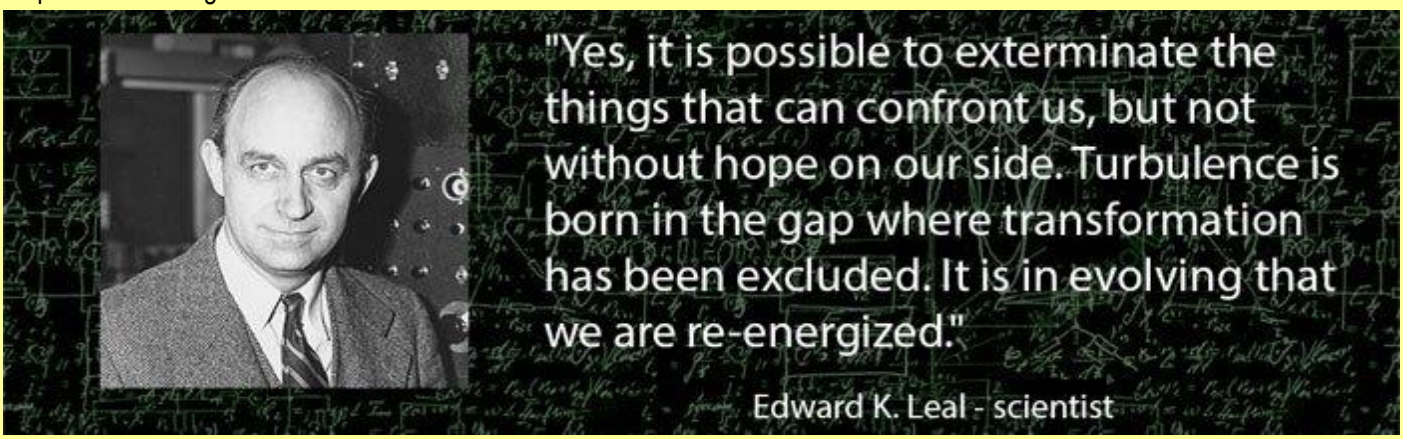
These statements were generated using the New Age Bullshit Generator, an algorithm that combines new-age buzzwords and seemingly intellectual wording to create phrases that *sound* profound.

An international team of researchers recently presented people with some 'pseudo-profound bullshit' created by the generator to see if they found the statements more credible if they came from a scientist or a spiritual guru.

In total, 10,195 participants from 24 countries answered questions relating to the supposed credibility of the statements; they were also asked about their own degrees of religiosity.



The results suggest that people generally find statements more credible if they come from a scientist when compared to a spiritual guru, with 76 percent of participants rating the 'scientist's' balderdash at or above the midpoint of the credibility scale, compared with 55 percent for the 'guru'.



(Hoogeveen et al., Nat. Hum. Behav., 2022 and New Age Bullshit Generator)

Additionally, individuals who scored high for religiosity still showed a preference for the statement from the scientist compared to the spiritual guru; however, it was relatively weaker than the general sample. Religious individuals also gave higher credibility judgments to gurus compared to the general sample but were still lower than the scientist.

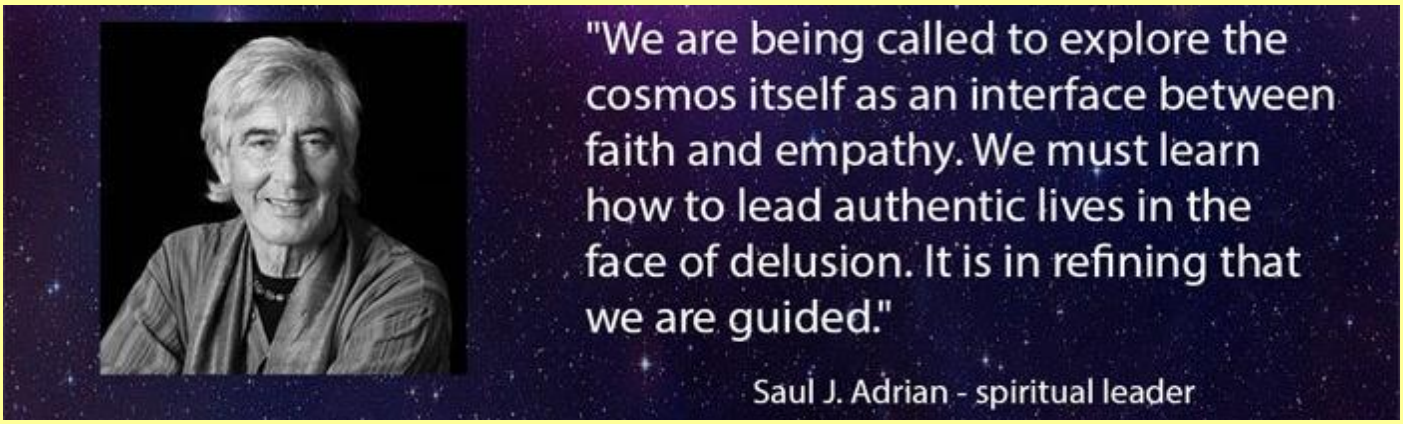
The authors think their results could be down to what's been previously called the 'Einstein effect', where trusted sources of information are given the benefit of the doubt because of the social credibility they possess.

"From an evolutionary perspective, deference to credible authorities such as teachers, doctors, and scientists is an adaptive strategy that enables effective cultural learning and knowledge transmission. Indeed, if the source is considered a trusted expert, people are willing to believe claims from that source without fully understanding them," state the researchers.

In other words, the concepts that Einstein could comprehend were outside the intellectual paygrade of most people, and so a certain level of trust that he knows what he is talking about has to be granted.

However, in some cases, the team suggests that incomprehensible statements from credible sources may be appreciated not just in spite of, but because of their incomprehensibility, demonstrated in the speech of some spiritual leaders – we can call this the 'Guru effect'.

A slightly different interpretation of the findings argues that the credibility of what someone is saying and who they are depends on individual and cultural factors, such as the perceiver's political ideology and worldview.



(Hoogeveen et al., Nat. Hum. Behav., 2022 and New Age Bullshit Generator)

"In the absence of the means to rationally evaluate a claim and reliable source information, people probably infer credibility based on beliefs about the group to which the source belongs (for example, 'conservatives', 'scientists'). In this process, similarities between one's own worldview and that of the source's group may serve as a proxy for being a benevolent and reliable source," note the authors.

Previous research has found Christians to require less evidence for religious claims (the efficacy of prayer to cure illness) than for scientific claims (the efficacy of medication to cure illness). Additionally, evangelical Christians are found more likely to accept statements opposing their personal views when the views are attributed to an ingroup religious leader compared to an outgroup religious leader.

In the current study, the authors chose to contrast 'scientist' with 'spiritual guru' instead of 'religious leader', because they wanted to make sure they selected an authority that wasn't specific to any particular religion, given that the study was taking place across different countries.

"Whereas religiosity and spirituality are overlapping but not interchangeable constructs, self-reported religiosity has been positively associated with belief in spiritual phenomena such as fate, spiritual energy, and a connected universe. Consequently, we expected religiosity to be associated with increased receptivity to gobbledegook from a spiritual authority," say the authors.

While there is variation across cultures with regards to who is deemed the more credible source of information, the authors bring up the point that, at some point in the past, scientists overtook spiritual and religious leaders as the main trustworthy sources of information, at least in terms of explanations for phenomena in the physical world.

It's no secret that information coming from a scientist is deemed trustworthy today, with a slew of advertising and political campaigns around the world drawing on scientists to validate their own products and ideas. Luckily, scientists and science in general encourage a good dose of skepticism when grand claims are made.

●▶ **The study was published in the journal** *Nature Human Behaviour.*

Adele Under Fire For 'I Love Being A Woman' Speech: Twitter Hotly Debates

Source: https://theblast.com/175665/adele-under-fire-for-i-love-being-a-woman-speech/

Feb 10 – At the BRIT awards held in London, earlier this week on Tuesday, Adele won three trophies to her credit. Plus, she performed on stage as well, in one stunning dress. Notably, this was the music awards' **first-ever gender-neutral event**, where there were no separate male and female categories. Instead, both male and female artists competed against one another in the same classifications of awards.

33-year-old Adele, stepped on the O2 Arena's spotlit stage to receive the venerated "Artist of the Year" award, beating out the likes of Ed Sheeran. After collecting the trophy, Adele made a speech, in which she said, **"I understand why the name of this award has changed but I really love being a woman and being a female artist. I do! I'm really proud of us, I really, really am."**

As she walked off to applause, a storm arose in social media, with many now accusing Adele of being TERF-y, if not a TERF (trans-exclusionary radical feminist).

EDITOR'S COMMENT: Enough with this global bullying! Enough with a minority trying to impose on the majority that being a "man" or a "woman" is not normal. That "mother" and "father" are not normal. Enough with the ridiculous show-off in all aspects of life, the military, politics, schools, etc. They are not going to change the world because of what they do in their private lives.

Drawing a better future for the Arabian-Gulf Security

Source: https://aue.ae/results-of-the-1st-international-arabian-gulf-security-conference-at-aue/

The 1st International Arabian-Gulf Security Conference was organized and hosted successfully by the American University in the Emirates (AUE) over two days Wednesday 10 and Thursday 11 November 2021. The Conference was held under the Patronage of and in the presence of His Excellency Lieutenant-General Dhahi Khalfan Tamim, Deputy Chairman of Dubai Police and General

Security in Dubai. The Conference was headed by the honorary Chair Major General Dr. Ahmed Nasser Al Raisi; chaired by

Professor Muthanna Abdul Razzaq, President and CEO of the AUE.

Participants hailed the conference's need, topics, timing and reasoning for such an organization. The Conference brought together, academics, researchers, practitioners and experts at the local and international levels to discuss the current status and future relations of Arabian Gulf Security. The conference was organized at an important moment in light of regional challenges yet also opportunities to convene and discuss the importance on peace and resolution of pending or ongoing conflicts.

As a highlight to the Conference, His Excellency Lieutenant-General Dhahi Khalfan Tamim, Deputy Chairman of Dubai Police and General Security in Dubai, stated that “the AUE's interest in organising an annual security conference and promoting the security culture in society is one of the strategies that people should pay attention to because it is extremely important."

"When a society's security is stable, individuals are able to live better lives, which emphasizes the need of instilling a security culture in society. We observe what has happened and continues to happen in nations where security and security culture are lacking," he added.

Professor Muthanna Abdul Razzaq, President and CEO of the AUE, stated during the Conference that "the Arab Gulf, Arab countries, through which also the Gulf Cooperation Council constitute a particularly crucial region in all respects and circumstances, in addition to its worldwide and not just regional significance. From this standpoint, we took the initiative to hold this Conference in order to explore the region's security challenges from a variety of perspectives that will help up comprehend yet also propose issues for consideration."

US Ambassador Mark Andrew Green CEO and President of the Woodrow Wilson Center from the Washington DC, lauded the AUE Conference, calling it “very crucial” for the region for both the UAE and the region particularly due to its importance in identifying methods and features for a brighter more stable and secure future in the Arabian-Gulf region.

Elements achieved through the 1st International Arabian Gulf Security Conference.

Highlighted important personalities and key experts joining the conference include H.E. Major General Ahmed Nasser Al Raisi, Chairman of the Board of Trustees of the AUE, retired US Ambassador Mark Andrew Green, President and CEO of the Woodrow Wilson

International Centre for Scholars in Washington, Major General Thani Butti Al Shamsi, Director of the Saif Bin Zayed Academy of Police and Security Sciences, Engineer Anwaar Al Shimmari from the Federal Geographic Information Center - Abu Dhabi, and Vladimir Tomašević from Union Nikola Tesla University School of Engineering - Serbia, participated in the opening session of the Conference.

The Conference is thankful to the collaborating partners of this years' conference, to include The Hoplite Group, the Federal Authority for Identity and Citizenship, H.E. Sheikh Abdulaziz bin Duaij bin Khalifa al Khalifa Private Office, Expo 2020 Dubai, the International Association for Intelligence Educators (IAFIE), the Center for Sea Power and Strategy At Plymough University UK, The Center for Global Security and Defence Affairs UAE & Egypt, The Center for Global and Strategic Studies Islamabad, the Georgian Center for Strategic Studies and Environmental Research.

During the conference, more than 200 papers were submitted and 55 papers were successfully accepted to be presented with 75 authors/co-authors, which included, 4 tracks of presented papers to include security and law affairs, economic warfare and diplomacy and international affairs, peace and conflict resolution and military affairs and technology and cyber-security, on the most recent developments and the future on the security, resilience, and growth of the Arabian-Gulf region.

Among others, topics like money laundering and financial crimes in the Middle East and North Africa, comprehension of international alliances in the Gulf and greater MENA region, recommended the way to implementing security convergence management and tackling threats were all covered and reviewed during the Conference sessions. The importance and role of water security and stadium security was included. Game-changing factors in cyber security were added to the historical development of fake news and its danger to societies, analysis of the phenomenon of conflicts and examining their causes and complexity, biological terrorism threats and ways to address them through strategic foresight were among the topics discussed as well while also methods of peace and conflict resolution. Moreover, sessions touched on cybercrime and technology, military technology issues such as the utility of drones for the Arabian-Gulf area, and the ramifications for future strategy and tactics. The attendees also considered Gulf security in terms of possibilities for stability and commercial continuity, as well as strategies to strengthen peace between the Arabian Gulf's two shores. During the opening of our second

day of our Conference a highlight included the talk of Major General Abdulla Al Hashmi, Member of the Board of Trustees of the AUE, who inaugurated the second day on UAE's regional concerns and issues and security. Other topics centred on the complexity of the regional security challenges, factors against threats of asymmetrical threats and terror groups, the need for joint collaboration in international governance and cooperation to face current and future challenges. The 1st International Arabian-Gulf Security Conference, already in its inaugural edition, is seen as a springboard for the second edition, which will take place next year in 2022. This Conference stems from the AUE's keenness to graduate competent and educated leaders and research experts, who make sound and important decisions for society and their nation.

EDITOR'S COMMENT: The Editor participated in this important conference addressing the topic of nuclear energy safety and his lecture ("Nuclear energy: It is green but is it safe?") was awarded the first research prize 😊

For CBRN First Responders designing now the future of their boys and girls

Source: https://www.dailymail.co.uk/sport/football/article-10523285/Paris-Saint-Germain-offer-make-Kylian-Mbappe-highest-paid-footballer-world.html

Paris Saint-Germain 'offer to make Kylian Mbappe the highest-paid footballer in the world - on a deal worth up to £1m PER WEEK' (~62,000,000 euro/year) as they attempt to convince France striker to stay amid strong interest from Real Madrid (but only 50,000,000 euro/year).

EDITOR'S COMMENT: I am sure that many of you, CBRN First Responders, are thinking/dreaming about what they could do for their team, unit or organization with just ONE week's compensation. Forget all about pushing your children to go to university becoming doctors, architects, chemists, astronauts. The most important thing in the world is to know how to kick a ball. So simple!

Turkish and Pakistani Islamism Finds Common Cause in the West

By Clifford Smith

Source: https://www.meforum.org/63018/turkish-pakistani-islamism-common-cause-west

Feb 14 - Last year, in a speech before the UN General Assembly, Recep Tayyip Erdoğan, Turkey's Islamist-leaning President, suggested that the UN had to help solve the issue of Kashmir, a disputed region between India and Pakistan.

This was the second year in a row that Erdoğan raised this issue – one in which Turkey previously had little concern, and which is widely considered by the international community to be an issue internal to India, to be solved bilaterally with Pakistan. In September, the Turkish and Pakistani foreign ministers also met at the UN, cementing the increasing closeness in their relationship.

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

Clifford Smith is director of the Middle East Forum's Washington Project.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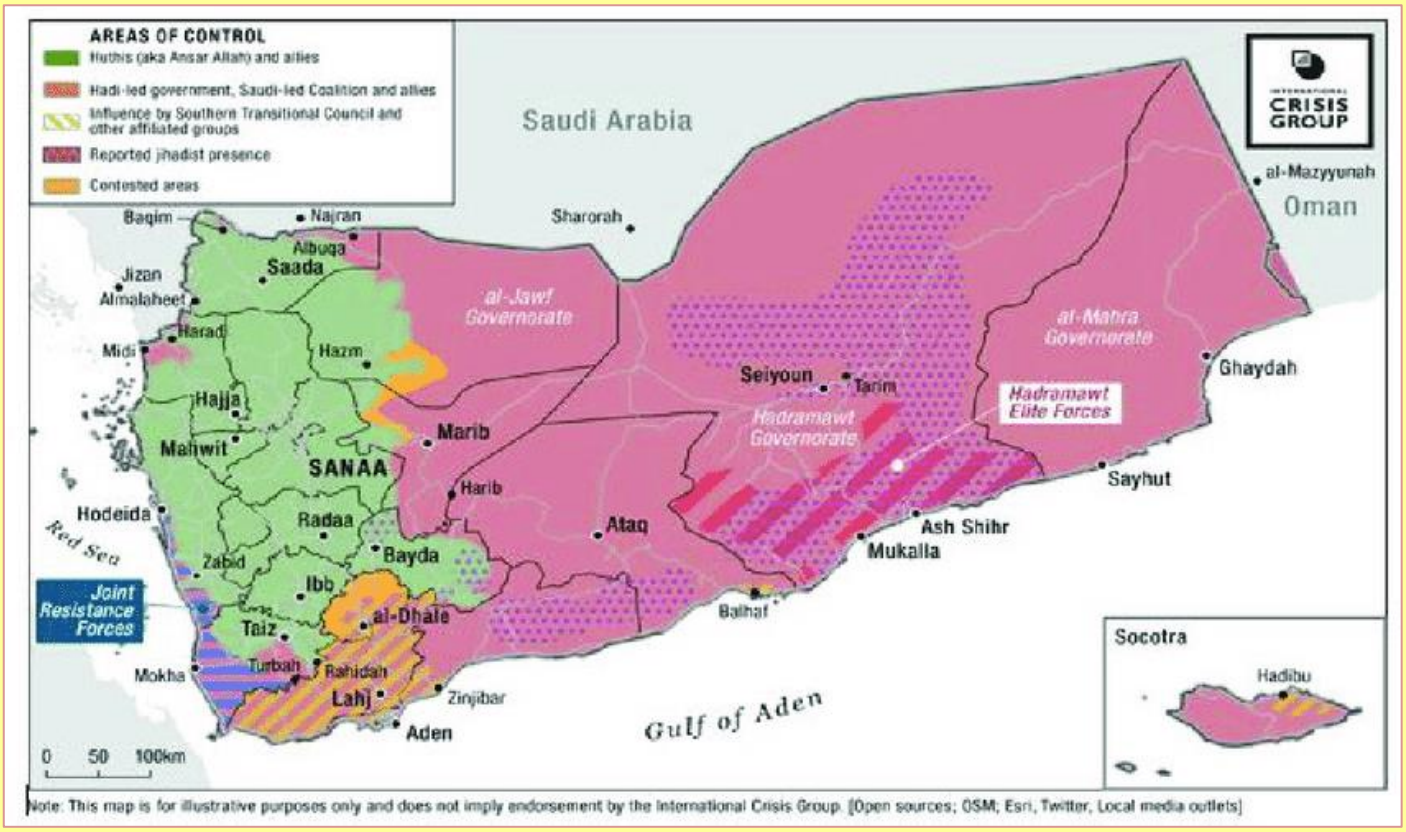
Call the Houthis What They Are — Foreign Terrorists

By Richard Kemp

Source: https://www.gatestoneinstitute.org/18172/houthis-foreign-terrorists

Jan 26 – This week, Ansar Allah ("Supporters of God"), also known as the Houthis, an Iranian-backed armed militia in Yemen, launched ballistic missiles against civilian targets in the United Arab Emirates and Saudi Arabia. This followed a missile and drone strike last week that killed three in Abu Dhabi, the capital of the UAE.

These are only the latest aerial attacks by Ansar Allah against the two countries, on top of the large-scale violence, deprivation, and suffering it has inflicted on the civilian population of Yemen. Despite Ansar Allah's depredations, almost immediately after he took office US President Joe Biden removed the group's Foreign Terrorist designation that had been imposed by President Donald Trump. Following last week's Abu Dhabi attack, Biden said he will consider reversing the decision. That would be the right move and he should do it immediately.



Before he de-listed Ansar Allah, Biden also ended Obama's and Trump's policies of support for Saudi Arabia's offensive military operations against the group, including arms supplies. Together these steps emboldened Ansar Allah and their Iranian sponsors and reduced Saudi Arabia's capacity to fight against them.

A US State Department spokesman claimed at the time that the de-listing of Ansar Allah had "nothing to do with" their "reprehensible conduct". So what was it about? Biden claimed the de-listing and cessation of military support to the Saudis would somehow contribute towards ending the conflict. He also suggested it would enable more effective delivery of humanitarian aid to the destitute people of Yemen whom the Ansar Allah have been holding as hostages, and which Ansar Allah had apparently been blocking.

Two other factors undoubtedly influenced Biden's decision, perhaps even more than what he must have known was a vain hope of conflict resolution.

First, he was already on a spree of reversing any policy with Trump's fingerprints on it.

Perhaps even more importantly however, was that Biden, desperate to restore Obama's deeply-flawed nuclear agreement with Iran, may have hoped these concessions would play well in Tehran, given the reality of the ayatollahs' use of Yemen as a proxy war against Saudi Arabia.

Biden's moves were a classic example of the failure of appeasement. Inevitably, the Iranian ayatollahs were not won over by these and other US placations. Instead they have become increasingly hard-nosed, demanding more US compromises in exchange for fewer restrictions on their nuclear weapons project -- a typical Iranian regime response to perceived weakness.

Meanwhile, according to the UN, since being de-listed Ansar Allah has stepped up its aggression, including increased Iranian-supported drone strikes against US allies in the region as we have seen continuing in recent days.

The Ansar Allah insurgency, now in its seventh year, has led to a humanitarian crisis branded by the UN as the worst in the world, with large-scale human rights abuse and more than 230,000 estimated dead. Vast numbers have been displaced, deprived of food, medicines and basic services and the country has seen the largest cholera outbreak ever recorded, with 2.5 million suspected cases. An estimated 400,000 children are suffering from malnutrition. Twenty million people, two thirds of the population, are assessed by the UN to be in need of humanitarian aid.

Ansar Allah now controls Yemen's capital, Sanaa, and 60% of the country, with around 50% of the population under its tyranny, which is reminiscent of the Islamic State. Ansar Allah carries out mass public executions, torture, assassinations and bomb attacks on government officials; murders civilians with snipers, missiles, drones, mines and car bombs; uses child soldiers and sexual violence and destroys civilian infrastructure and aid warehouses. It has been confirmed seizing vessels and accused of attacks on shipping in the Red Sea. It has sought to blackmail the UN by imposing ever more conditions on plans to make safe a deteriorating oil storage tanker, the Safer, moored off the city of Al Hudaydah. The vessel contains an estimated 1.1 million barrels of crude oil, and threatens an environmental crisis that will devastate much of the region, destroy local fish stocks and deprive eight million Yemenis of access to running water.

Ansar Allah's bloodthirsty motto is: "Allah is greater, death to America, death to Israel, curse on the Jews, victory to Islam". Previous US military defensive action may have deterred it, but Ansar Allah still represents a direct terrorist threat to the US. In the past it has taken American citizens hostage and in 2016 fired anti-ship missiles at US vessels off the coast of Yemen. The first damaged a US transport ship leased to the UAE and subsequent strikes against two US warships were deflected by naval countermeasures.

Ansar Allah also jeopardises wider American interests in the region, as well as its allies. As mentioned, we have seen strikes on Saudi Arabia and the UAE, both members of the Arab coalition fighting against them. Its ambitions may be broader. Ansar Allah has frequently threatened Israel, and last May one of its leaders proclaimed the movement was "shoulder to shoulder" in the fight against the Jewish state. It has the Iranian-supplied drones and missiles to turn such rhetoric into reality, perhaps as part of a Tehran-coordinated attack.

So far the West has proved impotent in helping to end this devastating war, with all efforts at agreeing a negotiated settlement frustrated largely due to Ansar Allah's intransigence. Its violent offensive against Yemen's Marib Governorate that began last February is further evidence that — with Iranian backing — it continues to seek only the path of war. As events since Biden became president have shown, appeasement is the opposite of the answer. Appeasement not only emboldened the group; it granted a major concession without any reciprocation, making its cooperation in any negotiations less likely and further undermining the already virtually non-existent leverage of the international community.

Like America, Britain has significant national interests to defend in the Gulf, and Saudi Arabia and the UAE are key allies and trading partners. Despite strong pressure, the UK did not follow the US lead in ceasing arms supplies and other military support to Saudi. It continued to recognise the value of providing precision weapons, intelligence and targeting support both in the interests of reducing collateral damage and increasing the effectiveness of operations against Ansar Allah.

Lord Sharpe, a British government front bench spokesman, commented last week that the UK was keeping under review the designation of the Iranian Islamic Revolutionary Guard Corps acknowledging that its role includes supporting Ansar Allah. The government should certainly do this, and also designate Ansar Allah as a Proscribed Terrorist Group, irrespective of any US decision.

Re-designating Ansar Allah, a move that is supported by the internationally-recognised government of Yemen, will not end the conflict. But it will damage the terrorist group, enabling asset-freezing and further US sanctions and pressurising other nations to follow suit. However, as Ansar Allah depends mainly on clandestine support from Iran, illegal taxation, theft of resources including international aid and profiteering, rather than the international financial system, the economic effects will be limited.

Re-designation will enable prosecution of Ansar Allah members and those supporting them as well as potentially providing a useful tool in any future peace talks.

Re-designation would not prevent Iran from continuing to fuel the Yemen insurgency but it would send a message of US strength to Tehran, one sorely needed in the months following the Afghanistan debacle and the administration's open desperation to renew the nuclear deal at almost any price.

Yemen is only one front in Iran's widespread regional aggression that embraces Iraq, Lebanon, Syria and Israel. It is essential that the US renew its strong opposition to Iran's expansionist actions, countering them at every opportunity. That would include supporting

regional allies and fully restoring arms sales to Saudi Arabia for its fight against Iranian proxies in Yemen. An implacably hard-line stance towards these terrorists is essential to reassure US allies that there are consequences for violence against them.
Such policies, of course, are in direct opposition to Biden's over-arching determination to return to the nuclear deal, which should, in any case, be abandoned in the interests of regional and global security.
Other than the nuclear deal miscalculations, the only argument against re-designation of Ansar Allah is the effect it might have on commercial imports and international aid which are vital to the people of Yemen. Suppliers and shipping companies would be concerned about the consequences of breaching US sanctions and humanitarian agencies would be worried that their work could lead to legal action for cooperating with a designated terrorist group.
The US administration could overcome this by granting broad licenses and waivers to organizations and companies operating in and around Yemen, enabling essential supplies including food, fuel and medicines to be delivered. This would also need to take account of Ansar Allah's demands for bribes from aid agencies, and their propensity to steal aid for their own profit. This is a challenge the US administration has so far side-stepped but must now clarify.
No doubt such a licensing regime would introduce further complications to the already desperate and fraught humanitarian programmes — on top of the theft of aid by Ansar Allah. But such additional bureaucratic effort is a price that needs to be paid for the wider political and strategic benefits in countering Iranian and Ansar Allah violence.

Colonel Richard Kemp is a former British Army Commander. He was also head of the international terrorism team in the U.K. Cabinet Office and is now a writer and speaker on international and military affairs. He is a Jack Roth Charitable Foundation Fellow at Gatestone Institute.

EDITOR'S COMMENT: It was almost impossible to find a map indicative of who is controlling what in Yemen. The overall conclusion was that the Houthis control only a small (Eastern) but densely populated part of the country disproportional to their missile/drone activity. Missiles are big pieces of equipment and should be transferred by the sea – not very difficult to spot and confiscate. So, why do they keep on coming? You might say that you do not need to import them if you know how to manufacture them, but even though …

Afghanistan Tops 2021 Global Survey of Islamic State Casualties

Source: https://www.voanews.com/a/afghanistan-tops-2021-global-survey-of-islamic-state-casualties-/6415735.html

A screen grab shows people carrying an injured person to a hospital after an attack at Kabul's airport, in Kabul, Afghanistan, Aug. 26, 2021. An Islamic State offshoot claimed responsibility for deadly suicide attacks outside the airport.

Jan 27 – A survey of the Islamic State group's attacks around the world in 2021 indicates the group killed and injured more people in Afghanistan last year than it did anywhere else, and experts warn the terror group is on the rise following the U.S. military withdrawal from the country.

Widely known as ISIS, the group conducted its most deadly attack in 2021 last August at the Kabul International Airport when a suicide bomber killed 170 Afghan civilians and 13 U.S. military personnel.

During 2021, Islamic State carried out 365 terrorist attacks in Afghanistan that caused 2,210 casualties, a significant increase compared with 2020 when 82 IS attacks that caused 835 casualties were reported, according to an Israeli think tank, the Meir Amit Intelligence and Terrorism Information Center.

Globally, IS operatives carried out 2,705 attacks resulting in 8,147 casualties. Iraq stood second to Afghanistan in casualties with 2,083. The Meir Amit group uses Islamic State's claims of responsibility, as published in public sources, to attribute responsibility for attacks.

"The increase in ISIS activity in Afghanistan (especially in the second half of the year) came in the wake of the pullout of U.S. forces from the country, the disintegration of the old regime and the takeover of the country by the Taliban movement," the center, which has tracked Islamic State attacks around the world for more than a decade, said in a report published this week.

The United Nations, which tracks civilian casualties in Afghanistan, has not yet released its final report for 2021. During the first half of 2021, the United Nations reported at least 1,659 Afghan civilians were killed and 3,524 were injured. Of those, the U.N. blamed 39 percent on Taliban insurgents and less than 10 percent on Islamic State fighters.

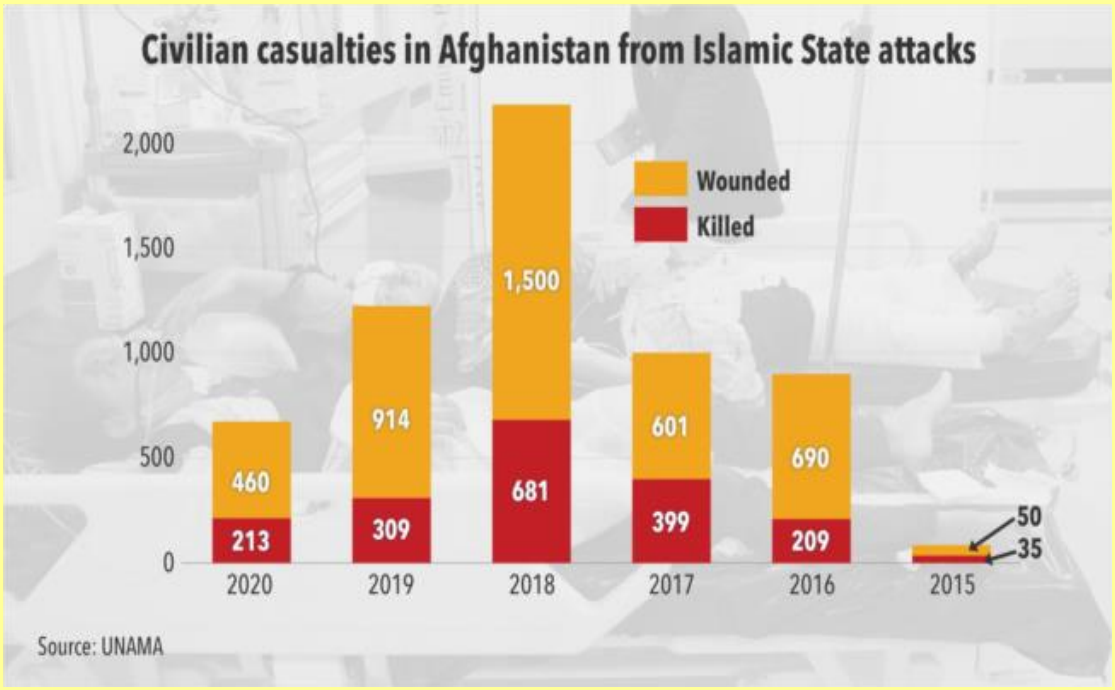
The rise in the number of civilians killed in IS attacks came as Afghanistan was expecting an end to war-related casualties after almost two decades of fighting between the U.S. and Taliban forces.

Thousands of Afghans were killed and wounded during the Taliban's brutal insurgency, which started immediately after the U.S. military invaded Afghanistan in late 2001 and lasted until the last U.S. soldier left the country in August 2021.

The victims

Even before the U.S. military withdrawal, the United Nations reported rising civilian casualties caused by Islamic State's offshoot in Afghanistan, the Khorasan Province, which is also known as IS-K.

In the first half of 2021, more than 124 Afghan civilians were killed and 315 were wounded in Islamic State attacks – a 45 percent increase compared with the same period in 2020, the U.N. Assistance Mission in Afghanistan (UNAMA) reported.



Analysts warn the terror group is on the rise again

Even while the Taliban claim they have ended the war and restored peace in Afghanistan, IS fighters have continued attacking civilians in different parts of the troubled country.

Last week, the group claimed responsibility for an attack in Herat city, west of Afghanistan, which killed at least six and wounded several other civilians.

Since its emergence in 2015 in eastern Afghanistan, bordering Pakistan, the IS Afghan affiliate has caused more than 7,000 civilian casualties (including over 2,200 deaths) in the country, according to a tally of U.N. totals and other reports.

Fighters with IS-Khorasan, the affiliate in Afghanistan, vow allegiance to new Islamic State leader Abu Ibrahim al-Hashimi al-Qurashi, in this photo issued Nov. 5, 2019, by SITE Intelligence Group.

IS-Khorasan primarily targets Shia communities — mosques, schools and residential areas — in Afghanistan. Shias account for about 12 percent of the country's estimated 35 million population.
The group has also attacked journalists, civil society activists and health workers.
IS-Khorasan attacks, human rights groups say, amount to crimes against humanity.
There are growing concerns now that in the absence of strong counterterrorism operations in Afghanistan, IS has found a conducive environment in the country to regenerate force and launch even more deadly attacks.
"It's not difficult to carry out operations targeting civilian targets," Matthew Levitt, a counterterror expert at the Washington Institute for Near East Policy, told VOA, adding that while Islamic State can cause a lot of disruptions in Afghanistan, it appears unable to topple the Taliban regime, at least in the near future.

Has MI5 learned its lesson from the Manchester Arena bombing?

By Duncan Gardham
Source: https://www.spectator.co.uk/article/has-mi5-learned-its-lesson-from-the-manchester-arena-bombing-

Jan 27 – The Manchester Arena Inquiry has adjourned for three weeks as its chairman Sir John Saunders considers the last, and most secret, part of the evidence. It involves the critical issue of why Salman Abedi was investigated by MI5 and found to pose no risk, and why his case was never re-opened.
At the centre of the Inquiry is a nugget of information which, MI5 says, cannot be trusted to the public, even five years after the attack. After Abedi's case was closed, two pieces of intelligence were received in the months before the bombing. These were assessed to be 'innocent activity' or 'non-terrorist criminality'. But in retrospect, the intelligence was 'highly relevant to the planned attack', the Security Service has conceded, even if 'the significance of it was not fully appreciated at the time'. So could the Manchester bombing – in which 22 innocent lives were lost – have been prevented?
We now know that a meeting was due to take place nine days after the attack to re-assess the bomber, Salman Abedi. The decision to hold that discussion was based on a fresh piece of intelligence, received a year earlier. But the meeting was, of course, 'tragically overtaken by events', as the inquiry has heard. Yet the most crucial part of the intelligence picture of Abedi remains under wraps.

Saunders has accepted MI5's assertion that there is 'centrally important material' relevant to the question of whether they could have prevented the attacks that cannot be revealed to the public. As a result of that decision, for the first time since 9/11, hearings at an inquiry or inquest into a terrorist attack have taken place behind closed doors. However, Saunders pledged to question three witnesses from the Security Service himself, over the course of three weeks of hearings in November and to make any information public he believed could be safely released. Decision time is approaching in the next few days about what that might be.

It is a process, known to those of us who operate in this world, as 'gisting'. It dates back to the closed material procedures against al-Qaeda suspects in 2009. The essence, or 'gist', of the information, stripped of its sourcing, tells us what the security services knew, but not how they found it out. Already, we can have an educated guess at what the pieces of intelligence may relate to.

Salman Abedi had links to a drug dealing gang; and hydrogen peroxide, the key ingredient for the bomb, could also be used to clean the clay pellets used in hydroponics to grow cannabis plants. A friend of Abedi's was also involved in a fraud to rip off Amazon – the source of his bomb-making ingredients – by claiming that his account had been hacked. He and his brother were also using two separate flats away from the family home: one to take delivery of the chemicals and one to mix them and turn them into explosives. Any of those activities could look like minor criminality – not necessarily terrorism – if investigators did not probe further. So were key details missed?

It is worth remembering that no one at MI5 went out to do a bad job on 22 May 2017, or on any of the days and months that led up to the bombing. Intelligence officers have a tough job. While I report on their successes, many of which were within months of the Manchester attack, these gain less attention than their failures. Strange as it may sound to the outsider, MI5 is faced with dozens of people like Salman Abedi: jihadi fanboys who spend years talking the talk but never walk the walk.

Some of them were Abedi's friends. One was his older brother, Ismail, who was found by MI5 agents to have a series of photographs of him posing with weapons on his Facebook account. Isis propaganda was also discovered on a phone he had used.

The statistics don't tell us how many of those on MI5's radar were in Manchester at the time of the bombing. But it is thought that around 3,000 individuals in 500 investigations are being monitored across the country at any one time. Amidst this haystack, was a crucial needle missed?

The families of the Manchester victims have criticised MI5 for failing to appreciate the cumulative intelligence about Abedi's increasing radicalisation. They say it is important MI5 learns lessons from the attack. Many of these relate to Abedi himself: what sort of person he was, and why he was not taken more seriously. Not every terrorist attack can be stopped, but there is an argument that the Security Service could have acted differently in the build-up to the bombing. Abedi was in contact, either directly or indirectly, with at least six different 'subjects of interest' – including individuals with links to al-Qaeda, Isis and groups in Libya.

There is a difficulty at the heart of MI5's process. They open an investigation, they determine whether an individual is 'attack planning', and if they aren't, they close it. There are around 40,000 'closed' subjects of interest, but no proper system for keeping a suspect under constant review. Indeed, some subjects, like Abedi, keep on popping up – in his case 18 times in total. But while they appear on the Security Service's radar, they may never have their case re-opened. Yet the problem is, of

course, that while a subject of interest (SOI) may not be planning an attack now, they may do at a future date. Picking when to revisit the case can be hit and miss.

It is not the first time this issue has arisen. Michael Adebolajo, one of the killers of Fusilier Lee Rigby in Woolwich in May 2013, was a closed SOI. So, too, was Khalid Masood, the Westminster terrorist who killed PC Keith Palmer and four others in March 2017. In some ways, the more often a person pops up in investigations – and the longer he remains engaged with extremists – the more dedicated he is to the cause. Even before the attacks, MI5 had changed the way they deal with so-called 'closed SOIs'; further changes have been made since. But the requirement to open and close cases, can lead to a natural tendency to clear the decks when what is really needed is a file of 'pending projects'. Introducing a different approach might need legal changes to allow intrusive measures to continue over a longer period. If that is unpalatable, the Security Service needs to have a more efficient way of revisiting cases.

The victims' families are also concerned about MI5's 'obsessive secrecy' which has included a situation where they refuse to name a 'known extremist prisoner' visited by Abedi in prison, although he was identified by the press days after the attack. Some suggest MI5 is trying to avoid embarrassment, but the more realistic view may be that organisations that operate in a secret world, value secrecy highly.

MI5 has told the chairman that to reveal the crucial information would also reveal the source, but Sir John, and his security-cleared team, have been able to examine whether there is, in fact, language that could allow it to be made public.

It is worth noting that few secrets of this type remain secret for ever and the anger of some of the victims' families at the back of the hearing room, faced by a lack of new information, has been palpable. Over two days of open hearings, their lawyers were able to pose questions to MI5's director general of counter-terrorism, known as Witness J, who answered on behalf of the organisation from inside a wooden cubicle. But the families were left to send in a list of questions to be asked in the 'closed' sessions, among them queries about how MI5 deals with the purchase of 'precursor chemicals'. The process contrasts with that of the inquests into the July 7 bombings, held entirely in open, because inquests do not have closed material procedures.

In those proceedings, there was a surveillance photograph that emerged showing the bombers Mohammed Sidique Khan and Shehzad Tanweer, over a year before the attack. The pair were photographed, in full colour at close quarters, on a driving break at Toddington service station on the M1, as they travelled from a meeting in Crawley, West Sussex back to Dewsbury, West Yorkshire. The emergence of that picture – and the questioning of a senior MI5 officer about it – was an uncomfortable moment for the Security Service, because the image revealed details about their tactics (even if it hardly came as a surprise to learn that they follow people around and take pictures of them). However, by the end of the inquest process, the victims' families were broadly happy that MI5 had done its best and that a full picture of the lead-up to the bombings had been revealed.

The Manchester Arena Inquiry has chosen to deal with the information in front of it differently. Will the families feel the same at the end of the proceedings? No one can doubt the thoroughness of the inquiry process and their desire to seek answers. But after two months of hearings on the stewarding – and seven months on the emergency response – we await the results of those three crucial weeks of hearings on the intelligence picture. For the loved ones of those who died, there are plenty of unanswered questions.

Duncan Gardham is a security journalist who specialises in covering terrorism. He attended the Manchester Arena bombing inquest.

Texas synagogue terrorist came out of UK Islamist no-go zone

By Daniel Greenfield

Source: https://www.heritagefl.com/story/2022/01/28/opinions/texas-synagogue-terrorist-came-out-of-uk-islamist-no-go-zone/16122.html

Jan 28 — As far back as 2013, Pakistani Muslim terrorists plotted to take “foreign Jews” hostage to trade for “Lady Al-Qaeda.” In 2022, a Pakistani Muslim terrorist actually went out and did it.

The hostage crisis at Congregation Beth Israel in Texas, ended with Faisal Akram of Blackburn — another post-industrial English town where Muslims make up a third of the population and Pakistanis account for more than 10 percent — dead and his Jewish hostages set free.

Back home, the Blackburn Muslim Community page announced “Faisal Akram has sadly departed from this temporary world” and prayed that Allah “bless him with the highest ranks of Paradise.”

The town has produced no shortage of jihadists, including the youngest terrorist in the United Kingdom; a number of jihadis who traveled to join Islamic State; an associate of shoe bomber Richard Reid; and a terrorist who played a key role in an Al-Qaeda plot that targeted New York and Washington, D.C.

Blackburn is one of the most segregated towns in the country and has been described as a "no-go zone." The area that produced the Temple Terrorist has the highest Muslim population outside of London, with some claiming that flying the English flag there has been effectively outlawed.

The setting couldn't be any better for the media to whitewash Akram with the familiar excuse that he was the victim of failed integration in the United Kingdom. His family, in an even more familiar excuse, is claiming that he was "suffering from mental health issues."

That, along with the claim by FBI Special Agent in Charge Matt DeSarno that Akram "was singularly focused on one issue, and it was not specifically related to the Jewish community," is becoming the very familiar narrative for covering up the latest Muslim terror attack.

But antisemitism, like Islamism, was in the air Faisal Akram breathed in Blackburn.

Aafia Siddiqui, aka Lady Al-Qaeda, on whose behalf the Texas synagogue attack took place, was married to the nephew of 9/11 mastermind Khalid Sheikh Mohammed and had assorted recipes for mass murder in her possession when she was captured. She demanded at her trial that jurors undergo DNA tests to prove that they were not Jewish. And the Aafia Foundation posted bizarre antisemitic rants about the "degree of poisonous venom [sic] within the heart of American mainstream Jewry."

The best way to cover up a terrorist attack is to shift the context. And that's what they're doing. But it's important to dig into the true context to understand the true origins of the Texas attack.

In his book "Among the Mosques," ex-Islamist Ed Husain describes Blackburn as "another global hub for the Deobandis and the Tableeghi Jamaat," where the mosques pray for the destruction of the enemies of Islam and texts declare that "there can be no reconciliation between Islam and democracy."
The Deobandis, who control many of the mosques in Blackburn, originated the Taliban.
Aafia Siddiqui is a Deobandi and a popular cause with Pakistanis. A few years ago, the Pakistani Senate even named the Islamic terrorist the "Daughter of the Nation."
Indian Mujahideen co-founder Riyaz Bhatkal had plotted to take Jews hostage a decade ago in order to force Siddiqui's release.
British Muslim "charities" were a major source of funding for the jihadist group, as they are for many Pakistani jihadist enterprises.
When Husain visited Blackburn, he warned that "it is clear that a caliphist subculture thrives here, a separate world from the rest of British society."
Tableeghi Jamaat, whose mosques are known as "breeding grounds" for jihad, is closely intertwined with Pakistani Islamism and vectored Islamic terrorism. Quite a number have joined Al Qaeda. It is no coincidence that so many Islamic terrorists have come out of Blackburn.
Nor is it a coincidence that the latest Islamic terrorist attack on America originated there.
Faisal's target, a progressive Reform Temple which happened to carry the traditional name of Congregation Beth Israel, was ideally selected to fit Muslim antisemitic obsessions with both Israel and Jews.
The antisemitic rants, the hostage crisis and the rapid cover-up are all regular features of life for Jews in Europe. Changing demographics are making them a new reality for American Jews.
Any American city or town can become the new Blackburn. That's the harsh lesson here.
In Blackburn, Muslims anticipate the Texas jihadist ascending to the "highest ranks of Paradise." More Muslims from Blackburn, marinating in the same hatred for America, for Jews and for anyone unlike them, will follow in his footsteps.

Daniel Greenfield, a Shillman Journalism Fellow at the Freedom Center, is an investigative journalist and writer focusing on the radical left and Islamic terrorism.

Nearly 200 schools in Indonesia tied to Islamic terrorist networks

Source: http://www.tampadispatch.com/report-nearly-200-school-in-indonesia-tied-to-islamic-terrorist-networks/

Jan 27 – According to Indonesia's National Counterterrorism Agency (BNPT), nearly 200 Islamic boarding schools have ties to terrorist networks.
On January 25, BNPT chief Boy Rafli Amar announced the discovery at a meeting with the parliament, saying the assessment was a result of the agency's terrorism prevention efforts last year.

The data shows that there are 11 Islamic boarding schools with ties to Jamaah Ansharut Khilafah (JAK), 68 with Jemaah Islamiyah (JI) and 119 with links to Jamaah Ansharut Daulah (JAD), an Islamic State-linked terrorist group.
JAD is known for many church attacks in Indonesia, including 2016 attack in Samarinda, 2018 attacks in Surabaya, and 2021 Palm Sunday attack in Makassar, resulting in dozens of deaths. JI, on the other hand, is known for 2002 Bali attacks that killed more than 200 and a number of church attacks as well.
Stanislaus Riyanta, an intelligence analyst from the state-run University of Indonesia, said the revelation should come as no surprise and indicated terrorist networks were changing tactics.
"Instead of using terror, they are targeting religious activities to gain influence in society. They can infiltrate Islamic boarding schools easily and spread their radical ideology like a Muslim cleric delivers a sermon," he told UCA News.

Franciscan Father Vinsensius Darmin Mbula, chairman of the National Council of Catholic Education, called the revelation "worrying," especially for Christians who have often been the targets of extremists.
At a recent Islamic event, Vice President Ma'ruf Amin said that efforts to prevent radicalism in Indonesia cannot merely rely on the role of ulemas (Islamic councils). All elements of society, from all backgrounds, must work hand in hand to prevent the spread of radical beliefs.

Revealed: how fake passports allow IS members to enter Europe and US

Source: https://www.theguardian.com/world/2022/jan/31/revealed-how-fake-passports-allow-is-members-to-enter-europe-and-us

Many who crossed into Turkey from Syria have used Istanbul airport to depart. Photograph: Ozan Köse/AFP/Getty Images

Jan 31 – A booming online industry specialising in fake passports with official visas and travel stamps is offering people with links to Islamic State the opportunity to leave Syria and travel onwards to the UK, EU, Canada and the US, a Guardian investigation has found.
One such network, run by an Uzbek with extremist links living in Turkey, is now selling high-quality fake passports for up to $15,000 (£11,132) purporting to be from various countries. In at least 10 cases the Guardian is aware of, people who illegally crossed the Syrian border into Turkey have used his products to depart through Istanbul airport.
Sellers claim the EU is the most popular destination but say in at least two cases people were able to travel from Istanbul to Mexico on fake Russian passports and, from there, illegally over the border into the US. Niger and Mauritania are also popular destinations, as are Ukraine and Afghanistan.
The Uzbek's business is doing so well he recently opened a new channel on the encrypted messaging app Telegram with the official-sounding name "Istanbul Global Consulting". The growing trade suggests that dangerous extremists could be slipping under the radar of security services around the world, escaping justice for past crimes and potentially able to continue terrorist activity in countries other than Syria.
"I do not ask about which group someone is with. I am willing to work with anyone," the Uzbek said in a message chat with the Guardian, which posed as an interested client. "It is not my job to see who is bad and who is not. The security services should deal with it."

Western security officials warned in 2015 that IS had managed to obtain significant equipment such as blank passport books and printers to make Syrian and Iraqi passports, which it used to disguise operatives among the more than 1 million people who fled to Europe during the peak of the refugee crisis. IS claimed several attacks around the continent shortly after, including the November 2015 attack on the Bataclan theatre in Paris and the Manchester Arena bombing in 2017.

Since then, European border agencies have invested in technology and personnel training to better identify forged passports. In 2020, Tajikistan totally overhauled its consular staff in Istanbul and document system in an attempt to stamp out the use of fake Tajik passports.

But in response, sellers of fake passports have also upped their game, using a wider variety of nationalities for prospective clients.

The Uzbek sent several videos of his wares, including crisp new French, Belgian, Bulgarian and Russian passports that appear to feature authentic security watermarks and holograms.

When placed under a black light, two Russian passports contain UV-sensitive materials designed to stop passport forgery, and a Belgian passport placed on a scanner similar to those used in airports appears to read correctly, with the holder's details appearing on the monitor.

According to document sellers, it is impossible to fake a working biometric chip, but at many border crossings officials checking passports simply ignore those that don't work, waving the passport holder through.

"There is a particular seller in Turkey who provides IS members with very high level [ie, well forged] documents," using interlocutors who speak Russian, Arabic and other languages to cater for different clients, said a source at the US Department of Homeland Security.

"We are aware of IS members using these fake passports to cross to Europe, and European security is not successful in arresting them all."

While the document sellers' most popular service is providing documents for foreign fighters in Syria associated with IS and other armed groups to travel to Europe, the group has also identified new areas to expand.

On a Telegram chat for people in al-Hawl, a camp in north-east Syria home to about 60,000 women and children with links to IS, one of the Uzbek's online marketers, a foreign woman detained in another camp nearby, has posted: "If you need fake documents from Russia, Central Asia, Turkey, Europe, DM me."

The fall of Afghanistan to the Taliban had also created a new client base of Afghan refugees in Turkey, the Uzbek said. Although his services are too expensive for most displaced Afghans, he says his clients use the fake passports to board flights to western countries, and then claim asylum once they land.

While low-ranked IS fighters usually barely have money to buy one passport, high-level members who want to completely drop off the grid usually buy several documents from different countries, and use them to move around frequently, changing passport for every new flight or transfer, said a Russian passport seller.

A Russian national who fought for IS until 2015 said: "I had only a couple of hundred dollars when I came from Syria so I bought the cheapest passport – a really poor-quality Tajik passport. It did not work and I was arrested in the airport in Istanbul.

"Then my family back home collected enough money to buy a better-quality one. So I got a real Russian passport, but with my photo on it, and was able to get to Ukraine with it. It is a really good one – I was once stopped by police in Ukraine and they took it but returned it to

me a week later saying everything is good. Unfortunately this passport is expiring now so I am currently trying to get money to buy a new one."

To make sure a person disappears completely, for $500 the Uzbek seller can even offer a Turkish death certificate that can be sent to their home country's consulate. "Unless you are Abu Bakr Baghdadi [The IS leader, killed in 2019] no one would go to the morgue to check if you really died. They would just accept that document and enter it into the system," he said.

There are several passport options, depending on the clients' ethnicity, languages they speak, where they want to go, and how much they have to spend. The cheapest documents with which to get to Europe are Russian, Kyrgyzstan and Kazakhstan passports, which cost about $5,000, or $6,000 as part of a Schengen visa package. Other popular and slightly more expensive options are Ukrainian and Moldovan papers, which allow visa-free travel to the EU.

The most expensive option is an EU passport, which will set a client back $8,000, usually requested by westerners and Arabs who speak some French and can pass for French or Belgian. Typically, an EU citizen arrives in Turkey on his or her own passport, sells it to the Uzbek and his colleagues for about €2,500, then the passport photo is changed to that of a client. The original owner of the passport then claims it has been lost and applies for a replacement at his or her consulate in Istanbul.

The passports are printed in their countries of origin and taken to the country where the client is waiting, where they receive official border entry stamps, which helps cement the legitimacy of the document.

"The passport itself relatively doesn't cost anything. What does cost is the stamps," said the Russian seller. "The majority of the money goes into bribes for stamps."

"In the past the quality of passports on the market was bad so there was a limited number of countries one could travel to from Syria," he said. "Now those passports are of such good quality that if you have enough money, you could go absolutely anywhere."

Court rejects Norwegian mass killer Breivik's parole application

Source: https://www.swissinfo.ch/eng/court-rejects-norwegian-mass-killer-breivik-s-parole-application/47311690

Mass killer Anders Behring Breivik, arrives at the makeshift courtroom in Skien prison on the second day of the trial, where he is requesting release on parole, in Skien, Norway January 19, 2022. Ole Berg-Rusten/NTB/via REUTERS)

Feb 01 - A Norwegian court has rejected mass killer Anders Behring Breivik's parole application, it said in a ruling on Tuesday, ordering that he must stay in prison.

Breivik, an anti-Muslim neo-Nazi, killed 77 people in Norway's worst peacetime atrocity in July 2011. He killed eight with a car bomb in Oslo and then gunned down 69, most of them teenagers, at a Labour Party youth camp.

On the first day of the parole hearing last month, Breivik made a white supremacist sign with his fingers before raising his right arm in a Nazi salute to signal his far-right ideology as he entered the court.

"The risk of violence is real and significant and equal to what it was when (Breivik) was first sentenced," the district court in Telemark said in a unanimous verdict.

Breivik, 42, is serving Norway's maximum sentence of 21 years, which can be extended indefinitely if he is deemed a continued threat to society. He attended court dressed in a suit and with his head shaven.

He was however eligible to seek parole after serving the first 10 years of his term, and is entitled to apply for release a year after each rejection.

Breivik in testimony last month blamed online radicalisation https://www.reuters.com/world/europe/mass-killer-breiviks-parole-hearing-begin-tuesday-norway-2022-01-17 by far-right extremists for his crimes, saying he had been brainwashed. He said he would be keeping fighting for white supremacy however, albeit with peaceful means.
The court said Breivik could not be taken at his word when he said he would no longer commit acts of violence.
"His stated assurances and word of honour have little value even if he were to mean what he says at the time he says it," the judges wrote.
Based on the court's findings, Breivik is unlikely at this time to be able to adjust to life outside of prison, and the risk of recidivism is significant, the judges wrote.
During trial, the court heard the testimony of prison service psychiatrist Randi Rosenqvist, who said Breivik remains as likely https://www.reuters.com/world/europe/norwegian-mass-killer-breivik-dangerous-now-decade-ago-court-told-2022-01-19 to commit acts of violence today as he was a decade ago. Breivik intends to appeal the court's decision, his lawyer Oeystein Storrvik told Reuters. "He said straight away he wants to appeal this," Storrvik said.

EDITOR'S COMMENT: Title correction: "Court rejects Norwegian ~~mass-killer~~ **terrorist** Breivik's parole application". Are we afraid to say things by their actual name?

Biden details US raid in Syria that killed ISIS leader

Source: https://www.yahoo.com/gma/us-military-carries-counterterrorism-mission-055800605.html

Feb 03 – President Joe Biden on Thursday, in remarks from the White House, gave details to the nation about a dramatic U.S. raid overnight in Syria he said had killed the leader of ISIS.
"Last night, operating on my orders, the United States military forces successfully removed in a major terrorist threat to the world, the global leader of ISIS, known as **Haji Abdullah**. He took over as leader of ISIS in 2019 after the United States counterterrorism operation killed Al Bhaghdadi," Biden said from the Roosevelt Room. "Thanks to the bravery of our troops, this horrible terrorist leader is no more."
Amid reports of women and children killed, Biden said he directed the Department of Defense "to take every precaution possible to minimize civilian casualties."
"Knowing that this terrorist had chosen to surround himself with families, including children, we made a choice to pursue a Special Forces raid at a much greater risk than our to our own people rather than targeting him with an airstrike," Biden said. "We made this choice to minimize civilian casualties."

"We do know that as our troops approached to capture the terrorist -- in a final act of desperate cowardice he, with no regard to the lives of his own family or others in the building, **he chose to blow himself up** -- not just in the vest but the **blow-up that third floor**, rather than face justice for the crimes he has committed, taking several members of his family with him. Just as his predecessor did," Biden said, describing the raid.
Earlier in the day, the White House tweeted a photo it said showed Biden and Vice President Kamala Harris in the Situation Room watching as the raid took place.
The Pentagon also confirmed U.S. special operations forces carried out a what it called a "successful" counterterrorism mission in northwest Syria Wednesday, but provided few other details.
"U.S. Special Operations forces under the control of U.S. Central Command conducted a counterterrorism mission this evening in northwest Syria. The mission was successful. There

were no U.S. casualties," said John Kirby, the Pentagon press secretary, in a statement. "More information will be provided as it becomes available."

One of the helicopters used in the mission experienced a mechanical problem and then had to be blown up on the ground by U.S. forces, according to a U.S. official.

No details were provided on whether the operation involved ground troops and helicopters, as was claimed in a flurry of social media reports emerging from Syria on Wednesday night.

Social media posts reported possible U.S. military activity in **Idlib province**, a town in far western Syria, close to the border with Turkey. Some posts included videos that seemed to show night scenes where the sounds of gunfire and low-flying helicopters could be heard near the towns of Atmeh and Dar Ballout.

The opposition-run Syrian Civil Defense, first responders also known as the White Helmets, said 13 civilians were killed as a result of the fighting and blasts that occurred at the raid site, including six children and four women.

Syrian Observatory for Human Rights, a war watchdog group based in the United Kingdom, said in a press statement that nine people, including at least two children and a woman, were killed during Wednesday's mission. The group cited local sources.

A U.S. official, meanwhile, told ABC News that the reported civilian casualties were not the result of U.S. military fire, but occurred when the target of the raid detonated an explosive device at the beginning of the operation.

According to an Associated Press reporter on assignment who visited the Atmeh area on Thursday and spoke with residents, the U.S. raid did involve helicopters, explosions, and machine gun fire.

The AP reporter and several residents said they saw body parts around a house targeted in the raid whose upper story was almost completely leveled leaving rubble in the surrounding olive grove.

There are approximately 1,000 U.S. military troops operating in eastern Syria to support the mission against ISIS.

American troops do not operate in government-controlled areas in northwestern Syria, especially in Idlib province, which was an extremist safe haven for much of the last decade. But they have sporadically carried out counterterrorism missions in Idlib, targeting various Islamic extremist groups with drone strikes. The highest profile mission was a ground raid that killed ISIS' top leader, Abu Bakr al Baghdadi, who was hiding out in a house close to the border with Turkey, on Oct. 27, 2019.

Islamic State Leader Killed in U.S. Raid – Where Does This Leave the Terrorist Group?

By Haroro J. Ingram, Amira Jadoon, and Andrew Mines

Source: https://www.homelandsecuritynewswire.com/dr20220203-islamic-state-leader-killed-in-u-s-raid-where-does-this-leave-the-terrorist-group

Feb 03 – An overnight raid conducted by *U.S.* special forces in Syria has resulted in the *death of the leader of the terrorist Islamic State group*.

Abu Ibrahim al-Hashimi al-Qurayshi was killed as he exploded a bomb at his compound in the country's northwestern Idlib province. The blast also caused the death of members of his family, including children, *U.S. officials said*.

This isn't the first time that American forces have targeted the head of terrorist organizations, nor the first time they have been successful. The Conversation asked *Amira Jadoon*, a terrorism expert at the *U.S.* Military Academy, and *Haroro J. Ingram* and *Andrew Mines*, research fellows at the George Washington University's Program on Extremism, to explain how this raid fits the U.S.'s counterterrorism strategy, and where it leaves the Islamic State.

1. Who Was Abu Ibrahim al-Hashimi al-Qurayshi?

Abu Ibrahim al-Hashimi al-Qurayshi is the alias adopted by Amir Muhammad Sa'id Abdal-Rahman al-Mawla, who became leader of the Islamic State in 2019 following the death of Abu Bakr al-Baghdadi in a U.S. raid.

He was born in 1976 in Mosul, northern Iraq. But very little was known about al-Qurayshi until September 2020, when it emerged that he had been detained and interrogated by U.S. forces in Iraq in early 2008.

Declassified tactical interrogation reports from that period depict al-Qurayshi as a recently graduated scholar who experienced a meteoric rise through the Islamic State group's ranks.

Al-Qurayshi claimed that he joined the group in 2007, having finished a master's degree in Quranic studies from Mosul University.
Soon after joining, al-Qurayshi became the group's Shariah adviser, a major religious figure, in Mosul and later the deputy "wali," or shadow governor, of the city before his capture in early 2008.
The interrogation reports show that al-Qurayshi revealed the names of at least 20 alleged members of the Islamic State of Iraq, as the group was known at the time. His betrayal came at a time when group members were being killed or captured in large numbers by U.S. and coalition forces.
Relatively little is known about al-Qurayshi's activities for the next decade after he was released. But he reportedly oversaw the Islamic State group's attempted genocide of Iraq's minority Yazidis and had served as deputy to al-Baghdadi since at least 2018.
His rise to "caliph" was controversial in jihadist circles, not helped by the release of his interrogation records after becoming leader.

2. Where Does His Death Leave Islamic State Operationally?
The operation against al-Qurayshi arrives at a precarious time for the Islamic State group.
The organization's transition from an Iraq-centric movement to a global insurgency with affiliates dotted across the Middle East, Africa, and Asia is still relatively fresh.
Recent Islamic State attacks on Hasakah prison in northeast Syria and elsewhere across Iraq have hinted that the group is more advanced in rebuilding its capabilities across traditional heartlands than perhaps expected. But the death of al-Qurayshi just two years after that of his predecessor raises uncertainty over who will succeed him.
The fact that the Islamic State group couldn't protect its top leader shows the continued pressure the group faces from U.S. and allied forces.
Al-Qurayshi's rapid demise – his predecessor led for almost a decade – may also indicate internal rifts. After he took over as leader, al-Qurayshi was mockingly described by dissenters within the terrorist group as "an unknown nobody" while others questioned his suitability as leader, especially after the release of his interrogation reports in September 2020.
It may be that al-Qurayshi was himself betrayed, ultimately contributing to the circumstances that led to the U.S. raid. If so, it could indicate a split within the group between al-Qurayshi and those who wanted him gone.
Now, the Islamic State is likely to appoint al-Qurayshi's successor based on the deliberation of its shura council, its senior leadership panel, as it has done previously.
If it happens as it has in the past, al-Qurayshi's successor could be appointed in the next few days or weeks. He'll be given an alias to conceal his identity. Group members and leaders of Islamic State global affiliates will be asked to pledge allegiance to him, but he may not make a public appearance for months or years – if ever.

3. What Effect Has Killing the Heads of Terrorist Groups Had in the Past?
Leadership decapitation – or the targeted killing of militant groups' top leaders – is a key component of counterterrorism and counterinsurgency. It is widely used by many nations, including the United States.
But terrorism experts don't agree on how effective killing top leaders is. Some have argued that taking out a terrorist leader constrains the operational capacity of groups and disrupts their organizational routines, making it harder for them to carry out attacks.
It may, it has been argued, also contribute to organizational collapse. Research shows that under the right circumstances, the targeting of top leaders can result in fewer violent attacks by a militant group and increase the chances of defeating an insurgency.
Yet other counterterrorism experts highlight problems with targeted killings. They argue that they can result in decentralization of the group and increase indiscriminate violence by targeted groups.
The tactic is also generally considered to be less effective against groups like the Islamic State and al-Qaida that have well-managed leadership structures and succession protocols.
The Islamic State group has survived multiple deaths within its leadership precisely because of its bureaucratic approach to succession, and because it still enjoys pockets of strong local support.
In the short term, the death of al-Qurayshi may cause the Islamic State group to lie low. But this will not indicate the demise of the organization. The loss of al-Qurayshi could also trigger retaliation attacks as a signal of resolve among members and to stay relevant in the global jihadist landscape.

4. How Much of a Global and Regional Threat Is Islamic State Group?
Back in early 2019, the U.S. and allied forces successfully beat back the Islamic State group from its height in 2014-16, when it controlled larges parts of Iraq and Syria.
The group has recently shifted attention to prominent affiliates, like those in sub-Saharan Africa and Afghanistan.

This shift highlights how the Islamic State has maintained its relevance: If it experiences decline in its strongholds of Iraq and Syria, affiliates elsewhere are able to keep the vision of the global caliphate alive.
The recent terrorist attacks in Syria and Iraq suggest that the Islamic State's resurgence strategy is much further along than many observers may have expected.
Elsewhere, affiliates are engaged in intense insurgencies against local governments and rival militant groups. This includes persistent threats from IS-West Africa Province in the Lake Chad region, and IS-Central Africa Province in the Congo and Mozambique. Indeed, Africa is poised to be a key Islamic State battleground going forward.
Meanwhile in Afghanistan, ISIS-K has pursued a relatively successful strategy to rally after years of losses at the hands of the U.S.-led coalition, challenging the new Taliban government and competing for control of provinces in the country's northeast.
The death of al-Qurayshi is unlikely to affect the operations of Islamic State group's affiliates in any meaningful way. Many have strategies that draw heavily on local resources and alliances with other groups. While the latest U.S. raid may result in temporary uncertainty for the broader movement, history suggests the Islamic State movement will be able to push forward with regional attacks and reestablish the support of affiliates around the world.

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After Qurayshi's death, who are Mideast's most wanted terrorists?

Source: https://www.al-monitor.com/originals/2022/02/after-qurayshis-death-who-are-mideasts-most-wanted-terrorists

Feb 04 – Before his death in an overnight US special forces raid, Abu Ibrahim al-Hashimi al-Qurayshi was among one of the world's most wanted terrorists. Al-Qurayshi took the helm of the Islamic State after Abu Bakr al-Baghadi died in a similar US operation in 2019.
In remarks on Thursday, President Joe Biden said al-Qurayshi's death would sent a strong message to terrorists worldwide: "We will come after you and find you." Here's a look at several other Middle East terrorists who remain at large and whose whereabouts are sought by the United States.
Ayman al-Zawahiri is the current leader of al-Qaeda. Born into a prominent Egyptian family, al-Zawahiri merged his group, Egyptian Islamic Jihad, with al-Qaeda in 1998. He served as Osama bin Laden's personal physician and closest adviser until his death in 2011. The US government accuses al-Zawahiri of plotting the USS Cole bombing in Yemen, which killed 17 US sailors in October 2000. He's also believed to have helped coordinate the 9/11 attacks and was indicted in the United States for his role in the 1988 twin US embassy bombings that killed 224 people in Kenya and Tanzania. In September 2021, al-Zawahiri, who was rumored dead, appeared in a new video marking the 20th anniversary of 9/11. The US State Department has offered a $25 million reward for information on his location.
Abu Mohammed al-Golani heads Hayat Tahrir al-Sham, the US-designated terrorist group that controls much of Idlib province in northwest Syria. HTS emerged from al-Qaeda's former affiliate in Syria known as al-Nusra Front and has undergone several rebrands. Golani formally broke ties with al-Qaeda in 2016 and in recent years, he has sought to portray HTS as a moderate Syrian opposition group fighting the government of President Bashar al-Assad.
Khalid al-Batarfi has been the emir of al-Qaeda in the Arabian Peninsula since February 2020, following the death of the Yemeni group's former leader Qasim al-Rimi in a US airstrike. Al-Batarfi, who previously served as a religious judge and AQAP's chief spokesperson, called for violence against Jews and the United States in a 2018 video. In February 2021, a United Nations report mistakenly claimed al-Batarfi was captured months earlier in Yemen's eastern Mahra governorate.
Salim Jamil Ayyash is a former top Hezbollah operative who played a key role in the 2005 assassination of Lebanon's former Prime Minister Rafik Hariri. According to the State Department, Ayyash was a senior figure in Unit 121, the group's assassination squad that receives orders directly from Hezbollah chief Hassan Nasrallah. In 2020, an international tribunal convicted Ayyash in absentia of terrorism and homicide for his role in the truck bombing that killed Hariri and 21 others. The US government also says Ayyash has been involved in efforts to harm American military personnel.
Abd al-Rahman al-Maghrebi, also known as Muhammad Abbatay, is an al-Qaeda leader who the US government believes is based in Iran. The Moroccan-born terrorist is the son-in-law of al-Zawahiri. The State Department describes him as the longtime director of al-Qaeda's media arm, al-Shahab.

Ibrahim al-Banna, also known as Abu Ayman al-Masri, is a senior AQAP leader and founding member of the terrorist group. According to the State Department, he has served as the group's head of security and provided military and security guidance to AQAP's leadership.

One in every 30 people in Turkey has been investigated for terrorism as a result of Erdoğan's witch hunt

By Levent Kenez (Stockholm)
Source: https://nordicmonitor.com/2022/02/21073/

Feb 05 – Following a controversial coup attempt on July 15, 2016, a witch-hunt launched by the government of Turkish President Recep Tayyip Erdoğan, which declared opponents as terrorists, has yielded the result that a record number of Turkish citizens were investigated and convicted of terrorism.

According to official statistics, terrorism investigations were launched into 2 million people between 2015 and 2020. Given the fact that the Turkish population over the age of 18 is 59 million, one in every 30 people in Turkey faced trumped-up terrorism charges.

Members of the Gülen movement, a group that is critical of the government, constitute the overwhelming majority of those who are prosecuted and convicted.

According to data compiled from official statistics on terrorism convictions between 2015 and 2020 by Solidarity with OTHERS, a nongovernmental human rights organization based in Brussels, terrorism investigations were launched into 1,977,699 people by prosecutor's offices all over Turkey.

Criminal cases were filed against 512,278 people, while prosecutors decided not to pursue charges against 505,772. These figures will definitely increase when it is clear what action will be taken against those who are still under investigation. Courts dismissed the cases against 663,247 people due to a decision of rejection of venue, meaning the cases fall within the jurisdiction or responsibility of other courts.

As a result of the cases filed between 2015 and 2020, the courts handed down rulings for 508,853 people — 427,447 men and 81,455 women. A total of 14,957 of those against whom terrorism charges have been filed are under the age of 18, and 1,020 of them are women.

A total of 320,063 people were sentenced to various lengths of imprisonment on terrorism charges between 2015 and 2020. Some 30,000 people are estimated to be behind bars in Turkey at the moment.

The other 290,000 were released because their time in prison corresponded to the sentences they received, because they had completed their sentences or because they are free on appeal, waiting for the court to either uphold or reverse their convictions.

According to statistics released by the Council of Europe (CoE), as of January 2020 out of 30,524 prisoners convicted on terrorism charges in the 47 CoE member states, 29,827 were in Turkey. In other words, 98 percent of all inmates convicted of terrorism in all of Europe are residents of Turkey, demonstrating how the government abuses its counterterrorism laws to punish critics, opponents and dissidents in this country of 84 million that is suffering under the iron grip of President Erdoğan.

YAŞ VE UYRUĞA GÖRE TÜM KARARLARA DAİR VERİLER

Karar

Yıl (Yıl)

TCK - TMK

Genel toplam 508.853

Toplam erkek 427.447 | Toplam kadın 81.355 | 18 altı erkek 13.937 | 18 altı kadın 1.020

18+ erkek 405.726 | 18+ kadın 79.514 | Yabancı erkek 7.757 | Yabancı kadın 848

Karar	Yıl (Yıl)	TCK - TMK	Genel toplam	Toplam erkek	Toplam kadın	18 altı erkek	18 altı kadın	18+ erkek	18+ kadın	Bilinmeyen	Yabancı erkek	Yabancı kadın
Hükmün açı...	2019	TCK-314	7550	6199	1351	120	7	6039	1337		40	7
Hükmün açı...	2019	TCK-220	262	219	43	16	1	201	41		2	1
Para cezası	2019	TMK	124	116	8	52	1	64	7			
Para cezası	2019	TCK-314	8	8		0	0	7			1	
Para cezası	2019	TCK-220	59	41	18	3	3	38	15			
Beraat	2020	TCK-220	5449	4651	798	70	7	4497	778		84	13
Beraat	2020	TCK-314	16516	12966	3550	202	21	12244	3469		520	60
Beraat	2020	TMK	3384	2719	665	196	26	2480	632		43	7
Diğer mahk...	2020	TMK	751	727	24	9	0	717	24		1	
Diğer mahk...	2020	TCK-314	12145	9845	2300	21	3	9521	2282		303	15
Diğer mahk...	2020	TCK-220	1425	1102	323	2	0	1090	323		10	
Erteleme (H...	2020	TMK	10	10		5	0	5				
Erteleme (H...	2020	TCK-314	195	171	24	26	6	140	18		5	
Erteleme (H...	2020	TCK-220	26	23	3	1	0	22	3			

The Ministry of Justice and the Turkish Statistical Institute have not disclosed how many people have been imprisoned on terrorism charges since 2020. The reason for this, experts say, is that Turkey does not want the much-criticized anti-terror law and the unknown number of Islamic State in Iraq and Syria (ISIS) prisoners to be discussed.

Nordic Monitor previously published a secret intelligence note dispatched by the Security General Directorate (Emniyet) stating that ISIS militants had been released in stages from prisons. "Individuals who were caught trying to enter our country illegally while operating in areas controlled by the ISIS terrorist group in Syria and arrested on charges of 'membership in an armed terrorist organization' have gradually been released from prison," the intelligence note filed on May 8, 2016, stated.

It is worth noting that the Interior Ministry, which in 2018 had published on a monthly basis the number of persons detained in counterterrorism operations on its website, stopped sharing that information as of January 1, 2019, for unknown reasons.

Turkey's anti-terrorism legislation has been criticized by the European Union, the Council of Europe, the United Nation's human rights bodies and international human rights organizations for years. Nordic Monitor previously reported that a joint UN letter underlined that Turkey's anti-terror law (No. 3713) does not comply with its international law obligations and that the country's anti-terror legal framework should be urgently revised.

Fionnuala Ní Aoláin, special rapporteur on the promotion and protection of human rights and fundamental freedoms while countering terrorism; Elina Steinerte, vice chair of the working group on arbitrary detention; Irene Khan, special rapporteur on the promotion and protection of the right to freedom of opinion and expression; Clement Nyaletsossi Voule, special rapporteur on the rights to freedom of peaceful assembly and of association; Mary Lawlor, special rapporteur on the situation of human rights defenders; and Diego García-Sayán, special rapporteur on the independence of judges and lawyers, sent a joint letter, dated August 26, 2020 to the Turkish government to express serious concern with the framework of the anti-terrorism law implemented by the Turkish government and its compatibility with Turkey's international and human rights law obligations.

In the letter, they recommended a review and reconsideration of the anti-terror framework. "We express concern that Turkey's anti-terror legal framework in its current form does not conform to international counter-terrorism nor human rights standards … [and that it] be reviewed in order to ensure … compatibility with Turkey's international legal obligations," the

UN letter stated. According to the letter, the anti-terror law limits the exercise of freedoms of opinion, expression and association and impacts the right to a fair trial and the prohibition of arbitrary detention.
Meanwhile, the situation of elderly convicts and their inability to access health care is frequently discussed on social media. Human rights observers also claim that women who have to take their children with them to prison have difficulty obtaining basic necessities for their children. For instance, the amount of food to be served is calculated according to the number of prisoners in a ward, and since children are not considered prisoners, no food is provided for them.

Inside Britain's first dedicated terrorist prison wing with sound-proofed cells to stop Islamic extremists trying to radicalise inmates on other wings

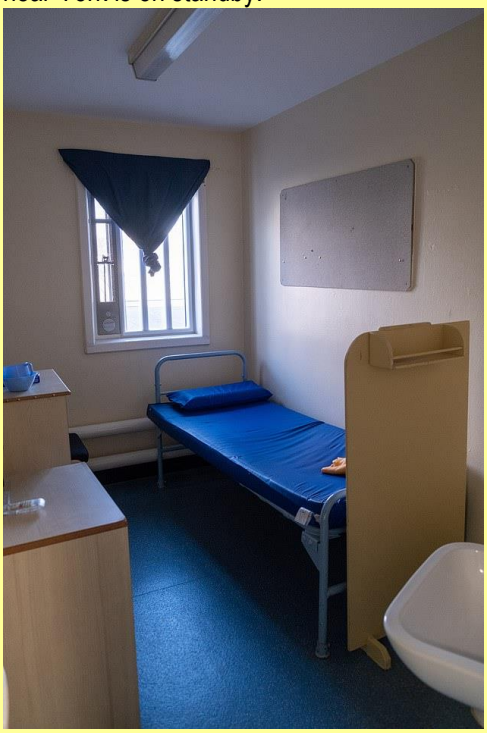
By Jake Ryan (Home Affairs Correspondent for The Mail On Sunday)
Source: https://www.dailymail.co.uk/news/article-10480629/Inside-Britains-dedicated-terrorist-prison-wing.html

Feb 05 – Nothing about the terrorist's 8ft by 5ft cell seems exceptional, at least at first glance. Single bed, thin blue mattress, toilet, sink, wooden table. But the windows are a different matter.
Impossible to penetrate, they feature sound-blocking glass 'bafflers' to prevent the cell's highly dangerous occupant from communicating with – and trying to radicalise – inmates on other wings.
Here at Britain's first dedicated prison 'terrorist wing' – where those caught trying to radicalise fellow inmates are cocooned – the security measures are as much designed to stop extreme ideologies from getting out as they are to keep the extremists locked in.

It is reportedly home to, among others, Hashem Abedi, who helped organise the 2017 Manchester Arena attack, and at least one Islamic State fighter

Last week, The Mail on Sunday, accompanied by Justice Secretary Dominic Raab, became the first newspaper to report from the 'separation centre' – or jail within a jail – at HMP Frankland near Durham.
It is reportedly home to, among others, Hashem Abedi, who helped organise the 2017 Manchester Arena attack, and at least one Islamic State fighter. One prison official said the unit is the 'least worst option' for handling the prisoners. It is, he added, about 'protecting the many from the few'.
For years, the unit at Frankland, established in 2017, was the only one of its kind in operation. But the MoS learned that a second at HMP Woodhill in Milton Keynes is now up and running while Mr Raab revealed plans to use them more widely.
The move comes after the attacks carried out by released terrorist prisoners Usman Khan, who murdered two people in the Fishmongers' Hall attack in London in 2019, and Sudesh Amman, who carried out a knife attack in Streatham, South London, a few months later.
Mr Raab said: 'Separation centres are critical to isolating the most radical offenders, who seek to poison the minds of other prisoners with their perverse ideologies. I want to make it easier for prison governors to put these dangerous predators into separation centres, to stop them recruiting more terrorist foot soldiers. Clearly the role of separation centres is going to increase.'
While far-Right extremists have been considered for places in the units, Frankland and Woodhill at present hold only Islamist radicals. Around 220 terrorist offenders are currently

in UK jails with a similar number considered 'at-risk' of being radicalised. Given that threat, another separation unit at HMP Full Sutton near York is on standby.



Human rights campaigners have likened the separation centres to the Camp X-Ray detention facility at Guantanamo Bay, but Frankland officials say the five men in their unit have settled into a routine.

Nothing about the terrorist's 8ft by 5ft cell seems exceptional, at least at first glance. Single bed, thin blue mattress, toilet, sink, wooden table. But the windows are a different matter

'Most of these guys are on enhanced [privileges],' said a prison officer. 'They are actually well-behaved. One is a dedicated cleaner who makes sure everything is tidy and another is the orderly looking after the unit's kitchen.'

Judging by the gleaming surfaces, they are doing a good job. Prisoners can order ingredients and cook their own meals. Plastic utensils –bright red, numbered and kept in a glass case on the wall in the prison officers' office – must be booked out and returned clean after use.

From the outside HMP Frankland, which looms into view along a quiet hedgerow-lined lane, resembles an anonymous company headquarters. Visitors to the separation centre – located at the heart of the prison – face innumerable high-tech security checks: fingerprinting, airport-style scanners, body searches, the list goes on.

A veteran officer, with a huge set of keys jangling around his waist, led an MoS reporter and photographer through the jail. There are between 15 and 20 locked gates separating the jail entrance from the isolation unit.

At the end lies a blue linoleum-floor entrance and a CCTV-monitored corridor with beige brick walls. All is scrupulously clean, claustrophobic and, with cell doors painted green, it has the feel of a high-security hospital.

As Mr Raab strides along the corridor, indecipherable shouts emerge from behind a cell door, suggesting word of his visit has spread.

A TV room features a pool table and bookshelf. It boasts few, if any, literary classics but there is a fantasy novel, Soul Of The Fire by Terry Goodkind, a number of books by Ted Dekker, who has written Christian mystery thrillers, and the non-fiction work Tea With Hezbollah, about his attempts to better understand the Middle East.

At the end lies a blue linoleum-floor entrance and a CCTV-monitored corridor with beige brick walls. All is scrupulously clean, claustrophobic and, with cell doors painted green, it has the feel of a high-security hospital

A prison officer said that staff originally feared the wing would become a 'living nightmare' when it opened in 2017. There were some attacks on officers, but none since 2019. Prisoners previously refused to co-operate with deradicalisation programmes but some are now becoming more receptive.

'We try to minimise their contact with each other and stop them from communicating to other wings,' said one official. 'Their views are often entrenched and very difficult to shift. It's

wrapped up in their whole status and being, they often don't have prospects for a regular life.' The terrorists enjoy the same benefits as regular inmates, including fortnightly visits and CDs or games consoles for those with privileges. They can mix with each other on the wing but are allowed no access to other prisoners.

At the end of another corridor a stairway leads outside to a small exercise yard, reportedly the subject of a complaint by the International Red Cross over its small size, around 15ft by 25ft. Encased by metal caging on all sides, the roof of the yard is alarmed and covered by wiring to prevent any attempt at escape by helicopter. There are basketball nets and it could be used as a football pitch, though the prisoners 'just walk around and around' an officer said. Monitoring of prison wings has often found noticeable improvements in inmates' behaviour when the extremists have been removed, according to officials. A counter-terror intelligence unit has been established at the prison where experts build an intricate picture of terror offenders behind bars, not just in Frankland, but at other jails across the country. Tucked away close to the office of acting governor Darren Finley, the team works out of a spare bedroom-sized office with wall charts mapping extremist inmates. One chart profiles the five held in Frankland's 'separation centre'. Another features profiles of more than 100 convicted terrorists across the country. Staff and specialist psychologists regularly feed back intelligence to track relationships developing between the extremists and ensure others do not fall into their orbit.

Gavin O'Malley, a former HMP Frankland governor who now oversees it along with five other Category A prisons in the north of England, said staff have to be constantly alert to the smallest details. 'It could be a new tea pack that a prisoner has received, or that their pin credit [for phones] or canteen [weekly items] has gone. These are small signs that something's changed,' he explained.

'This might not seem like anything to them [staff] but if it's fed back it can build a picture and we can try to understand what's happening, if someone is falling in with the wrong group.' Senior prison officials at the jail told how staff have to constantly monitor groups and rivalries, which can flare into violence. They include traditional gangs and organised criminal groups, far-Right terrorists and the more organised, 'hierarchical' Muslim groups. Prison officers have even identified cases in which gangsters have sought to ally themselves with high-profile terror offenders, identifying a business opportunity.

'It's because the terror offender will have sway over a large group of prisoners. That can be used by the OCG [organised criminal group] in a prison,' explained Mr O'Malley to officials including Mr Raab.

Two years ago, the unit at Frankland was criticised in a review by prison watchdog the Independent Monitoring Board, which said: 'The lack of engagement, and now the antagonism and hostility to staff, result in a lack of progression. Is the separation centre, initially conceived to be one of several, now viable in the successful management of these prisoners?'

Officials insist reforms introduced after the review have improved the situation. Mr O'Malley says the inmates also play a role. 'We do rely on prisoners as well to keep a wing settled and those good relationships to maintain stability on the wing,' he said.

Since 2011 German authorities have thwarted 13 terrorist attacks, including 6 cases where the information alerts were received from abroad

Source: https://counteriedreport.com/since-2011-german-authorities-have-thwarted-13-terrorist-attacks-including-6-cases-where-the-information-alerts-were-received-from-abroad/

Feb 06 – Without information from foreign partners, a number of planned terrorist attacks in Germany in recent years might not have been prevented. According to the Federal Government, a total of 13 attacks have been thwarted by the security authorities in Germany since 2011, three more failed for technical reasons.

"In six of these cases, information from foreign intelligence services and security authorities were of essential importance for prevention," says a response by the Federal Government to a written question from CDU deputy Christoph de Vries.

The information received from abroad was either the trigger for investigations or made an "outstanding contribution", writes the Federal Ministry of the Interior in the reply. For example, following the tip of a foreign intelligence service in **June 2018, German authorities were able to arrest a couple in Köln-Chorweile, who was planning a bomb attack with the deadly poison ricin.**

New Pro-ISIS Magazine "Voice of Khurasan" Released

Source: https://www.counterextremism.com/topics/taliban

On January 31, a new pro-ISIS web magazine, titled "Voice of Khurasan," was released online from al-Azaim Foundation. The magazine is analogous to the pro-ISIS publication "Voice of Hind" in that both are written in English and have similar layouts and imagery.

The inaugural "Voice of Khurasan" issue contained seven articles, four dealing with broader ISIS matters, and three directly concerning Afghanistan. The four global articles called for a

new generation to join ISIS, celebrated the Ghweran prison attack in Hasakah, Syria, encouraged the practice of ISIS's specific brand of fundamentalism, and encouraged their readers to give the group money, especially women who are described as not being able to participate in armed combat.

The web magazine included an article condemning the Taliban, who were described as hypocrites for claiming to be an Islamic emirate but having diplomatic relations with Pakistan, the U.S., China, and other states. The article also accused the Taliban of protecting opium fields and traffickers, defending the majority Shiite Hazara community, and entering a secret pact with the U.S. to destroy ISIS-K. The second article regarding Afghanistan contained a propaganda biography of the ISIS terrorist who killed almost 200 people, including 13 U.S. service members, in the suicide attack outside the Kabul airport on August 26.

The bomber was described as the well-educated son of a wealthy family who gave up a life of comfort to join ISIS-K. The final article concerning Afghanistan stated that ISIS's self-proclaimed Khurasan province is the third most important geographic unit, following Iraq and Syria, and that ISIS's pure enforcement of religious law is a threat to the Taliban and all other regional powers and the U.S. The article described ISIS as not discriminating based on tribe, nationality, or ethnicity, contrary to the Taliban, and encouraged the reader to join the group before it was too late.

The magazine was spread on RocketChat and a pro-ISIS propaganda website and was additionally located on JustPaste.It, Archive.ph, and the Internet Archive's Wayback Machine. JustPaste.It and the Wayback Machine removed the magazine after CEP reported it, but Archive.ph did not.

One member of a pro-ISIS chat stated that the release of the web magazine in English was "extra special" because pro-ISIS propagandists remembered their broad global audience.

UK terrorism threat level lowered to 'substantial'

Source: https://www.bbc.com/news/uk-55982743

Feb 08 – The UK's terrorism threat level has been downgraded from "severe" to "substantial".

Home Secretary Priti Patel said the move followed a "significant reduction" in the momentum of attacks in Europe - since those seen in Austria and France between September and November 2020.

But she stressed that it was kept under constant review and was always subject to change.

A "substantial" threat level means a terrorist attack is still likely.

The threat level was raised to severe by the Joint Terrorism Analysis Centre (JTAC) in November following the attacks last year, which saw four people shot dead in Vienna, three others die in a knife attack in Nice, and a teacher murdered in Paris.

But on Thursday last week the expert analysts reduced the level, Ms Patel told MPs on Monday.

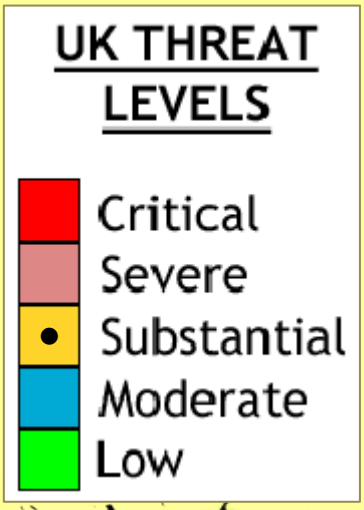
She added: "Terrorism remains one of the most direct and immediate risks to our national security.

"Substantial continues to indicate a high level of threat; and an attack on the UK is still likely.

"The public should continue to remain vigilant and report any concerns to the police."

The JTAC makes its recommendations independently from the government.

The five levels of threat set by the JTAC are:



- Low - an attack is highly unlikely
- Moderate - an attack is possible but not likely
- Substantial - an attack is likely
- Severe - an attack is highly likely
- Critical - an attack is highly likely in the near future

The UK's terrorism threat level was last raised to the highest rating, "critical", in the days following the Manchester Arena bombing in May 2017.
It reached that level again briefly in September that year, after a bomb partially exploded on a Tube train at Parsons Green.
The threat level remained at the second highest rating, "severe", until November 2019 when it was downgraded to "substantial", where it stayed until last November.

'Intent remains'

Analysis
By Dominic Casciani
Home and legal correspondent

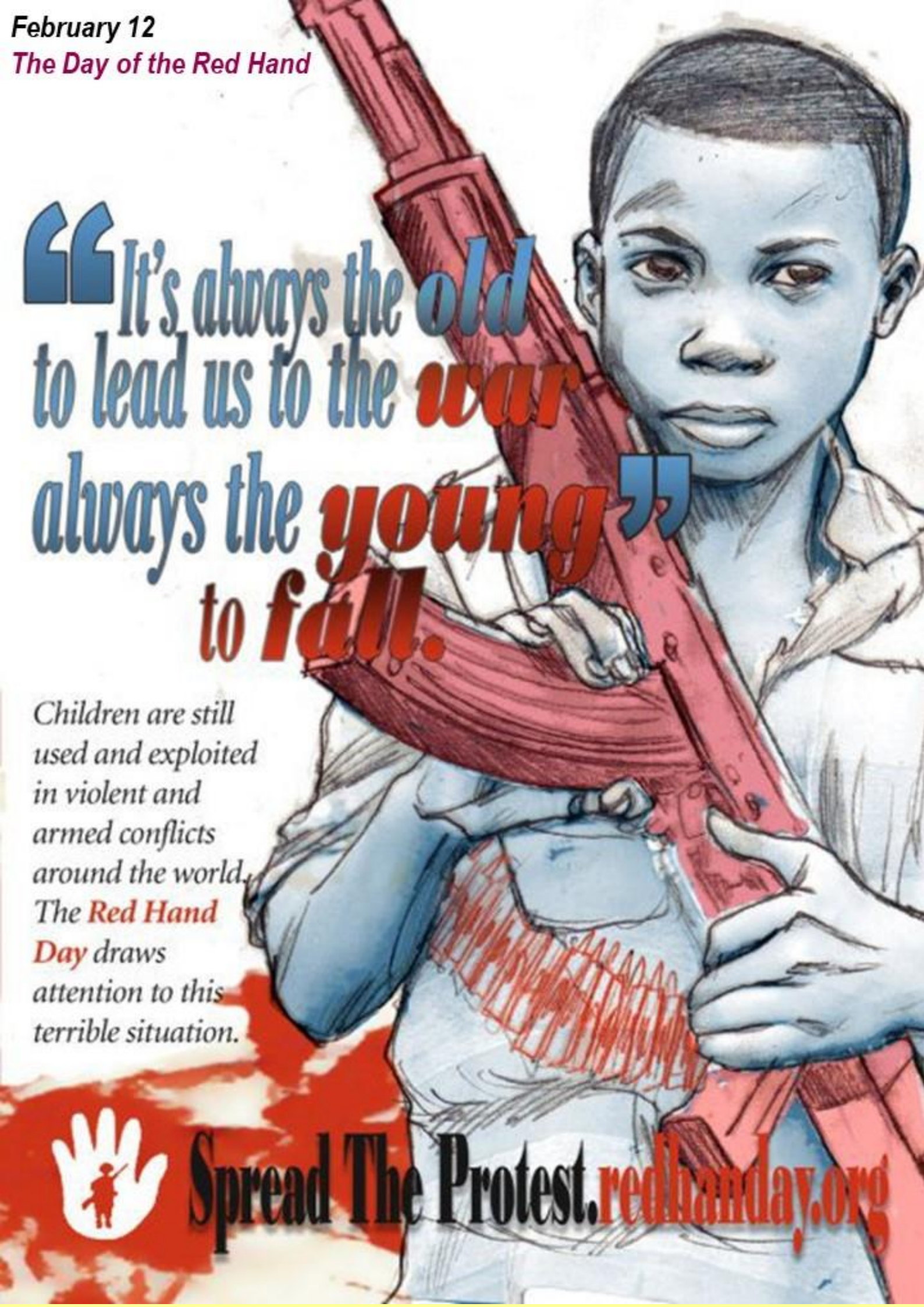
The UK's threat level system doesn't come with the publication of the number of ongoing plots - and indicators of foiled attacks and near-misses. But the headline declaring there is now a "substantial" threat can be understood with the help of some historical context. When the level was raised last year, there was no specific new intelligence suggesting a major bomb plot was about to come to fruition. But security agencies know, from the words of attackers themselves, that events at home are often inspired by those far away. Chronic global crises, such as Syria, provide radicalisers with raw material they can use to recruit and incite hate. Single specific incidents - such as the deaths in Vienna last November - can influence other extremists to accelerate their own plans - the copycat effect. But for months now, the pace of global events that are used as excuses for terrorism has slowed. There's some intelligence that some extremists in the UK also briefly slowed down as the pandemic and lockdowns took hold. That has not lasted. The number of potential suspects on MI5's radar remains largely unchanged at around 3,000 people. So the intent remains - including from the extreme right wing.

EDITOR'S COMMENT: What is the point of having "low" and "moderate" levels? Certain countries will never achieve peace and will always be a target – unless they change their policy and adapt to the fact that we only live 70-80 years! In addition, what is the point of having an alert system when people do not know what this means to them and their businesses or daily routine?

The Day of the Read Hand (February 12)

February 12

The Day of the Red Hand



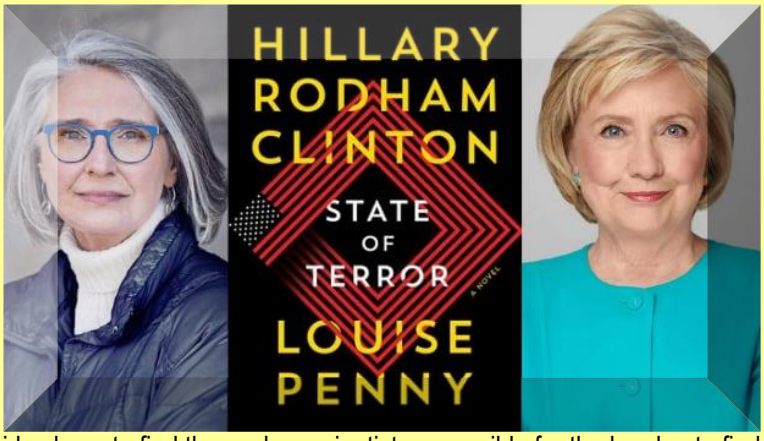
Book Review: State Of Terror

By Robert McCool

Source: https://www.blufftonicon.com/news/2022/02/13/book-review-state-terror

Feb 13 – A blockbuster book from two powerful authors. Hillary Rodham Clinton and Louise Penny co-authored the intense political thriller State Of Terror, (Thorndike Press ISBN-13-1-4328-8983-8) a page-turning thriller on a grand scale. If you like insight into the intrigue of our political system, this book is written to your taste.

Madame Ellen Adams, sixty-seventh Secretary of State, newly appointed by a president whom she campaigned against with her international media empire, is pulled into an international crisis when three buses in London are blown away with bombs placed by a conspiracy of anti-government terrorists. Her son, journalist Gil Bahar, was on one of these buses when he received a tip. Gil tries to evacuate the bus but is thrown off by the driver. This saves his life, leaving him with some significant injuries.



And thus begins the international chess game for the capture of the ultimate bad guy, Doctor Bashir Shah, dealer in weapons of mass destruction and friend of the Russian Mafia, the Taliban and other extremists committed to ending the American way of life by using nuclear weapons. There are three such "**dirty bombs**" in the United States, hidden and set to explode in urban areas, including one in the White House.

The race to stop this from happening takes you on a worldwide chase to find the nuclear scientist responsible for the bombs, to find the bombs and defuse them, and keep Ellen Adams' family and friends safe from terrorists who would kill them. Most of all, to foil Bashir Shah's plan to end America, including the ignorant ex-President's support for his "friendship" with the terrorist.

One of the things I like best is the portrayal of Erick Dunn, a loosely based lambasting of the very real Donald Trump. The authors draw down Trump like a gassed and pinned butterfly on the brutal backboard of the incidental, internal destruction that his reign created.

Hillary's insider expertise and Louise Penny's power with words provide unsurpassed thrills throughout the book, often leaving you with chills from the realistic possibilities of such a scene actually occurring in this dangerous vision of an unprotected America. Regardless of what you might think about Mrs. Clinton's term as a Secretary of State under Barack Obama, she learned the elements of the job and the personalities within Washington's subset of power-hungry politicians. The book rings with the true machinations of Washington's insiders.

Reviewers have noted similarities in this novel to husband Bill Clinton's two novels about the Washington crises. His protagonist-hero is a president. Her protagonist-heroine is the Secretary of State.

Louise Penny is a Canadian author with her own series of seventeen thrillers that take place in Twin Pines, Quebec, a location that appears in this book as a nod to Penny's novels. It's a nice sideline. Likewise, the other characters are based on real people in Hillary's life, lovingly included as a piece of reality. You come to know and care about them.

For its thrills and chills, I recommend the State of Terror. It gives you a mind-altering taste of what could be in this dangerous world we live in.

Islamic State collaborators received Turkish citizenship, official report shows

By Fehim Tastekin

Source: https://www.al-monitor.com/originals/2022/02/islamic-state-collaborators-received-turkish-citizenship-official-report-shows

Feb 15 – Shortly after the Islamic State's (IS's) leader was killed in a Syrian hideout near the Turkish border, a leaked report by Turkey's Financial Crimes Investigation Board (MASAK) revealed details about how the jihadi group used the country to traffic money and obtain supplies, including drone parts.

The March 8, 2021, report by the MASAK, a body attached to Turkey's Treasury and Finance Ministry, indicates that IS members acquired equipment and parts to make drones and improvised explosive devices with the help of companies set up in Turkey, and used

exchange offices, jewelry shops, post offices and banks to transfer money. Furthermore, it reveals that some IS-linked individuals investigated by the MASAK have acquired Turkish citizenship.
The 279-page document, obtained by Al-Monitor, was first reported by journalist Bahadir Ozgur in the daily BirGun last week and has since made it to parliament's agenda.

Seized Islamic State weapons that were found in the last stronghold of the extremist group are displayed at an SDF base on March 22, 2019, outside Al Mayadin, Syria. - Chris McGrath/Getty Images

The most striking details pertain to the activities of three companies set up by the Aleppo-born Ibrahim Hag Gneid in Turkey's southern province of Mersin in 2014 and 2016. The companies — Altun Inci, Mavi Yelken and Elfarah — were registered as businesses dealing in construction materials, industrial supplies and hardware.
According to information sent to the MASAK by the directorate-general of the police on Nov. 1, 2017, Altun Inci procured equipment and parts for drones and improvised explosive devices worth millions of dollars from 2015 through 2016. The authors of the report opine that Gneid's motivation was material but he was aware the supplies were destined for IS.
Gneid was business partners with Mustafa Ghassan Naway and Safi Naway, both Syrians who have settled in Mersin and acquired Turkish citizenship.
According to the report, Abu Naeema al-Turkistani, a Chinese national of Uighur origin involved in Altun Inci's procurement chain, ordered materials used in weapons-making worth some $85,000 from a China-based company in 2015. Turkistani and his wife, Minawaer Maitituersun, belonged to an IS unit in charge of making chemical weapons.
According to the report, Sajid Farooq Babar, a Pakistani national known as Abu Muaz Pakistani, also supplied IS with large amounts of materials via Altun Inci and Mavi Yelken before being killed in a US strike in 2017.
The Pentagon said at the time that Babar and two fellow IS members responsible for modifying commercially produced drones were killed in successive strikes near Mayadin, Syria, in September 2017, which targeted also a research lab. A US military official described the three men as "highly skilled" militants whose removal would degrade IS' ability "to modify and employ drone platforms as reconnaissance and direct-fire weapons on the battlefield."
Gneid parted ways with Altun Inci in 2017, continuing his activities with Elfarah and Mavi Yelken. Open sources show Mavi Yelken is a member of Turkey's Mediterranean Exporters Assembly.

According to information obtained by Ozgur, the BirGun journalist, two Turks bearing the same surname became partners in Altun Inci after Gneid's departure. Elfarah, meanwhile, is currently owned by Cafer Ibrahim, a Syrian who acquired Turkish citizenship in 2017 and resides in Istanbul. Ozgur reports that Naway Group, a company owned by Altun Inci partner Mustafa Naway, was a key link in the network. The company, which was founded in Aleppo and opened an office in China in 2011, is still involved in e-commerce.

Gneid received Turkish citizenship under a Cabinet decision of May 29, 2017. In 2019, prosecutors in Mersin investigated him on suspicion of belonging to a terrorist group and, even though intelligence reports described him as an IS member, the probe ended with a nonprosecution decision. Writing to the MASAK in February 2021, the police reiterated that Altun Inci procured multimillion-dollar drones and explosive materials on behalf of IS.

The report cites also a Lebanese link: Fayez Alfliti, a Turkish citizen of Lebanese origin. According to information relayed by the police to the MASAK on Jan. 22, 2020, Alfliti made contact with IS after crossing to Syria from Turkey and supplied the group with Lebanese-made detonating cords in 2015. In return, a payment of $400,000 was sent with smugglers from Raqqa, then an IS stronghold in Syria, to the southern Turkish city of Gaziantep before the money was transferred to Lebanon.

The report indicates that Turkish members of the group were actively involved in IS efforts to raise money to help the escape of fellow militants and their relatives from al-Hol camp in northern Syria, which is controlled by the Kurdish-led Syrian Democratic Forces. On Sept. 30, 2020, the police informed the MASAK that Abdi Yildirim, who was captured in December that year, and Selami Boztepe raised money in Ankara, Antalya and Konya to "rescue" female members of the group held in camps in Syria.

In another finding, the MASAK established that Abuliezi Abduhamiti, hailing from China's Xinjiang region and described as a key IS financial operative by US authorities, was linked to Abdulkadir Masharipov, the Uzbek assailant convicted of gunning down 39 people in an Istanbul nightclub just minutes into New Year's Day in 2017, and had a role in money trafficking linked to a network in Britain.

Standing out on the financial leg is also Ahmed El Ahmed El Harun, a Syrian from Deir ez-Zor, known also as Uday Ali Saad Khalifa Al Salmani, who joined IS in Iraq along with his brothers. According to the report, he was in charge of financing the transfer of arms and militants. As part of his mission, he ran jewelry shops, transferred funds using the informal hawala system, provided money to pay the salaries of IS members in Iraq, spent time in Turkey to take care of logistical issues, organized illegal border crossings and set up a solidarity fund for IS members.

The report shows that IS activities have extended to Turkish regions that have rarely been on the radar, unlike provinces such as Istanbul, Ankara, Konya, Sanliurfa and Bursa. For instance, a native of Deir ez-Zor named Yusuf El Ali El Hasan collected money from Syrians in the Black Sea province of Trabzon. He sent the money to contacts in Ankara and Sanliurfa, named respectively as Abdurrahman Abdulkareem, also from Deir ez-Zor, and Ali El Ali. The pair then transferred the money to the El Hafiz company in Syria.

The report mentions numerous individuals linked to the currency exchange companies Saksouk and Al Haram, which are at the center of the money transfer chain. Among them is Aleppo-born Hasan Krayem, the owner of a jewelry business in Turkey, called Talbe Kuyumculuk, who, the report shows, has become a Turkish citizen.

According to information the police relayed to the MASAK on Sept. 23, 2020, Suat Ozdemir from Elazig, eastern Turkey, collected 1.7 million Turkish liras for the release of about 200 IS-related women and children held in Syria. In two separate instances in November 2018 and September 2020, the police informed the board that Tahsin Elhalaf, a Syrian residing in the southern Turkish province of Kahramanmaras, was involved in IS money transfers between Turkey and Syria.

Other information from the police, dated April 3, 2018, details a police raid on the El Hadi jewelry shop in Istanbul, owned by Halid Habu, a Syrian, on March 16, 2018. The police seized large sums of money believed to be used in IS-linked transfers, including more than $1.2 million, nearly 129,000 euros, some 1.8 million Turkish liras, nearly 47,000 Emirati dirhams and 2 million Syrian pounds.

The report shows that some IS sympathizers such as Suleyman Soltamuradov and Rukman Mazashev who raised money for Gayratjon Mirzotokhirovich, an IS financial operative known as Abdurakhmon Uzbeki, have also acquired Turkish citizenships.

The report mentions also a Somali man, Abdifatah Abdullahi Mohamed, who belongs to the Somalia-based jihadi group Al-Shabaab, according to information the MASAK received from Turkey's National Intelligence Organization on Feb. 4, 2021. Prosecutors in Istanbul investigated Mohamed on suspicion of membership in a terrorist group in 2020, but that probe too ended in nonprosecution.

The report includes curious tables on the identities of the individuals investigated by the MASAK. A column titled "TCKN" — the Turkish acronym for "Republic of Turkey Identity Number" — lists 11-digit numbers starting with the number 9. In the "citizenship" column, many are marked as citizens of Turkey. The tables might mislead the reader to conclude that all IS-linked individuals mentioned in the report are Turkish citizens, even though the report's only open reference to the acquisition of Turkish citizenship pertains to Gneid. Back in 2017, following allegations that Ankara would allow Syrian refugees to vote,

officials explained that identity numbers starting with 9 have been assigned to foreign nationals and do not denote citizenship. The identity numbers of several individuals other than Gneid do not start with 9.
Alpay Antmen, a lawmaker for the main opposition Republican People's Party, submitted a parliamentary question to the interior minister last week, asking why the police were not acting against the individuals cited in the report and how many IS-linked people have acquired Turkish citizenship. Antmen told Al-Monitor he has yet to receive a reply.

Fehim Tastekin is a Turkish journalist and a columnist for Turkey Pulse who previously wrote for Radikal and Hurriyet. He has also been the host of the weekly program "SINIRSIZ," on IMC TV. As an analyst, Tastekin specializes in Turkish foreign policy and Caucasus, Middle East and EU affairs. He is the author of "Suriye: Yikil Git, Diren Kal," "Rojava: Kurtlerin Zamani" and "Karanlık Coktugunde - ISID." Tastekin is founding editor of the Agency Caucasus.

Activity Shows Terror Groups and Right-Wing Extremists Were Undeterred by COVID-19 Pandemic

By Mahmut Cengiz
Source: https://www.hstoday.us/featured/activity-shows-terror-groups-and-extremists-were-undeterred-by-covid-19-pandemic/

Feb 14 – Now in its third year, the COVID-19 pandemic has wreaked havoc on the world population with 350 million confirmed cases, more than 5.6 million deaths (as of February 9, 2022), and widespread geopolitical and socioeconomic disruptions. Government leaders have prioritized the implementation of mitigation measures – including vaccines, booster shots, masking, social distancing, and drug therapies – yet the prospect of new variants arising remains an ongoing threat. The pandemic also has prompted many people to change how they live and work and some to carry on as usual, while still others have used the pandemic to their advantage. Organized crime groups, for example, have found ways to thrive during the pandemic by ramping up human trafficking and antiquities trafficking. The World 2020 Drug Report and the Global Initiative against Transnational Organized Crime have underlined how drug trafficking groups and various criminal organizations have taken advantage of the consequences COVID-19 and expanded their capacities.
Much less is known, however, about any changes in the activity level of terrorist organizations during the pandemic. Scant research has been done on the topic. One such study, which used 2019 data from the Global Terrorism Database, found a tremendous decrease in the number of terrorist attacks in urban areas and a slight increase in terrorist activity in conflict zones. An examination of data in the U.S. State Department's 2020 Annex of Statistical Information, published in December 2021, indicated a 13 percent increase in the total number of terrorist attacks across all countries between 2019 and 2020, which could lead one to conclude that the COVID-19 pandemic has little to no impact on terrorism.
How individual countries fare in terms of the effect of COVID-19 on terrorist activity is problematic. The reliability of COVID-19 data varies from one country to another. The Western world, for example, is believed to have the most known cases, primarily because of widespread testing and transparency in the release of COVID-19 data. Some countries lack testing, making it difficult to get a clear picture on the number of cases, while other countries manipulate the numbers to their advantage. Reported here are the results of a study that analyzed the impacts of COVID-19 by the types of terrorism included in the 2020 Annex of Statistical Information.

Global Impacts of COVID-19
COVID-19 and its variants are among the most contagious viruses that scientists have seen, fueling a pandemic that has had dramatic social and economic impacts unheard of until now. The decline in growth of the world Gross Domestic Product (GDP), for example, is the greatest it has been since the end of World War II. The global economy contracted 3.5 percent in 2020, and every country covered by the International Monetary Fund reported negative growth in 2020. Manufacturing countries were hit especially hard and recorded rapid declines in GDP. Lockdowns and quarantines led to fatigue among people unable to leave their homes to socialize or go to offices as they were accustomed to doing. Reports of mental health issues among people at all socioeconomic levels increased as people felt more and more isolated. At the same time, the number of COVID-19 cases increased worldwide, rising from around 66,000 on March 30, 2020, to around 300,000 on July 30, and to around 596,000 on December 30. When omicron became the dominant variant, the number of confirmed COVID-19 cases skyrocketed.

The Impacts of COVID-19 on Terrorism
Terrorism continues to be a significant security issue worldwide. Efforts to stem the tide of terrorism have been met with some success, though the problem persists. The Western

world, for example, has been able to counter several coordinated attacks by jihadist terrorist organizations on Western soil. At the same time, however, the rising number of ISIS- and al-Qaeda-affiliated groups operating in Asia, the Middle East, and Africa has threatened not only local and regional security but also global security. Added to the mix are Iranian-backed Shia groups that are active in the Middle East and Latin America; a growing number of organized right-wing extremist groups in the Western world, including those involved in the January 6, 2021, attack on the U.S. Capitol; antifascist and anarchist groups in the United States and Western world; and revolutionary and far-left groups that operate in Latin America and Asia. Some of these groups are listed among the top 10 terrorist groups responsible for the largest number of terrorism incidents in 2020, indicating that the COVID-19 pandemic had little effect on stemming the groups' collective activity. Figure 1 shows the total number of terrorist incidents and fatalities in 2019 and 2020. During that period, the number of incidents rose 13 percent and fatalities 12 percent. The effects of the COVID-19 pandemic on different types of terrorism are described in the sections that follow.

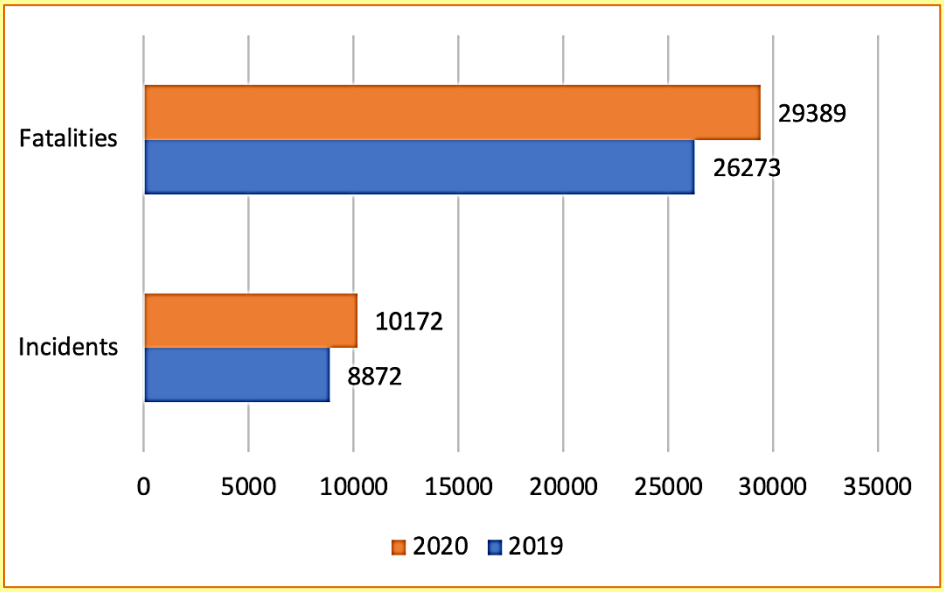


Figure 1: Comparison of Terrorist Incidents and Fatalities, 2019 and 2020

Revolutionary Terrorism

Revolutionary terrorism is a global movement expressing dissatisfaction in the wake of anticolonialism and refers to movements designed to overthrow and replace a political system. Modern revolutionary terrorism reached its zenith in the 1960s and 1970s and involved mainly left-wing and Marxist movements. The Revolutionary Armed Forces of Colombia (FARC) founded in 1964 and Shining Path founded in Peru in 1970 are two examples of revolutionary terrorism in Latin America, while the New People's Army (NPA) founded in 1968 in the Philippines and the communist and Maoist-oriented India-Naxalites founded in 1967 are two examples of revolutionary terrorism in Asia. Today, NPA and Naxalites are two active revolutionary groups.

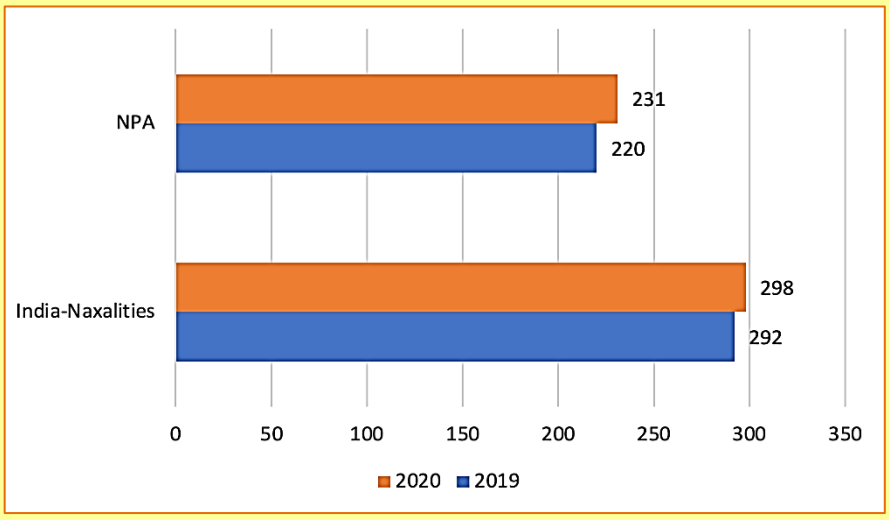


Figure 2: Comparison of Terrorist Incidents by India-Naxalites and the New People's Army (NPA), 2019 and 2020

Revolutionary groups have taken advantage of worsening economic conditions and weak government responses in the countries where they operate by telling their fighters that the government has presented more opportunities to wealthy people than to poor people. In India, for example, a nationwide lockdown and local restrictions amid the COVID-19 pandemic have prompted workers and day laborers to leave large cities and return to their villages, driving up the unemployment rate and causing economic hardship for many. A common belief among the Naxals is that they have been hurt especially hard by the economic effects of the pandemic compared with the country's billionaires, who have managed to increase their wealth 35 percent during the nationwide lockdown. Sensing an opportunity, the Naxals have attempted to persuade the returning villagers to join the ranks of the India-Naxalites organization by promising them a better future. The effort was at least somewhat effective. The India-Naxalites slightly

increased their capacity and perpetrated 298 attacks in 2020, which is close to the number of attacks the group perpetrated in 2019 (see Figure 2).
In the Philippines, a significant number of NPA fighters who surrendered or were captured by the Philippine military tested positive for COVID-19. According to military sources, COVID-19 spread quickly among the members of the NPA; therefore, the army launched a "vaccine for surrender" campaign for NPA fighters. The NPA was suspicious of the campaign's true intentions and warned its members not to join the military's vaccination campaign. Instead, the NPA carried on as usual, perpetrating enough attacks in 2020 to place the group among the top 10 terrorist organizations in that category. Much like the India-Naxalites, the NPA increased its capacity slightly in 2020 (see Figure 2).
In Colombia, the government ordered one of the longest and strictest COVID-19 lockdowns in the world; however, the measure has failed to contain the virus and, in 2020, Colombia was included among the countries with the highest number of COVID-19 cases. The economic and social fallout from the spread of the virus provided fertile ground for revolutionary groups, such as FARC-dissident groups and the National Liberation Army, to recruit more children into their ranks. Social confinement and school closures made more children vulnerable to enticement by revolutionary groups. The efforts were successful. In the first half of 2020, for example, armed groups recruited 190 minors – a marked increase from the 200 minors recruited in all of 2019. For its part, the National Liberation Army has hosted parties used messaging apps to entice children into its ranks during the pandemic.

Right-Wing Extremism
Right-wing extremism is defined as the use of threats or intentional violence by non-state actors and individuals (often referred to as lone actors) with goals that include declaration of the superiority of one race and/or ethnicity over all other races and/or ethnicities, opposition to the government authority, anger at women, and outrage against single issues such as abortion, the environment, or animal rights. This type of terrorism manifests as racism, hatred of minorities, antisemitism, xenophobia, and Islamophobia. More specifically, far-right groups in the United States typically express contempt for the federal government, emphasize social hierarchy, and are composed of white supremacists and anti-government extremists.
Right-wing extremism has received increased attention in the Western world. Although the European Union, the United States, and Canada have reported a handful of right-wing terrorist attacks, right-wing extremism has become a major security threat for these countries. The insurrection targeting the U.S. Capitol on January 6, 2021, served as a galvanizing event and brought to the forefront concerns about how right-wing extremist groups can come together, make a plan, use social and digital media, and dare to attack one of the strongest symbols of democracy in the world. Parler, a conservative alternative to Twitter, played a key role in the ability of far-right groups to not only plan but also inspire and recruit thousands of like-minded people from across the country to come to Washington, D.C., and storm the Capitol on the day that a joint session of Congress was convened to certify Joe Biden as the winner of the Electoral College vote.
Far-right groups in the United States have been quite vocal in their response to the COVID-19 pandemic, especially in terms of refusing to abide by efforts intended to mitigate the spread of the virus. These groups have used the COVID-19 pandemic to call for violence, spread debunked conspiracy theories, engage in hate speech, and claim that democracy is a failed system. Much like the January 6 insurrectionists, far-right groups use digital platforms to disseminate extremist content and call for coordinated campaigns against perceived enemies. The platforms of choice range from unregulated imageboard sites (such as 8chan and 4chan), to censorship-free discussion platforms (such as Voat), to encrypted messaging channels (such as Telegram). Incendiary content transmitted through these channels has triggered acts of violent extremism and shows how far-right groups can achieve their goals of attacking law enforcement, liberals, Muslims, Jews, Black Americans and others deemed to be their enemies. Telegram, for example, has seen an exponential increase in the number of Telegram channels associated with white supremacy and racism. The Boogaloo movement, a "decentralized ideological network that believes in a coming second U.S. civil war and espouses anti-government and anti-law enforcement rhetoric," has grown 800 percent just in the month of March 2020. QAnon, which the FBI labeled as a domestic terrorism threat in 2019, espouses an ideology based on the belief that the United States and the rest of the world are controlled by a "powerful group of pedophiles who worship Satan and control the Democratic Party, the media, and Hollywood." The number of QAnon followers on Telegram increased almost 100 percent in March 2020.
The words and actions of far-right groups have pushed the U.S. Department of Justice to release a memorandum that refers to coronavirus as a "biological agent" and charges certain acts related to COVID-19 as federal crimes of terrorism. The memorandum aims to punish ill-intentioned individuals who seek to spread the virus to others and violate social-distance guidelines. The politicians who are influential among far-right groups have made the situation worse. For example, after former U.S. President Donald Trump labeled coronavirus as the "Chinese virus" in 2020, online anti-Asian hate speech and physical attacks on Asian Americans increased.

The situation in the European Union was similar, with the number of arrests of right-wing extremists increasing in 2020 compared with 2019. For example, the number of total arrests rose from 21 in 2019 to 34 in 2020. Germany was the leading country with 14 arrests in 2020 compared with no arrests in 2019. The Netherlands recorded 6 arrests in 2020 compared with 2 arrests in 2019.
The author's database confirmed the increases in the number of attacks by right-wing groups. The database collected information on attacks by lone actors according to their chosen ideology (i.e., right wing, jihadist, ethnonationalist, and anarchist) and whose acts meet the criteria for individually committed violence. Accordingly, the number of right-wing attacks worldwide rose from 15 in 2019 to 27 in 2020.

Jihadist Terrorism

Jihadist groups are influenced by their strict interpretation of the Qur'an and their twisted version of Islamic law. They use religious rhetoric not only to justify their goals but also to assert that the coronavirus is a punishment from God. The groups have devoted an enormous amount of their attention to the COVID-19 pandemic, generating propaganda based on their beliefs and even encouraging their followers in some countries to intentionally spread the virus. This heightened focus on the pandemic, however, did not diminish the groups' desire or ability to carry out terrorist attacks. For jihadist groups, it was business as usual.
As the 2020 Annex of Statistical Information shows, COVID-19 did not reduce significantly the attack capacity of jihadist groups in 2020. The Taliban, Boko Haram, ISIS-Core, and two groups affiliated with al-Qaeda (Hay'at Tahrir al-Sham (HTS) in Syria and al-Shabaab in Somalia) perpetrated almost the same number of attacks in 2020 as they did in 2019 (see Figure 3). ISIS-Core's province in the Democratic Republic of Congo (ISIS-DRC) was the outlier; attacks by this group increased almost 300 percent in 2020 compared with 2019, despite the impacts of COVID-19.

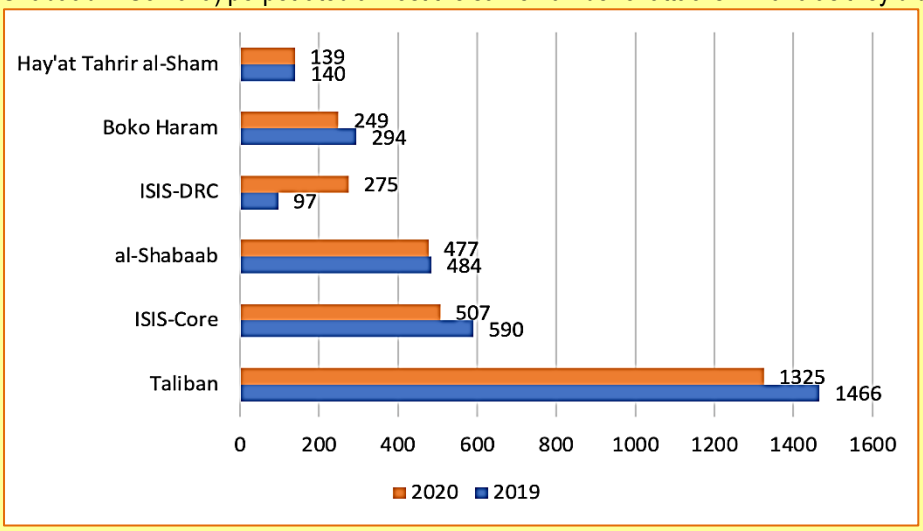


Figure 3: Jihadist Groups Listed Among the Top 10 Terrorist Groups Responsible for the Largest Number of Terrorist Incidents, 2019 and 2020 (Note: ISIS-DRC is ISIS-Core in the Democratic Republic of Congo.)

According to ISIS-Core, the pandemic has been "God's wrath upon the West, and the disease itself is a 'soldier of Allah.'" In its official online publication, *al-Naba*, ISIS states that the pandemic has killed more Americans than the attacks of 9/11, which shows that America is not powerful and invincible. In another ISIS online publication in India, the group called for its supporters to spread the virus, saying that every member of the organization and their families can contribute to Allah's cause by becoming the carriers and that it is guaranteed that devout Muslims will not be sickened because no disease can harm even a hair of a believer.
Al-Qaeda-affiliated groups are no different from ISIS in their responses to COVID-19. For example, the Turkestan Islamic Party, a Uyghur jihadist group operating in Syria, claimed that the outbreak of COVID-19 in China was a punishment from Allah for the Chinese oppression of the Uyghur minority in Xinjiang. Another al-Qaeda-affiliated group, Hay'at Tahrir al-Sham, calls the virus an apocalyptic harbinger that will cause political and economic collapse and provide a geopolitical opportunity for their aims. At the same time, HTS released on its media outlet, *al-Ebaa*, a poster that instructed the group's followers to comply with COVID-19 mitigation and safety measures in the territories under its control.
Furthermore, al-Shabaab used conspiracy theories in its approach to the COVID-19 pandemic, saying that crusader forces intentionally spread the virus in Somalia. It should be noted that the Islamic Revolutionary Guard Corps in Iran, which was designated as a terrorist organization by the U.S. State Department in 2019, claimed that the virus is the result of a Zionist biological terror attack.
The Taliban said that God sent COVID-19 in response to the sins and disobedience of mankind, though the group hinted that it was concerned about the reckless spread of the virus in government prisons where Taliban militants were being held. The Taliban also issued security guidelines intended to counter the spread of the virus and asked that more tests be made available throughout Afghanistan.
Despite the jihadist groups' expressed or implied concerns about the virus, they proceeded with business as usual during the pandemic by increasing their presence on social media to radicalize and recruit into their ranks as many people as possible. At the same time, two of

the jihadist groups – the Taliban and HTS – exploited the pandemic operationally by providing government services and medical aid to locals. Using a hearts-and-minds approach, both groups sought to improve their credibility and popularity and show that they are better prepared to meet the challenges of COVID-19 than the government officials in the countries where two group operate.

Conclusion

To conclude, the 2020 Annex of Statistical Information shows that COVID-19 did not reduce the number of terrorist attacks; instead, such attacks increased 13 percent worldwide. Terrorist organizations continued to maintain their operational capacity and responded to the virus based on the pillars of their ideologies. Whereas jihadist groups used their religious ideology to justify their causes and benefit from the impacts of the pandemic by declaring that the virus is a punishment from God, right-wing groups in the United States used digital platforms to spread debunked conspiracy theories and target their perceived enemies. Revolutionary groups were more concerned about the economic impact of the virus and weak or ineffective government responses to the disease. Pandemics – regardless of the precipitating disease –have significant negative impacts on the social, political, and economic systems of the affected countries. Immune to these effects appear to be terrorist organizations and right-wing extremist groups. They simply carry on, business as usual.

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UN praises Qatar's support for global network launch against terrorist attack

Source: https://www.qatarday.com/News/un-praises-qatars-support-for-global-network-launch-against-terrorist-attack/13001/0

Feb 16 – The United Nations praised the State of Qatar and its support for the launch of the United Nations Global Network of Experts on the Protection of Vulnerable Targets against Terrorist Attacks.

The launch of the network comes within the framework of the UN Global Programme on Countering Terrorist Threats against Vulnerable Targets.

This came at the high-level virtual meeting held by the United Nations Office of Counter-Terrorism (UNOCT) to launch the Global Network of Experts on the Protection of Vulnerable Targets against Terrorist Attacks, with the participation of nearly 200 senior officials, experts and stakeholders from Member States, international and regional organizations, the private sector, civil society, and academia.

Under-Secretary-General of the United Nations Counter-Terrorism Office Vladimir Voronkov praised in his opening remarks the State of Qatar and thanked it for its support for launching the global network, and said that the network comes within the framework of the United Nations Global Programme on the Protection of Vulnerable Targets, and that this Programme is one of the strategic initiatives of the UNOCT, which is funded mainly thanks to the contribution made by the State of Qatar in favor of the Office.

This Programme, he said, is implemented in cooperation with the Counter-Terrorism Executive Directorate (CTED), the United Nations Interregional Crime and Justice Research Institute (UNICRI) and the United Nations Alliance of Civilizations (UNAOC).

HE Permanent Representative of the State of Qatar to the United Nations Sheikha Alya Ahmed bin Saif Al-Thani participated as a keynote speaker in the meeting. HE said in her

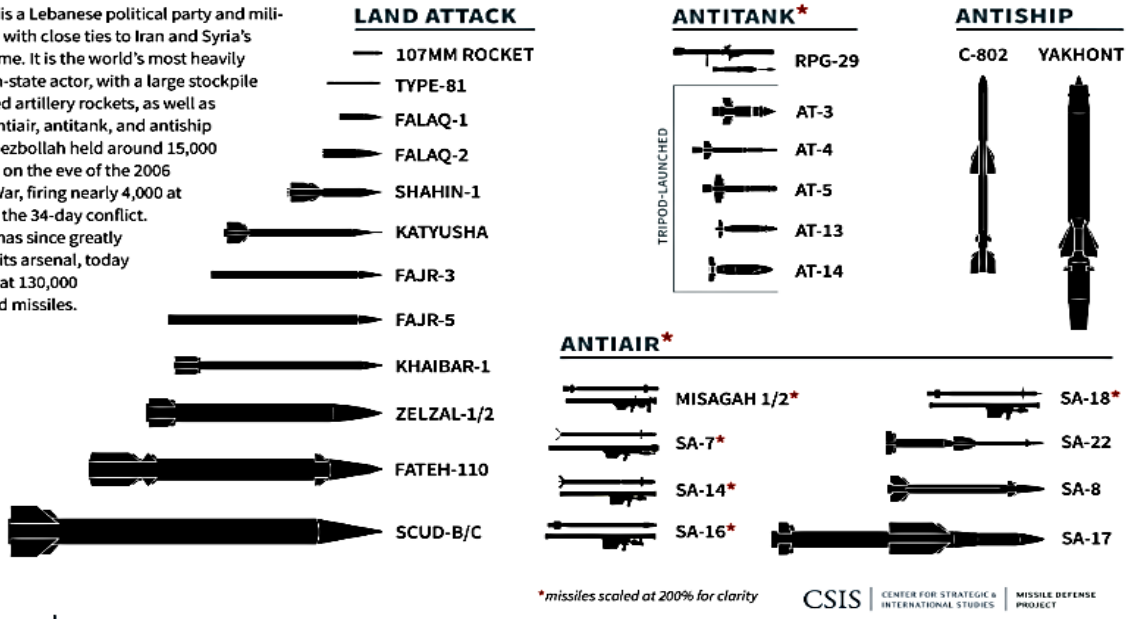
remarks that the State of Qatar welcomes the new concrete outcome of this Global Programme on Countering Terrorist Threats against Vulnerable Targets supported by the State of Qatar.
Her Excellency stressed that the Global Program is beneficial in supporting the efforts of Member States to prevent, protect, mitigate, respond to, and recover from terrorist attacks against critical targets.
The programme serves a crucial need in view of the imminent danger to vulnerable targets, including infrastructure, she added.
HE the Permanent Representative of the State of Qatar to the United Nations explained that in order to allow more effective interaction, the Global Network will be hosted on the Connect and Learn Platform, which is another tool through which UNOCT fulfils its mandate in coordinating and supporting international cooperation for counterterrorism.
Her Excellency drew attention to the efforts made by the State of Qatar in the framework of developing expertise and capabilities in the field of countering terrorist acts against vulnerable targets, stressing that the State of Qatar is ready to contribute to enhancing international cooperation and capacity building.
In this context, HE pointed out that the State of Qatar has nominated government focal points to enroll in the new Global Network of Experts, including the competent national agencies, namely the National Counter Terrorism Committee and the General Directorate of Industrial Security.
By facilitating liaison between national competent authorities of Member States and experts from different sectors, the new Global Network can play a central role in coordinating global efforts and facilitating exchange of best practices and needs for capacity building, HE added.
This network of experts and stakeholders seeks to protect critical infrastructure and "soft" targets, and to foster synergies between relevant stakeholders from across the world from both the public and private sectors, as well as academia, civil society, and international and regional organizations.
The Network, which was established in November 2021, already counts close to 150 members and is hosted online on the UNOCT Connect and Learn Platform.
The meeting witnessed lively discussions, in which a number of officials and experts from Member States, regional organizations and civil society participated. The discussions focused on the protection from terrorist attacks for each of the vital infrastructures, such as energy facilities, transportation systems or water supplies, and "soft targets" such as urban centers, tourist places, religious sites, and major cultural and sporting events.

Nasrallah: Hizbullah Making Precision Missiles, Drones inside Lebanon

Source: https://www.naharnet.com/stories/en/287941-nasrallah-hizbullah-making-precision-missiles-drones-inside-lebanon

Feb 16 – **Hizbullah chief Sayyed Hassan Nasrallah on Wednesday announced that his group now possesses the ability to transform its ordinary rockets into precision-guided missiles, adding that Hizbullah has also been manufacturing drones for several years now.**
"I tell the Israelis that what they call a 'battle between wars' has turned the threat into an opportunity for the resistance," Nasrallah said in a televised address, referring to Israel's recurrent strikes on Hizbullah-bound arms shipments inside Syria.
"We now possess the ability to transform our **thousands of rockets** into precision-guided missiles," Nasrallah added, noting that such missiles are spread throughout Lebanon and are not stored in a single place.
Hizbullah's leader also boasted that his group has been manufacturing drones for several years now, adding that it is willing to **start selling** such aircraft.
He also warned Israel against carrying out any landings or airborne operations inside Lebanon.
"Should the enemy dare to carry out a certain operation in search of our missiles, it might face an 'Ansariyeh 2' operation," Nasrallah said, referring to Israel's 1997 botched landing on Ansariyeh's shore in which 12 of its troops were killed.
Nasrallah also said that Hizbullah has been working on improving its military capabilities, revealing that last summer, Hizbullah fighters conducted the largest training exercise since the group was formed in 1982.
Stressing that Hizbullah will continue to "protect Lebanon" through the so-called army-people-resistance equation, Nasrallah added that his party does not fear any national dialogue over the fate of its weapons.

Hezbollah is a Lebanese political party and militant group with close ties to Iran and Syria's Assad regime. It is the world's most heavily armed non-state actor, with a large stockpile of unguided artillery rockets, as well as ballistic, antiair, antitank, and antiship missiles. Hezbollah held around 15,000 projectiles on the eve of the 2006 Lebanon War, firing nearly 4,000 at Israel over the 34-day conflict. The party has since greatly expanded its arsenal, today estimated at 130,000 rockets and missiles.



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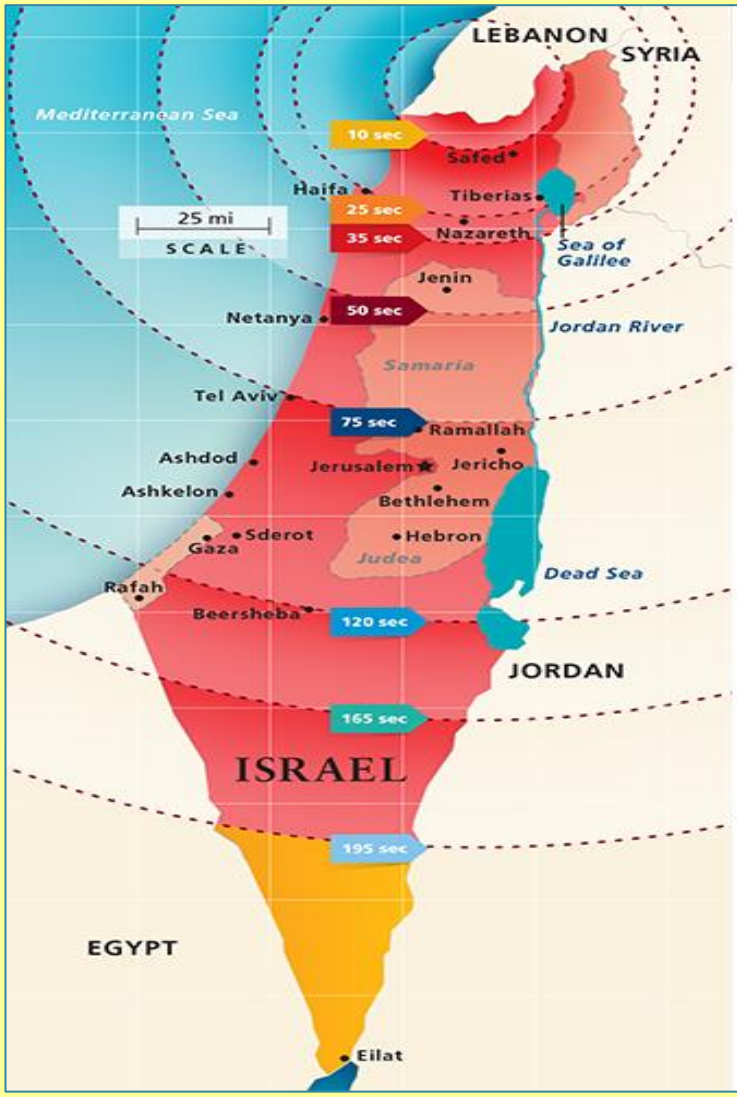
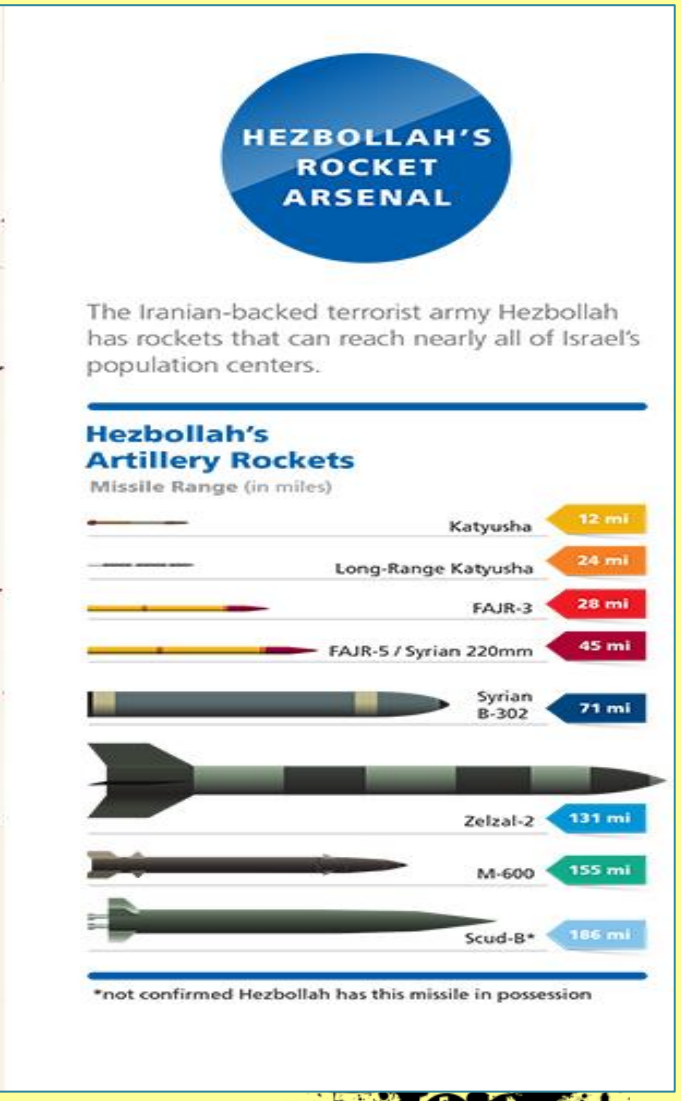




"We insist on strengthening and equipping the army and we also insist that the assistance should not come from a single side," he added, referring to Washington's support for the Lebanese Army.

As for the upcoming parliamentary elections, Nasrallah emphasized that "all electoral rounds in Lebanon are important and critical" and underscored that Hizbullah supports holding the elections on time.

Nasrallah also commented on Interior Minister Bassam al-Mawlawi's banning of two events for the Bahraini opposition in Lebanon and his criticism of a rally that was held at a pro-Hizbullah venue.

"Those who met yesterday in the Risalat Hall are the ones who consolidated Lebanon's identity and the Bahraini opposition has the right to celebrate the anniversary of its revolution," Nasrallah stressed.

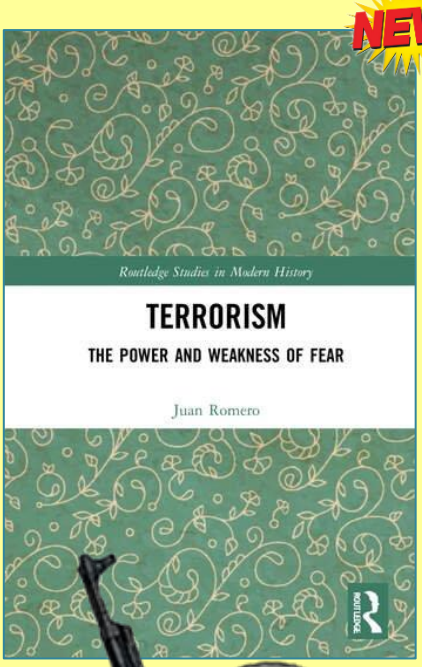
"Lebanon has always been the refuge of political oppositions in the Arab world. Who wants to transform it into an oppressive country? Lebanon is the country of freedoms and this is its real identity," he said.

RECOMMENDED

Terrorism – The Power and Weakness of Fear

Author: Juan Romero (2022 | 288 pages)
Source: https://www.routledge.com/Terrorism-The-Power-and-Weakness-of-Fear/Romero/p/book/9781032198064

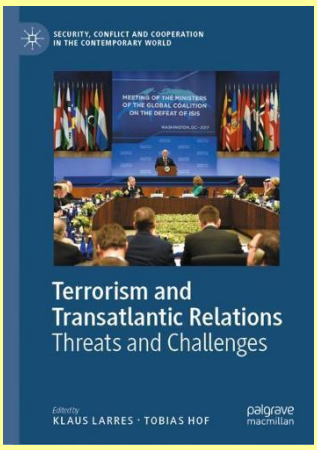
NEW!



This book adopts an innovative historical approach to Terrorism, focusing on the weaknesses of terrorist states and organizations as reflected in the ideologies, methodologies and propaganda of Russian populist, National Socialist and Islamic Terrorism.
Drawing upon multilingual primary sources, the book challenges the oft repeated claim that the Nazi regime and Islamic State produced propaganda of superior quality, instead arguing that the manipulation of information is the Achilles heel of terrorist organizations. It offers a critical examination of the fears of terrorists themselves, as opposed to the traditional focus on the fear instilled by terrorist organizations in governments and citizens. Taking a multidisciplinary approach and long-term history perspective, the book provides a method for exploring the minds of terrorists and the inner workings of their organizations and traces the evolution of terrorist thought and methodology across time and place.
This is the ideal volume for researchers of Terrorism within the fields of History, Politics, Security Studies, Religious Studies and Legal Studies.

Table of Contents

Juan Romero is Associate Professor at Western Kentucky University, USA.



Terrorism and Transatlantic Relations: Threats and Challenges - Security, Conflict, and Cooperation in the Contemporary World (Hardback)

Klaus Larres (editor), **Tobias Hof** (editor) | Nov 2021; 265 pages
Source: https://www.waterstones.com/book/terrorism-and-transatlantic-relations/klaus-larres/tobias-hof/9783030833466

This book explores the development of transatlantic policy on international terrorism and assesses the situation today. It takes an interdisciplinary approach to terrorism and transatlantic relations, bringing together experts from contemporary history, political science, military strategy, psychology, law, and security. Looking back to the roots of modern terrorism, from the late 70s to 9/11 and beyond, the volume evaluates how

attitudes and approaches have changed over this period. It analyses potential solutions for finding a shared philosophy to counter the threat of transnational terrorism in the US and Europe, against a rapidly changing political landscape. Chapters cover a range of topics, including the psychology of terrorism, online propaganda, domestic terrorism, terrorism and finance, and cyber security.

ISIS Supporters in the United States Urged to Join 'ISIS North America'

By Bridget Johnson

Source: https://www.hstoday.us/featured/isis-supporters-in-the-united-states-urged-to-join-isis-north-america/

Feb 21 – A video posted online urges followers of the Islamic State to help form a province of the terror group in the United States called ISIS North America.

The video is dated "new 2022" in the first frame and was posted on a file-sharing site this month. It consists of simple white English-language writing on a black background, instead of being dressed up with images of ISIS battles or adherents as in many videos with higher production value associated with the terror group.

Propaganda including videos, magazines, online memes, instructional leaflets, etc., is produced both through official ISIS channels and — more prolifically since the fall of the declared caliphate in Iraq and Syria — by independent groups and lone actors waging what they call "media jihad." Regardless of the production source, this ISIS-supporting propaganda is intended to recruit, threaten, and incite, with a particular emphasis on urging followers to use accessible weapons and attack soft targets on their home turf.

"To those who want to try," it begins with an ISIS flag as a nasheed plays. "To my brothers following in the path of the Khilafa in America I urge you to come join our group."

"This new group will operate in the United States to surprise the murtad in their own lands," the video continues. The wording suggests that the group intends to target Muslims seen as turning their back on ISIS' interpretation of Islam — how the terror group defines apostasy — instead of the general population, referred to as kuffar or disbelievers.

"The name of this group will be named ISIS-NA (Islamic State of Iraq & Sham – North America)," the video states. It then shows imaginings of the Nevada and California flags as "Flag of Tawheed" — the concept of oneness in Islam and why ISIS followers make the hand gesture of raising a single index finger.

The video says that it was linked in the comment section of Islamic State videos on the file-sharing site, assuring viewers that if they followed the link and arrived at the video "you are at the right place."

"Do not send this video anywhere else as this will alert the kuffar. Do not join if you aren't commited [sic] to our organization and do not join to make jokes, we will trace every keylog you make if you do this," it continues.

"My dear brother or sister, may Allah grant you good health and happiness for watching this video. Spread the word about this organization to those who are trustful but be careful with doing so," the video cautions. "May Allah grant this organization with success and may Allah grant us Jannah [paradise]."

The video was posted by a user called "Cell of the IS," and one of the tags on the post is Al-Furat Media Center, an official ISIS outlet that was launched in 2015 to distribute Russian-language ISIS propaganda as well as other regional languages. The only ISIS province noted in the tags is Khorasan, referring to the group in Afghanistan and the surrounding region. "Brothers do not spread this video," it adds in the video description.

In its first English-language magazine recently released online, ISIS Khorasan declared that theirs is the "most important province" of ISIS after Iraq and Syria.

The push to ensure ISIS ranks and accompanying visuals extend far beyond the territory of the former physical caliphate began many years ago, as the terror group saw value in encouraging the formation of provinces that could recruit, train, and attack close to home. In a November 2016 audio message, late ISIS leader Abu Bakr al-Baghdadi referred to ISIS

units in regions such as Afghanistan, the Caucasus, Indonesia, Philippines, Sinai, Bangladesh, West Africa and North Africa as the "base of the caliphate," and warned that "kuffar [disbelievers] will try to split you."
ISIS' official weekly newsletter *al-Naba* is largely dedicated to posting updates from different provinces, and some of these regional groups also distribute content through their own media outlets.

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. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld, and more, and has myriad television and radio credits including Al-Jazeera, BBC, and SiriusXM.

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CHEM NEWS

NATO Decontamination Procedures

By Mr. Ludwig de Meersman
NCT Magazine 2022
Source: https://nct-magazine.com/nct-magazine-january/nato-decon-procedures/

On the radio, the news is telling us about a fourth covid wave, and how to keep this one under control. The positive side of this pandemic episode is that we were able to take some time, as business as usual slowed down, to re-organize and learn from this situation what we could apply on CBRNe interventions. Therefore, in this decontamination article I would like to share these problems, challenges encountered and the solutions with you. To start you need to understand that the service we provide is not like the Fire HAZMAT teams who intervene on industrial scale leaks, nor is our service a military CBRNe unit to patrol in the fields.

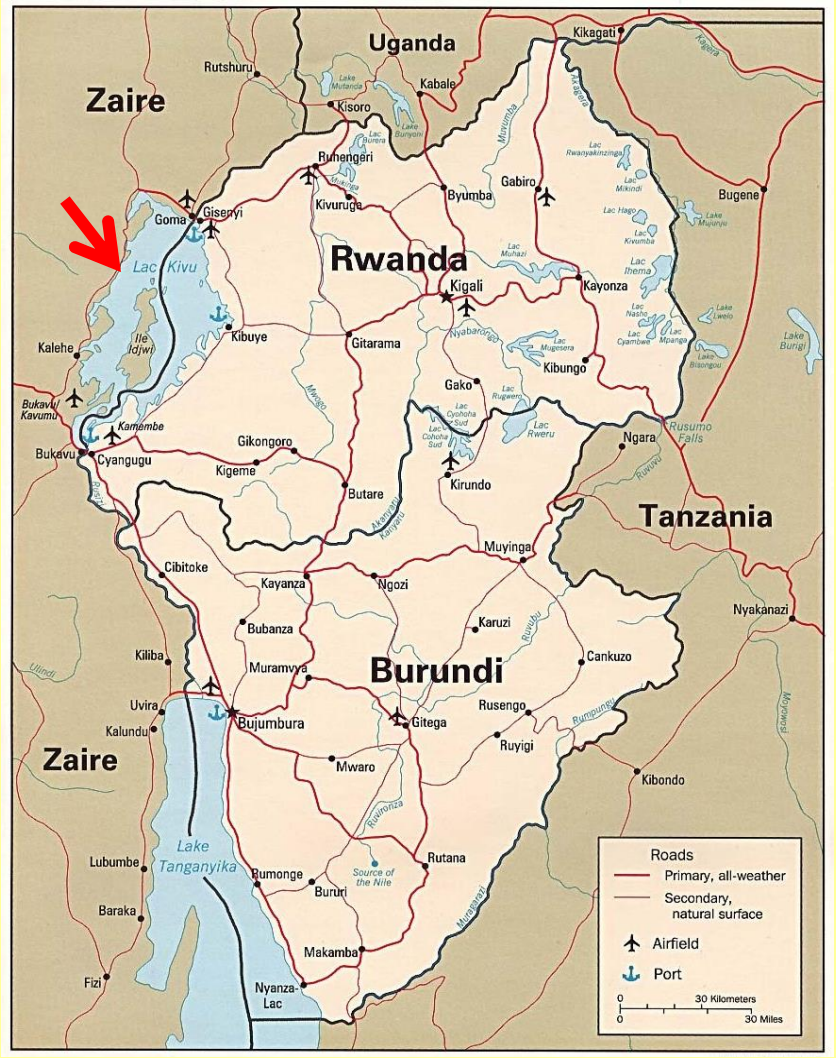
De Meersman Ludwig. Education in biotechnologies, chemistry and water- and air purification. Followed by a military career as NCO in the Belgian army (combat unit) and from there to City firefighters Ghent (Belgium). In 2009 I made the switch to NATO's HQ in Brussels and has been involved in the CBRN response for the HQ since. In my spare time active as outdoor enthusiast; running, rock climbing, winter pulka trekkings.

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

'Killer Lake' in Africa Looks Like Paradise, But It's Hiding a Deadly Secret

Source: https://www.sciencealert.com/killer-lake-in-africa-looks-like-paradise-but-it-s-hiding-a-vast-deadly-secret

Jan 27 – The engineers aboard the floating power station on **Lake Kivu** could only watch nervously as the volcano in the distance erupted violently, sending tremors rumbling through the water beneath them. It was not the lava shooting from Mount Nyiragongo last May that spooked them, but the enormous concentrations of potentially explosive gases within Kivu, one of Africa's great Rift lakes lying between Rwanda and the Democratic Republic of Congo.
Flanked by rolling green hills tumbling into glassy waters, Kivu is not quite the picture of tranquility it seems, according to Francois Darchambeau from KivuWatt, a company that extracts gas from the lake's waters for electricity.
Thousands of years of volcanic activity has caused a massive accumulation of methane and carbon dioxide to dissolve in the depths of Kivu – enough to prove monumentally destructive in the rare event they were released.
If triggered, a so-called limnic eruption would cause "a huge explosion of gas from deep waters to the surface" resulting in large waves and a poisonous gas cloud that would put the lives of millions at risk, said Darchambeau, environmental manager at KivuWatt.
"This is what we call a killer lake," the limnologist, or an expert in freshwater systems, told AFP.
Only three such lakes exist in the world: Kivu, and Lakes Nyos and Monoun in northwest Cameroon.
The latter two experienced limnic eruptions in the 1980s, and the bigger disaster at Nyos suffocated more than 1,700 people in a toxic release of carbon dioxide.
But these catastrophes occurred in a rural area, whereas some 2 million people would be "at risk" of such a similar disaster involving Kivu, said Darchambeau.



In both Rwanda and DR Congo, many live in fear of the lake's harmful potential, and stories abound of swimmers disappearing into its depths after being asphyxiated or pulled under.

World first

The lake, however, poses both peril and promise.
KivuWatt, which says this is the only project of its kind anywhere in the world, saw an opportunity to tap these abundant gases for energy generation.
A 20-minute speedboat ride is required to reach KivuWatt's unique floating platform, a compact tangle of pipes and buoys as high as a multi-storey building moored in the Rwandan part of Kivu.
With a deafening roar, the facility pumps water saturated with carbon dioxide and methane from around 350 meters (1,150 feet) to the surface.
As it rises, the water and gas separate as the pressure changes.
"It is like opening a bottle of soda," said KivuWatt director Priysham Nundah, who described the project as "halfway between a thermal and a renewable energy plant".
The extracted methane is sent through a pipeline to a second facility located onshore in Rwanda, where the gas is transformed into electricity.
The carbon dioxide is pumped back into the lake at a precise enough depth to ensure the delicate balance is not upset.
The company says it hopes that removing methane could over time reduce pressure within the lake, possibly lowering the risk of a limnic eruption.

A barge extracting methane gas at the KivuWatt power plant on Lake Kivu, Rwanda. (Simon Maina/AFP)

'It was frightening'

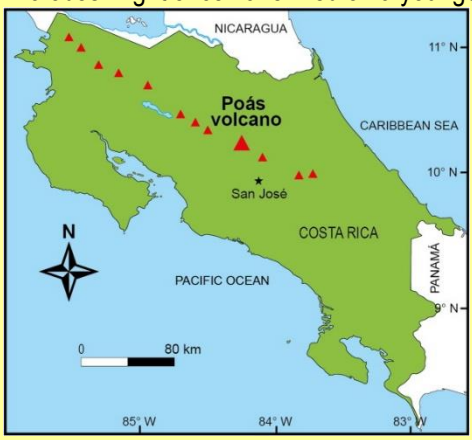
But fears of such a disaster were reawakened when Nyiragongo – an active volcano north of Kivu in DR Congo – roared to life in early 2021.
The lava flow killed 32 people and destroyed hundreds of homes, as earthquakes shook the region. A second wave of lava pushed deep into the earth under the lake itself.
From their station, KivuWatt's engineers watched the sky turn red and angry.
"It was very frightening," said Nundah.
"When the rates of earthquakes and the frequency of earthquakes started to rise... no one could really say what would happen."
A shutdown was considered – but the engineers held their nerve.

Suspending operations would have serious consequences for Rwanda: KivuWatt produces around 30 percent of the annual electricity consumed in the East African nation.
American company ContourGlobal, which owns KivuWatt, launched the Lake Kivu venture in 2015 and for a time considered expanding its capacity from 26 to 100 megawatts.
Another company is exploring the possibility of launching its own 56-megawatt gas extraction venture on the lake. There are no plans in the short term for such a project on the Congolese side.
How long it will take to deplete these vast gas reserves will depend on the pace of extraction, said Martin Schmid, a researcher at the Swiss Institute for Water and Environmental Research.
"Just with KivuWatt alone it will take, I don't know, centuries to have really a reduction of methane in the lake," he said.

This Extremely Toxic Lake Could Show Us How Life May Have Survived on Mars

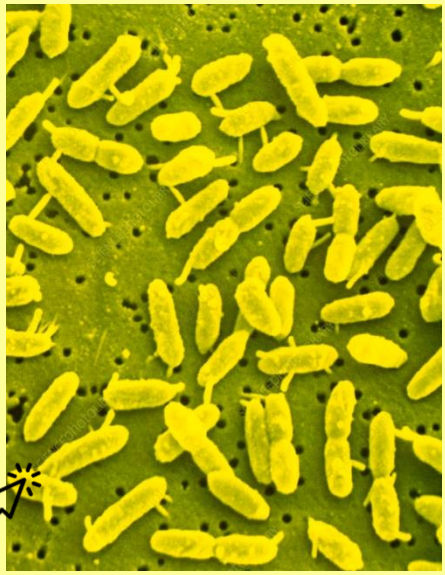
Source: https://www.sciencealert.com/a-toxic-volcanic-lake-could-show-us-how-life-may-have-survived-on-mars

Jan 29 – The search for life on Mars is not an easy one. Not only is the red planet difficult to get to, it's deeply inhospitable to life as we know it.
However, there are places on Earth that could show us how life may have been able to survive on Mars – if not now, then at some other point during the planet's 4.5 billion-year history. Places like deserts, you might be thinking, and you'd be right; but there's more to Mars than deserts.
Scientists have investigated microbes that somehow survive in one of the most inhospitable places on Earth: a hot, toxic, acidic lake in a volcanic crater in Costa Rica. The ways these extremophile microbes adapt to their hellacious environment could show us how microbes might once have lived on a younger, wetter, more volcanic Mars.



"One of our key findings is that, within this extreme volcanic lake, we detected only a few types of microorganisms, yet a potential multitude of ways for them to survive," said astrobiologist Justin Wang of the University of Colorado Boulder.
"We believe they do this by surviving on the fringes of the lake when eruptions are occurring. This is when having a relatively wide array of genes would be useful."
The lake is known as **Laguna Caliente** (literally "hot lake") and it sits in the crater of the active **Poás Volcano** in Costa Rica. It's one of the most acidic lakes in the world, with a layer of liquid sulfur floating along the bottom, and often generating local acidic rains and fogs. In addition, the water is suffused with toxic metals. It's not exactly teeming with life.

Nevertheless, it's not entirely uninhabited, either. In 2013, a research team led by the University of Colorado Boulder found that a single species of microbe was surviving in the lake, from the genus *Acidiphilium*, or "acid lover", which are found living in acidic environments, and have a number of genes that allow them to do so.
The Poás Volcano continued to rumble and in 2017, it explosively erupted. Naturally, a team of researchers decided to revisit Laguna Caliente to see how the ongoing volcanic activity might have impacted the microbial community they identified in 2013, especially since volcanic eruptions had the potential to sterilize the lake.
The researchers took samples from the lake, sulfur clumps, and the sediment at the bottom of the lake, and subjected them to gene sequencing and metagenomic 'shotgun' sequencing



to identify any organisms that might be lurking therein. Surprisingly, not only was *Acidiphilium* still present, so too was a small number of other microbial species.

Acidiphilium was the dominant species found inhabiting the lake, but all had significant survival adaptations. The team found that the bacteria had genes that might confer resistance to acid, as well as heat-resistant genes – vitally important in an environment that can reach boiling temperatures.

In addition, the organisms have a wide number of genes that allow them to metabolize various substances that might be toxic to others. These substances include sulfur, iron, and arsenic. They also have genes for carbon fixation, which allows plants to convert carbon into organic compounds; and seem to be able to process both simple and complex sugars, as well as bioplastic granules, which can be used in times of energy and carbon privation.

"We expected a lot of the genes that we found, but we didn't expect this many given the lake's low biodiversity," Wang said. "This was quite a surprise, but it is absolutely elegant. It makes sense that this is how life would adapt to living in an active volcanic crater lake."

Hydrothermal environments are of increasing interest to astrobiologists. The organisms that manage to thrive in these extreme places often don't rely on sunlight to survive, but harness chemical reactions to produce energy. This means that they could offer an analog for ecosystems that might be found in other locations far from the Sun, such as the hidden ocean ice moons of Saturn and Jupiter.

But scientists also believe that life on Earth may have started in a deep hydrothermal environment since it would be safe from the harsh ultraviolet radiation of the young Sun while containing all of the ingredients necessary for life to spark. Perhaps when Mars was younger, wetter, and more volcanically active, hydrothermal environments there could have sparked life too.

"Our research provides a framework for how 'Earth life' could have existed in hydrothermal environments on Mars," Wang said. "But whether life ever existed on Mars and whether or not it resembles the microorganisms we have here is still a big question. We hope that our research steers the conversation to prioritize searching for signs of life in these environments."

●▶ **The team's research has been published in** *Frontiers in Astrobiology*.

The past, the present and the future are in our hands - Chemical, Biological, Radiological and Nuclear Risk Mitigation - December 2021

By Antonia Marie De Meo

Source: http://www.unicri.it/index.php/Publications/F3-CBRN-Risk-Mitigation

Dec 2021 – "At the beginning of the COVID-19 pandemic, UNICRI celebrated the 10th anniversary of the Chemical, Biological, Radiological, and Nuclear (CBRN) Centers of Excellence risk mitigation programme, generously funded by the European Union. This initiative brings together stakeholders from 62 countries at the international, regional, national, and local levels to cooperate in CBRN security governance and to promote a global culture of safety and security.

Against the backdrop of the COVID-19 pandemic – the biggest crisis of our lifetime – the threat posed by dangerous CBRN agents and materials remains high, with special need to focus attention on biological threats. Criminal elements are taking advantage of vulnerabilities in society exposed by the COVID-19 pandemic. Moreover, terrorists may misuse potential CBRN agents, which is a serious concern for governments and a threat to civilian populations worldwide.

United Nations Interregional Crime and Justice Research Institute

The CBRN field is prone to fragmentation, with each sector – chemical, biological, radiological, and nuclear – often studied in isolation. When this occurs, it is counterproductive, because coordinated resources, expertise, and authority are needed to address all aspects of CBRN risks.

Each of our 62 partner countries voluntarily participates and takes ownership over the CBRN work, which has contributed to the success of the responses to the biological threat posed by the COVID-19 pandemic. Ten years ago, this approach generated skepticism, especially from those who believed that there could not be adequate commitment in the absence of a politically or legally binding agreement. However, voluntary participation has proven

essential to ensuring that partner countries are owners of the initiative. And their ownership can be seen in the manner in which the 62 countries that are part of the CBRN Centers of Excellence have responded to the pandemic.

During COVID-19, partner countries identified their priority needs. Our decentralized CBRN Centers of Excellence Regional Secretariats then worked with partner countries to ensure that available expertise was mobilized to respond to their specific needs, thereby reducing the impact of the pandemic in their communities. For example:

- In Africa, more than 1500 people benefited from a door-to-door awareness raising campaign and distribution of masks, as well as in-person trainings on safe and dignified burial and webinars on COVID-19 risks related to wastewater;
- In Eastern and Central Africa, the CBRN Centers prepared a joint roadmap for 2021;
- In the Gulf Cooperation Council Countries, a Regional CBRN Training Hub was inaugurated with Abu Dhabi University;
- In the Middle East, the CBRN Centers supported Lebanon in the aftermath of the tragic Beirut explosion to identify critical priorities and respond to emergency needs;
- In Central Asia, the CBRN Centers purchased necessary equipment for front-line officers to protect them from COVID-19; they also conducted awareness raising campaigns for university students;
- In South East Asia, they focused on peer-to-peer sharing of knowledge and experience on COVID-19; and
- In South East and Eastern Europe, partner countries came together to combat the spread of COVID-19 in a coordinated manner.

By adopting a flexible, country-drive approach to CBRN risks, UNICRI has also been able to take a whole of society approach by including women and youth and ensuring no one is left behind. For example, in Central Asia and Eastern Europe, a large number of female scientists shared their expertise in diagnostic medicine related to the COVID-19 pandemic response. We also partnered with the local community in Uzbekistan to host a drawing competition for schoolchildren, which raised their understanding of biorisks, such as a coronavirus outbreak.

UNICRI's example of the CBRN Centers of Excellence concretely prevents CBRN risks by promoting good governance, a culture of safety and security, cooperation, and the transfer of best practices. We learn together and we become more effective together to achieve our ambitious goal of promoting healthy, peaceful, and inclusive societies for sustainable development.

Building upon the forward-thinking, learning, and achievements of the CBRN programme, UNICRI has a new programme, CONTACT, which was launched with the generous support of the Governments of Canada, Norway, United Kingdom and United States. CONTACT is one of UNICRI's flagship programmes in nuclear security. It enhances capacities of state security, law enforcement and other agencies to carry out intelligence operations aimed at thwarting trafficking of radiological and nuclear (RN) materials. CONTACT focuses on fostering regional cooperation and exchange of information on RN trafficking investigations. Since its inception, CONTACT has involved countries in the Middle East, Black Sea and Southeast Asia regions.

In cooperation with UNOCT-UNCCT, UNICRI has also recently launched the new report "Advances in Science and Technology to Combat Weapons of Mass Destruction (WMD) Terrorism". The report is an output of the United Nations Global Counter-Terrorism Coordination Compact Working Group on Emerging Threats and Critical Infrastructure Protection project on Technology and Security: Enhancing Knowledge about Advances in Science and Technology to Combat WMD Terrorism, which is funded by UNOCT-UNCCT and co-implemented with UNICRI. The Working Group promotes coordination and coherence to support Member States to address emerging terrorist threats, including those related to CBRN materials.

The threats derived from the misuse of CBRN agents and materials know no boundaries, which makes international cooperation critical. COVID-19 serves as a devastating reminder of this in the sector of biorisks. In these extremely challenging times, when people all around the world are experiencing health, economic, and social crises simultaneously, the UNICRI CBRN programme has proven to be an effective network for international cooperation based upon a common understanding of risks and a global commitment to jointly share responsibilities. UNICRI is on the front line

with partner countries, facilitating priority responses to limit the negative consequences of the pandemic, and supporting Member States to plan for recovery as the pandemic subsides.
A key lesson learned from the CBRN programme is the importance of protecting communities. Awareness of CBRN risks must be raised across the public at large, starting in local communities with CBRN stakeholders and extending to community leaders, NGOs, media, universities, students, and parents.
This issue of the Freedom From Fear Magazine focuses on CBRN risk mitigation to honor the victims of CBRN catastrophes, who guide us in our quest for lasting peace and security."

Antonia Marie De Meo is the Director of UNICRI.

Preparing for Event X: what CBRN responders can learn from Covid-19

By Steven Pike
Source: https://www.argonelectronics.com/blog/preparing-for-event-x-what-cbrn-responders-can-learn-from-covid-19

Dec 2021 – In a BBC Richard Dimbleby lecture, Professor Dame Sarah Gilbert detailed how scientists reacted quickly to the Covid-19 pandemic. However, the Oxford professor said they should have moved forward at even greater speed. The overarching question throughout her talk was, "How do you fight a pandemic when you are in a pandemic?" While this question might have been moot in 2019, moving into 2022, there is a clear answer.
Professor Gilbert's lecture spoke about Covid-19, not a Chemical, Biological, Radiological and Nuclear (CBRN) event in the first responder / military sense, but "B" nonetheless with clear parallels between the two. Both can cause an unrivalled amount of destruction to health and the economy, and both need previous investment, preparation, and training to ensure the best possible response.
We were not prepared for Disease X, but listening to Professor Gilbert's story about how she developed a vaccine for Disease X should give those involved in CBRN an insight into how we could better prepare for Event X.

Responding to the threat
At the time of writing, Covid-19 has taken 5,340,614 lives, emptied schools, savaged economies, kept us from our loved ones, and closed down entire societies. The virus has killed more people than any infectious disease for over a century.
However, despite the destruction it has left in its wake, the human response has been nothing short of extraordinary. Within less than a year, Professor Gilbert's team designed, made, manufactured, and distributed a very safe vaccine that is highly effective and available worldwide.
The scientists moved at a speed that would have been impossible pre-2020, facilitated by their level of preparedness before we had even heard of zoonotic disease. Researchers, rather than governments, had been planning for infectious diseases in general—and Disease X specifically. Despite Disease X being a hypothetical, it was seen as inevitable.
Professor Gilbert's team had surveillance systems in place to track the virus, gathered a vast amount of knowledge from similar previous viruses, and used prior vaccine preparation to create the Covid-19 vaccination. Ironically, pre-Covid we were told the public was tired of listening to experts; however, this sentiment evaporated quicker than the virus was spreading. It was clear for all to see that the experts were the ones who would lead us out of the pandemic.
In the future, new strands will appear, but experts are confident they can beat Covid-19. However, this is dependent on how prepared they are.

Memory: essential in preparing for the next threat
When a virus affects us, our immune system detects intruders and destroys them. Our bodies remember this process so that they can better respond next time.
Our immune systems are very good at doing this, but viruses are quick, which is why they can make us ill. Viruses can hit us before our immune system has had the chance to mobilise its forces—which is why vaccines are so important.
Vaccines provide the immune system with a memory of a virus without the body suffering from the disease. Instead, they present a body with a harmless mimic of a virus. And most modern vaccines show the body only the part of the virus it needs to recognise to produce an immune response.

Paris 2024 outlines unprecedented Opening Ceremony along Seine River; 600,000 spectators expected

Using technology to safeguard the future

AstraZeneca, Pfizer, and Moderna all produced vaccines using platform technology, developed due to the inadequate response to ebola. The world first knew about ebola in 1976, but 20 years later, there was still no vaccine. However, everything changed in 2014 with the ebola outbreak in West Africa, when 8% of Liberia's doctors and nurses were killed by the disease. This shook the world into action, and the WHO began to draw up a list of dangerous diseases against which we should develop vaccinations. The institution was aware of some diseases and unaware of others—the so-called Disease X.

But how do you prepare for a disease about which you know nothing? The answer lies in preparing platform technologies suitable for rapid response. Platform technologies are used as the infrastructure upon which other applications, technologies, or processes can be developed for an end-user. The key to a platform technology architecture is abstraction, which is the quality of dealing with generic forms rather than specific events, details, or applications.

In terms of vaccinations, platform technologies have been developed that could make it possible for multiple vaccines to be more rapidly produced from a single system. Thus, Professor Gilbert used the work she had been carrying out on MERS, which belongs to the coronavirus family, as a springboard from which to start working on Covid-19.

Luckily she secured funding for this research. Unfortunately, many researchers spend their professional lives chasing elusive grants that can take years of work to secure, only to be denied at the final hurdle. This means experts are, for years, trapped in a silent mouse spinner instead of working on scientific discovery.

Rapid, multi-institutional response is everything

When Professor Gilbert received the news that the virus was a coronavirus, she knew the template her team had already created for MERS could be used to develop a vaccine.

When Chinese scientists posted the genetic sequence for the novel coronavirus online, the years of preparation—albeit for a different virus—allowed her and her team to work quickly. Using the code, it took only 48 hours to work out the exact genetic sequence to make the vaccine.

Months of work followed until the Clinical BioManufacturing Facility at Oxford made the vaccine and had it ready for clinical trials. Professor Gilbert described that this moment felt as if "we had created a great sourdough in the kitchen and then you have to supply every supermarket in the world."

However, her team drew upon existing infrastructure and colleagues in Brazil and South Africa to carry out clinical trials. And this time, they were lucky. Lucky because she was successful when previously they were likely to have failed—not for the robustness of her science but for the lack of funding.

Previous vaccine efforts have moved slowly or halted because they have not been considered a high enough priority. The system of applying for funding is laggard, and vaccines are almost always delayed for this reason rather than for being unsafe. It happened at a time "when we were scrambling to find PPE and clapping for carers—and this kind of limping along would not do," said Professor Gilbert.

She was able to move quickly because the system allowed her to. Helped by former venture capitalist Kate Bingham, funding cycles were compressed, which allowed her to focus on the research rather than the fundraising. Vaccine development was also helped by The Medicines and Healthcare products Regulatory Agency reviewing the evidence on a rolling basis instead of scientists presenting every piece of evidence at the end of a trial, which is the general practice.

Cooperation and preparedness are the keys to success

The success of the vaccine is not just about its efficacy. It also depends on how many doses can be manufactured, how easy it is to supply, and how many people are willing to receive it.

Manufacturing and producing vaccines was not a problem for Professor Gilbert at Oxford; however, the logistics of distributing them across the globe was. When AstraZeneca, a pharmaceutical manufacturing giant, approached her, this problem became smaller. This type of inter-company, inter-institutional, international cooperation was one of the vaccine's keys to success. Cooperation on every level is paramount.

However, better preparation and more secure funding would have led to an even faster response. Professor Gilbert admits to not being fully prepared. And as they had never gone through this process before, her team was using never-tried-before techniques, which are always somewhat trial and error.

But the experts learned during the pandemic, and they made the systems more efficient. Time, funding, and practice meant that when the more contagious Delta variant was discovered globally in 2021 they had a much better system in place to analyse how to best address it.

Just like the body's immune system, Professor Gilbert's team learnt from past experiences and adapted to overcome challenges. Every time a new variant is detected, work starts to change the vaccinations in response.
Professor Gilbert concluded, "There will be a disease Y. This will not be the last time a disease threatens our lives or our livelihoods. The next one could be worse—more contagious or more lethal." The only way to beat Covid-19 is through experience facilitated by investment, preparation, and training.

What lessons can we learn from Covid-19 for a CBRN event?
Luckily for us, scientists around the globe like Professor Gilbert were prepared for Disease X. But we were also perturbed that our governments did not seem equally prepared for a pandemic. Surprisingly, according to the 2021 Global Health Security Index, "Despite important steps taken by countries to respond to the Covid-19 pandemic, all countries...remain dangerously unprepared to meet future epidemic and pandemic threats."
Governments did not believe a pandemic of this magnitude would happen—until it did. For many, this exposes the lack of serious preparation for a possible CBRN event. Accidents and terrorist attacks can cause serious global disruption and are a risk for human health and the economy. To prevent catastrophe tomorrow, we must prepare today.
In the words of Professor Gilbert, "What we discovered is what we can do when we understand our goal and really put our minds to achieving it. By working together, we can have a better response to Disease Y."

Preparing for a CBRN event with simulation training
Preparing for a CBRN event is a complex process. There are many ways of ensuring an efficient response; however, similarly to Covid-19, successfully addressing CBRN threats involves four core elements:

1. Foresight - recognising that one day there will be an Event X
2. Investment in the right technologies
3. Preparation by studying the best ways to address Event X
4. Training using simulation devices so first responders are fully prepared for Event X

CBRN simulation training is a widely used method of preparing investigators in the field to correctly identify chemical and radioactive materials. It involves investment, preparation, and training.
Argon Electronics has over 30 years of experience as a global provider of CBRN detector simulators. The company has developed strong relationships with many of the leading detector manufacturers, which allows it to create realistic simulators that are almost identical to the real devices.

Steven Pike is the Founder and Managing Director of Argon Electronics, a world leader in the development and manufacture of Chemical, Biological, Radiological and Nuclear (CBRN) and hazardous material (HazMat) detector simulators. He is interested in liaising with CBRN professionals and detector manufacturers to develop training simulators as well as CBRN trainers and exercise planners to enhance their capability and improve the quality of CBRN and Hazmat training.

Decon PLUS Kit

Source: https://m2dcon.com/wp-content/uploads/2021/04/Decon-PLUS-rev20210223.pdf

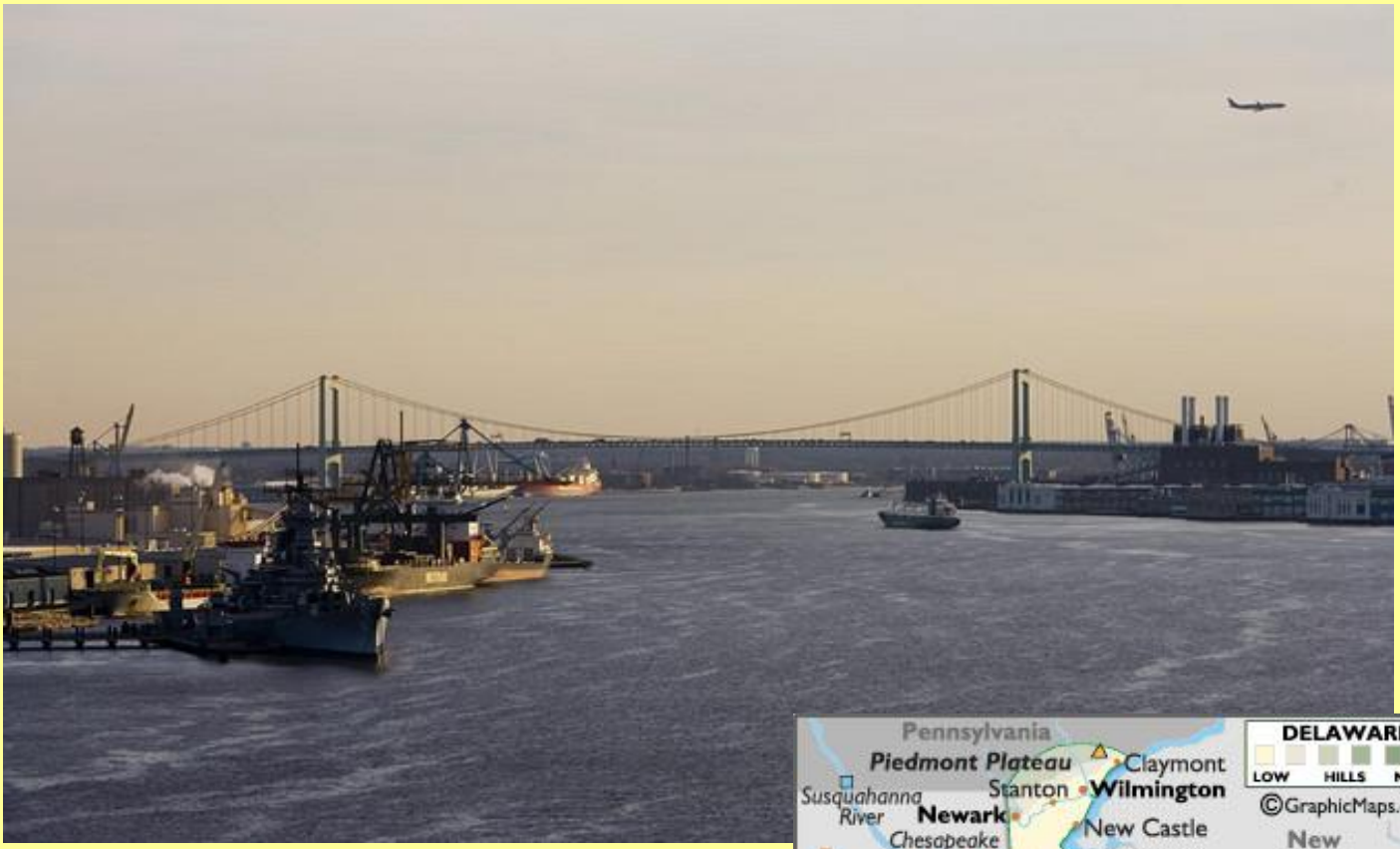
The Decon PLUS Kit is a low logistic decontamination technology for use against chemical and biological contaminants. It is the commercial equivalent of the M333 selected by the US Department of Defense for the Joint General Purpose Decontaminant Program, which was a three phase down-select competitive program. Each kit includes three pouches of unique chemistry packaged laminated foil pouches for superior shelf life.
The decontaminant is stored as dry powders which are mixed at point of use with locally available water (fresh, brackish or salt water). Once this proprietary chemistry is mixed, its use life has been demonstrated to be in excess of 8 hours.
The unique dry chemistry formulation reduces the kit weight and volume by 90% compared to most other conventional liquid decontaminants making Decon PLUS Kit easier to transport and store.

The Decon PLUS formulation replaces organic solvents used in other decontaminants with a proprietary blend of surfactants. These surfactants ensure Decon PLUS effectively inactivates chemical and biological agents. By eliminating organic solvents, Decon provides improved material compatibility and simplifies shipping & handling. Simply mix with available water, apply to completely wet contaminated surfaces, then allow to dry completely. Once mixed, Decon PLUS can be applied to surfaces or equipment manually or using spray systems (pressure washers, electrostatic sprayers, etc.).

How a toxic chemical ended up in the drinking water supply for 13 million people

By Ry Rivard

Source: https://www.politico.com/news/2022/01/21/new-jersey-toxic-drinking-water-527621



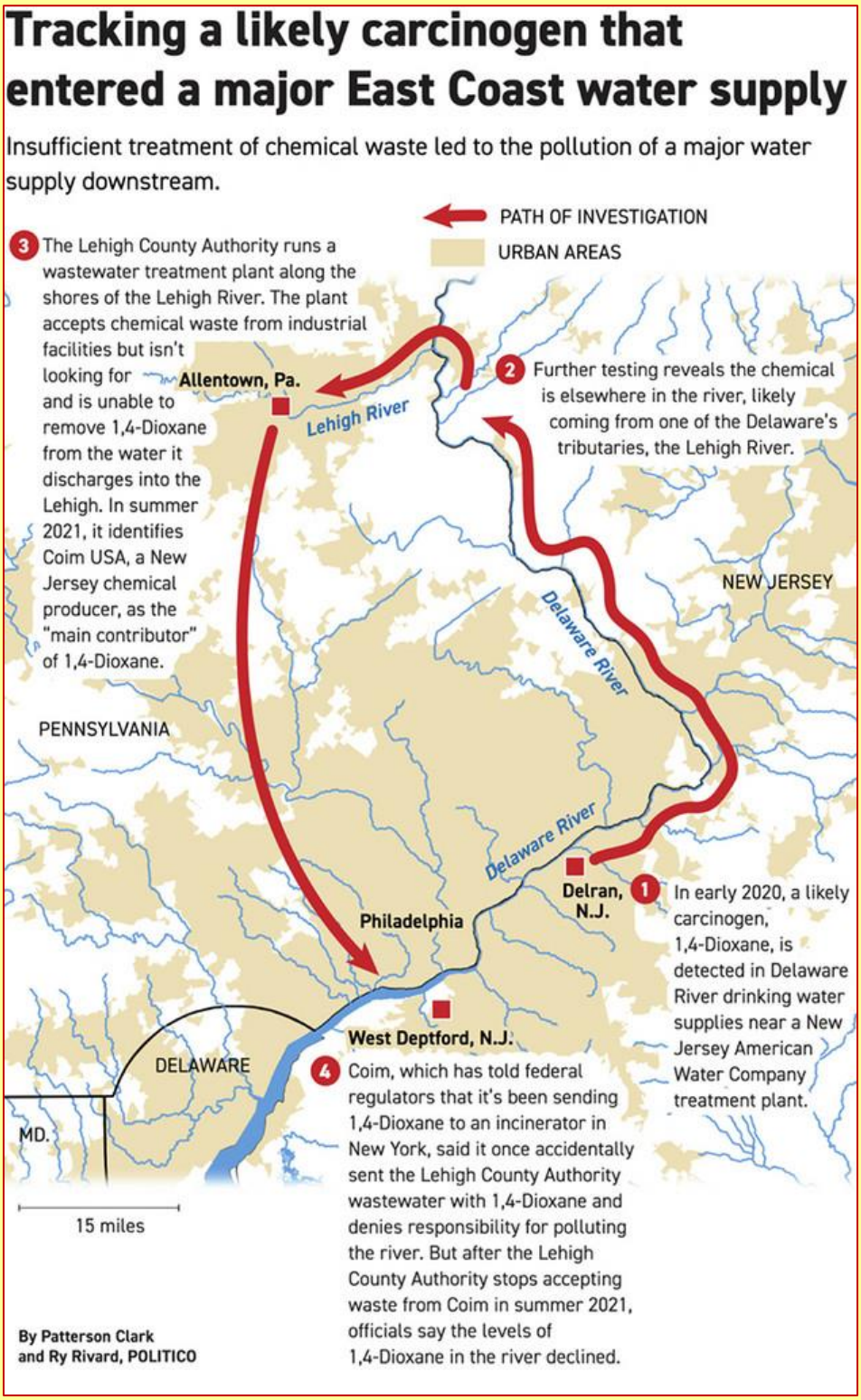
T he Delaware River incident highlights the extent to which drinking water suppliers are often on the hook for cleaning up other people's problems. | Matt Rourke/AP Photo

Jan 23 — New Jersey's largest drinking water supplier discovered a toxic chemical in the river where it gets water for hundreds of thousands of customers, setting off a major search for polluters that led back to a Pennsylvania wastewater treatment plant and a South Jersey company.

The chemical New Jersey American Water Co. found, **1,4-Dioxane**, is a byproduct of plastic manufacturing that is considered a likely carcinogen by the federal government. While the chemical has been found in water supplies before, this discovery in early 2020 set off alarms because of the high levels in a section of the Delaware River close to American Water's treatment plant in South Jersey that sends drinking water to customers in Burlington, Camden, Gloucester and Salem counties.

It wasn't just a New Jersey problem. The Delaware and all of its tributaries provide drinking water to more than 13 million people along the East

Coast — including New Jersey, New York, Pennsylvania and Delaware — and officials had no idea how the chemical was getting into the river.



What they found, the details of which have not been previously reported, is a gap in state and federal regulations that allowed an unsafe chemical to end up in an essential water supply.

There are no federal limits for how much 1,4-Dioxane can be in drinking water, though New Jersey is proposing new rules that would limit the chemical to .33 parts per billion. Some samples from 2020 found nearly 10 times that amountin the Delaware. New Jersey officials have said they believe those levels ultimately did not "pose any immediate health risk," by the time drinking water reached customers.

Officials from across the region, including the Delaware River Basin Commission, the multi-state agency tasked with looking after the river, set up a group to track down the source of the contamination.

Though their work continues, it comes with an unsatisfying twist: Someone clearly sent the chemical into the river, but it's not clear whether anyone will face consequences for polluting one of the country's major water supplies.

Some chemicals, including 1,4-Dioxane, remain largely unregulated. And even as New Jersey's Department of Environmental Protection is preparing for the first time to set strict limits on the amount of 1,4-Dioxane allowed in drinking water, it seems unlikely those rules would have prevented the Delaware River contamination.

New Jersey's planned rules require drinking water suppliers to look for and remove most of the chemical from drinking water — but the rules don't do more to keep polluters from putting it there in the first place.

The Delaware River incident highlights the extent to which drinking water suppliers are often on the hook for cleaning up other people's problems, even as New Jersey American is expanding its treatment process to handle 1,4-Dioxane and other contaminants, like other "forever chemicals" the public only recently understood are unsafe.

A big part of figuring out where the pollution was coming from fell to Matt Csik, the top water quality official for New Jersey American Water. He needed to know how a likely carcinogen was getting into the river and threatening his customers' water. In a watershed that stretches from the Catskill Mountains to Rehoboth Beach, Del., that was a challenge.
So, in October 2020, Csik put on his wetsuit and started taking water samples from the Delaware.
His sampling suggested the chemical was in water coming from one of the Delaware's main tributaries, the Lehigh River, which cuts through Pennsylvania before dumping into the Delaware.
"It was pretty clear to me at that point that we had at least the smoke to tell us where the fire could be," Csik said in an interview.
Csik's work helped narrow down where the larger regional search party would look and ultimately find the chemical — near a wastewater treatment plant in Allentown, Pa., operated by the Lehigh County Authority. A sample taken from the Lehigh River near the treatment plant found levels of 1,4-Dioxane more than 100 times higher than what New Jersey's proposed rules would say is safe to drink.
The Allentown plant takes wastewater, cleans it up, then discharges it into the Lehigh at a point right before where the Lehigh empties into the Delaware. The plant handles chemicals on a federal priority list, but 1,4-Dioxane isn't one of them, and the plant hadn't studied how to treat it. That makes 1,4-Dioxane one of thousands of potentially harmful chemicals that are not an official priority for federal regulators, even though they have already determined long term exposure to it may cause kidney and liver damage.
"We weren't looking for it and didn't know to look for it," Liesel Gross, the CEO of the Lehigh County Authority said in an interview.
But now the plant needed to find out who was sending it wastewater laced with 1,4-Dioxane.
Most people know wastewater treatment plants handle what comes to them through sewage systems. But some plants, including the one in Allentown, have lucrative side businesses accepting waste from outside haulers.
The Lehigh County Authority, a public agency run by local officials, received about $2.9 million in 2020 treating all kinds of hauled waste, including $38,000 from Coim USA, Gross said in an email. Coim which had been sending some wastewater to the Allentown plant Pennsylvania since 2018 from its polymer manufacturing facility in West Deptford, N.J.
Coim is an Italian polymer and plastics maker, and 1,4-Dioxane is one of its byproducts.
According to regulatory filings Coim submitted to the federal Environmental Protection Agency, the company should have been sending waste containing 1,4-Dioxane to an incinerator near Niagara Falls, N.Y.
But when the Allentown treatment plant conducted tests in June 2021 to find who was bringing 1,4-Dioxane to its facility, it found Coim was the "main contributor."
The treatment plant immediately stopped accepting Coim's waste and the amount of 1,4-Dioxane in the Delaware dropped, according to officials from New Jersey American Water and the Pennsylvania Department of Environmental Protection, both of which have the results from subsequent water samples in the Lehigh and Delaware rivers.
Coim USA's president, Michelangelo Cavallo, denied responsibility for polluting the river and said the June test that found 1,4-Dioxane in the wastewater it was sending to Pennsylvania was the result of an accident. That time — and that time only, Cavallo said — the company mixed up the tank it was sending to the Allentown plant with the one meant for the incinerator in Niagara Falls.
"It was a simple mistake," Cavallo said in an interview. "Never happened in the past and … it will not happen in the future."
Regulators haven't taken any formal action against anyone involved in the incident.
The EPA requires plants like the one in Pennsylvania to test for about 130 different chemicals, out of what experts say are thousands of industrial chemicals that can end up in wastewater. After a plant tests for what they have to, they have little insight into what else might be is going into their facilities — or what might be is coming out.
"In this case, if there are not regulations that prevent a thing from occurring, the thing can occur," said Shawn LaTourette, New Jersey's top environmental regulator. "I think the public has a really hard time with this, and understandably so."
Tracy Carluccio, deputy director of the nonprofit Delaware Riverkeeper Network, said failing to test for pollutants is long-standing problem along the river.
"But ignorance is not bliss, and this is no excuse for pollution," she said.
Work is continuing to track down other sources of 1,4-Dioxane in different parts of the Delaware, though New Jersey American's sampling shows the primary source of the chemical threatening its supplies has substantially gone away since last summer.
Csik, New Jersey American's water quality official, said the utility was fortunate to have a treatment process that helped remove 1,4-Dioxane and is getting ready to add another treatment process that further removes the chemical.
This is not the first time 1,4-Dioxane has threatened New Jersey drinking water. Several years ago, the federal government asked large water suppliers throughout the country to test for the chemical. About a tenth found some level of 1,4-Dioxane, but nearly a quarter of New Jersey suppliers found it, including about 30 drinking water systems that had levels of the

chemical at or above what would be allowed under the state's newly-proposed proposed rules.
Tom Neltner, the chemicals policy director of the Environmental Defense Fund, a nonprofit group, said incidents like the one in the Delaware are pretty common, though the details are rarely reported. Tracking down the unusual toxic trail can be difficult and municipal wastewater treatment plants, like the one in Allentown, may not know what industrial polluters are sending them.
He said the Safe Drinking Water Act, the key law that protects Americans' drinking water, may be ill-suited for a world where potent and robust chemicals, like the 1,4-Dioxane found in the Delaware River, can come from far away and be dangerous in tiny amounts.
"In many ways, we use the Safe Drinking Water Act as a cleanup program, to clean up the water that never should have been contaminated in the first place," Neltner said in an interview, "instead of trying to prevent it from being contaminated in the first place."

Threat Assessment Grim on Weapons of Mass Destruction

By Peter Brookes and Jacob Montoya
Source: https://www.dailysignal.com/2022/02/07/threat-assessment-grim-on-weapons-of-mass-destruction/

Feb 07 – Alongside so many other threats to U.S. interests, weapons of mass destruction is another area that will be of deep concern this year.
Indeed, there are good reasons to be nervous about threats from weapons of mass destruction arising not only from rogue states such as Iran, North Korea, and Syria—but also from great powers such as China and Russia, too.

Iran

The regime in Iran continues to move closer to building a nuclear weapon, which would threaten its Arab neighbors, American ally Israel, and possibly eventually even the United States.
For years now, Tehran has been violating the 2015 Joint Comprehensive Plan of Action, aka "the Iran nuclear deal," which the Trump administration disavowed due to the pact's serious flaws.
Some analysis asserts that Iran maybe just a short time away from having the necessary amount of highly enriched uranium to build a bomb—maybe even a few bombs.
That's downright frightening.
Questions do exist about whether Iran can turn that highly enriched uranium into a workable warhead, but with the largest missile arsenal in the Middle East, it does have a way to get a nuke to a regional target.
Tehran is also working on expanding the range of its ballistic missiles through its "civilian" space program that one day could enable it to launch an ICBM toward the U.S.
With diplomatic talks to restore—or replace—the Iran nuclear deal failing, Iran could be looking at becoming the 10th member of the once-exclusive nuclear weapons club at some point soon.

North Korea

North Korean leader Kim Jong Un hates to be ignored, especially by his archenemy, the U.S. He's literally gone "ballistic" as a result of that need for attention already in 2022.
Indeed, by the end of January, North Korea had conducted seven missile tests, including an intermediate-range ballistic missile, which could potentially reach Guam.
More troubling, the North Korean regime "implicitly threatened" to begin nuclear and ICBM testing again, which its hasn't done since 2017.
With denuclearization talks going nowhere, both are a distinct—and destabilizing—possibility.
Pyongyang is thought to have some 30 to 60 nuclear weapons in its arsenal that could be mated to a variety of ballistic missiles for strikes against targets in the region—or even the United States.

China

Beijing is expanding and diversifying its nuclear capabilities on an unprecedented scale. The commander of U.S. Strategic Command, Adm. Charles Richard, called it "breathtaking."
Discovery of the construction of nearly 250 new land-based ICBM silos in the summer of 2021 undermines the idea that China is still adhering to its long-standing "minimum deterrent" nuclear force.
The silo expansion could mean China could soon rival the U.S.' land-based ICBM force.

China has also sent its nuclear strike force to sea on submarines and is developing a strategic bomber leg as part of what will soon be a nuclear triad.
Beijing is also developing unique ways to deliver its nukes.
Last year, China stunned many by testing a fractional orbital bombardment system, which circumnavigated the globe before releasing a nuclear-capable hypersonic glide vehicle at a target.
That increase in Beijing's nuclear numbers and capabilities raises the specter of parity or near-parity with the U.S.—or even superiority.
That's a chilling thought in an era of great power competition and the level of strategic distrust that exists between Washington and Beijing.

Russia

Besides modernizing its nuclear force, Russia is also diversifying it, testing and deploying a number of novel nuclear weapons.
Those nontraditional nuclear-capable weapons systems include an ICBM, three hypersonic weapons, a long-range nuclear-powered underwater torpedo, and an unlimited-range nuclear-powered cruise missile.
Add to that a concern about Russia's doctrine for its nonstrategic (i.e., low-yield) nuclear weapons, aka battlefield or tactical nukes.
Moscow's "escalate to deescalate" doctrine contemplates using a tactical nuke in a conventional conflict with NATO to end resistance to its aggression by crossing the nuclear threshold.
Considering Russia's belligerence in Europe, those small nukes are a big problem for NATO.

Chemical and Biological Weapons

Weapons of mass destruction also include chemical and biological weapons—and their recent use is deeply troubling. Indeed, Israel reportedly struck targets in Syria that might be involved in the production of chemical weapons.
The Damascus regime has already used chemical weapons against civilians in Syria's civil war—and could use them in a conflict with Israel. Also, don't forget Russia's use of a nerve agent against political opponents Sergei Skripal and Alexei Navalny or North Korea's use of VX nerve agent to assassinate Kim's half-brother.
While we've not seen a biological weapon used, the COVID-19 pandemic painfully reminds us of the potential power of a purposely unleashed biological pathogen. No one likes to think about these horrific weapons, especially in the hands of troubling regimes, but unfortunately, due to their destructive power, we're going to have to in 2022.

Peter Brookes is a senior research fellow, focusing on weapons of mass destruction and counter-proliferation, in the Davis Institute for National Security and Foreign Policy at The Heritage Foundation.
Jacob Montoya is an intern in the Davis Institute for National Security and Foreign Policy at The Heritage Foundation and a member of Heritage's Young Leaders Program.

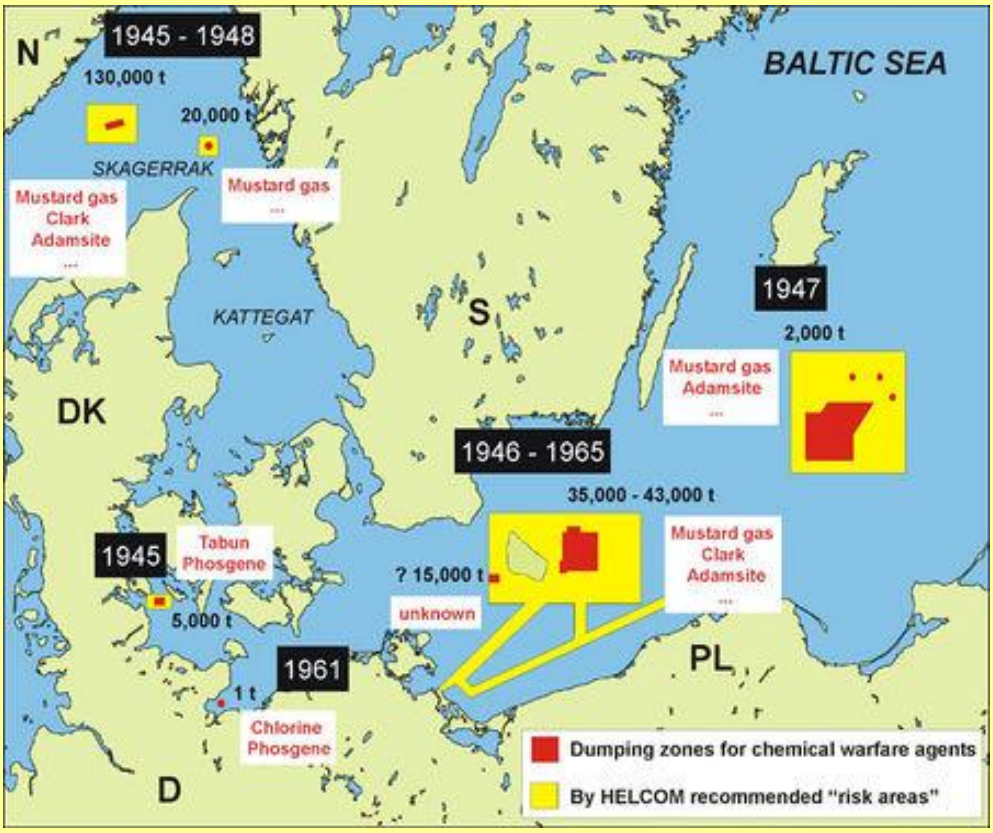
Poland rankles Brussels over the disappearance of World War II chemical weapons

Source: https://www.neweurope.eu/article/poland-rankles-brussels-over-the-disappearance-of-world-war-ii-chemical-weapons/

June 2020 – A former policy adviser to the Conservative Party in the European Parliament, he is now a campaigner for the Liberal Democrats. Based in Poland's reputation as the EU's *enfant terrible* has gone from bad to worse over recent allegations that the Polish Ministry of Justice has been involved in a state-wide cover-up.
In January 1997, Polish fishermen found 5 kilograms of World War II mustard gas in the Baltic Sea. This was reasonably presumed to have been dumped by either Nazi or Soviet forces after the end of the war.
Following recent testimony given by lawyers and ex-army officials, these chemical weapons were taken to an army unit in Rozewie on the Polish coast and have since disappeared. The Polish Ministry of Justice had been informed as early as 2006 as to the disappearance of these weapons, yet no serious investigation has been conducted to this day.
The environmental implications are enormous. As you'd expect, the storage of mustard gas, aka sulfur mustard, poses a serious health risk to anyone involved. Even the botched attempts to dispose of the chemical weapons by chucking them into the sea haven't reduced their toxicity, nor their ability to contaminate the surrounding wildlife. Despite being doused with seawater, only the outer layer of these viscous 'lumps' of mustard gas hardens and

detoxifies, leaving behind amber-coloured residues that still contain the active contaminants. The chemical reaction that takes place underwater has proven to have made the weapons even more toxic.

As unsuspecting fishermen have found, breaking these lumps with massive fishing nets can result in a shocking ecological disaster that destroys vast swathes of marine bed wildlife. And if accidentally caught in these nets and brought aboard, these fishermen would experience the equivalent of a World War II chemical attack on deck, with injuries including severe body burns and lung damage.



Poland's government would understandably get quite tetchy about the prospect of an ecological disaster on its hands. The Supreme Audit Office (NIK) has lambasted the state for doing nothing about this "ticking time-bomb" lurking on its seabed. Yet investigative journalists OKO.press estimate that there are around 40 thousand tonnes of chemical ammunition off the Polish coast, containing around 13 thousand tonnes of toxic warfare agents. Blueprints for the Nord Stream-2 gas pipeline from Russia to Germany had already suffered several setbacks as engineers attempt to find a way through this literal minefield in the Baltic Sea.

Credible allegations of a state-wide cover-up have surfaced, with recent testimony implicating the Polish Minister of Justice and former MEP, Zbigniew Ziobro, in having a role to play. In a legal battle which has lasted almost 14 years, Poland's Supreme Court has got the upper hand in suppressing the startling revelations of a rag-tag bunch of Polish fishermen 23 years ago.

Upon discovering the mustard gas just off the Polish coast, the crew contacted the Polish Armed Forces, who subsequently forced the seamen to bury their findings in the ground. As the case dragged on through the Polish military and then appellate courts between 2006-2009, the fishermen and military personnel involved were stepping forward with the classic symptoms of sarcoidosis, namely reduced lung capacity.

As is standard practice in an institutional cover-up, what followed was a case of collective amnesia. Key witnesses were unable to remember the burial of the mustard gas lumps. After the army conducted spirometric (breathing) tests, clear evidence of patients suffering from sarcoidosis were simply dismissed as pre-existing genetic conditions. A painfully blasé conclusion was reached by government lawyers claiming that even if there had been some contamination, there was a negligible amount anyway.

In bringing the charges against the Polish authorities, one of the fishermen, Karol Piernicki, has found that he is up against the entire resources of the Polish state. His legal representation Bartosz Chudzinski has published the explosive claims within the court proceedings.

The case begs the question as to whether the government had simply tried to downplay the potential of an environmental catastrophe, or whether it actively sold off the weapons to less than reputable characters. Either way, failure to report the discovery of mustard gas within 180 days would be in direct contravention of international law under the Chemical Weapons Convention.

Yet the supranational body designed to enforce this, the Organisation for the Prohibition of Chemical Weapons (OPCW) has earned its reputation as a toothless regulator. According to Terrance Long, founder of the International Dialogue on Underwater Munitions, the organisation was designed specifically to remove countries' liabilities for dumping toxic munitions in seas throughout the 20th century.

Long provides a grim assessment of the state of Europe's northeastern sea. He recalls how the Lithuanian Mission to the OPCW openly admitted that 30% of all fish tested in the Baltic Sea contain warfare agents. This figure can only increase over time to 100% of the fish stocks, as such chemical weapons have a radioactive half-life of 5,000 years.

The allegations pose a clear threat to the EU's grip on the rule of law and its environmental standards, not to mention its internal security, as no one knows who now owns these highly toxic chemicals capable of being used again in weapons. The EU has already decided to start sanctioning Poland for its controversial judicial reforms, under Article 7 of the Treaties, but is held back by Hungary's veto.

This alleged state-wide cover-up only adds more fuel to the conflict between Brussels and Warsaw, over the government's blatant overreach in the judiciary. Chudzinski has contacted Justice Commissioner Didier Reynders as well as the European Chemicals Agency (ECHA), but to no avail. EU budget officials certainly wouldn't like to know that their €3.9 million a year funding of the OPCW is going to waste.

Brussels had also been shocked by Poland's attempt to organise a presidential election during the lockdown, and entirely by post, without parliamentary approval. Ludicrous scenes of the ruling Law and Justice Party's candidate, Andrzej Duda, as the only one allowed to campaign for an election that would have had 0% voter turnout were fortunately avoided as the election was postponed at the last minute to June 28.

Could this scandal over Poland's mishandling of chemical weapons be the final straw that leads to EU sanctions against Warsaw? After any EU action, Poland's response would be predictable. It could either pursue the Clintonian tactic of "deny, deny, deny", followed by admittance and then pointing out other countries doing the same thing. Or perhaps it could follow Russia's 2018 World Cup bid in claiming that all records had been destroyed and so no further investigation is possible.

In any case, Poland's attitude to Brussels and the safety of its citizens could be the EU's own ticking time-bomb.

Olympic Obfuscation: At Games, China-Russia Jab U.S. on Chemical Weapons

Source: https://www.polygraph.info/a/fact-check-xi-putin/31693558.html

Feb 04 – On February 4, Chinese President Xi Jinping met with Russian President Vladimir Putin in Beijing before the opening of the Winter Olympics in China, where the Russian team is competing under a neutral flag as a penalty for a massive state-sponsored Olympics doping scandal.

Xi and Putin reaffirmed solidarity on a wide range of global issues. Russia declared its commitment to the "One China" principle, stating that Taiwan is "an integral part of China" and that Moscow opposes "Taiwan independence in any form."

China backed Russia's resistance to NATO expansion. However, the joint statement did not specifically mention the Kremlin's ongoing military buildup around Ukraine, or its past annexation of Crimea and military machinations in the Donbass region.

Xi and Putin did, however, pointedly attack the United States' record of compliance with chemical and biological weapons agreements.

From their joint statement:

"China and Russia are deeply concerned about the politicization of the Organization for the Prohibition of Chemical Weapons and call on all its members to strengthen solidarity and cooperation and to uphold the tradition of consensus-based decision-making.

"Russia and China insist that the United States, as the only state party to the Convention that has not completed the process of destroying chemical weapons, accelerate the elimination of its chemical weapons stockpiles.

"The parties emphasize that the domestic and foreign military-biological activities of the United States and its allies cause serious concerns and questions among the international community regarding their compliance with the BTWC [Biological and Toxin Weapons Convention].

"The parties share the view that such activities pose a serious threat to the national security of the Russian Federation and China and cause damage to the security of the respective regions."

This characterization is highly misleading.

Biological weapons

China and Russia routinely accuse the U.S. military of developing and using biological weapons both domestically and abroad. Fact-checkers repeatedly have debunked this disinformation narrative.

An example is Russia's recurring misrepresentation of the U.S.-funded Center for Public Health Research in Tbilisi, Georgia, popularly known as the "Lugar Lab" after its patron, the late U.S. Senator Richard Lugar.

Here are a few past claims with links to detailed fact checks:

False: "The Lugar Lab produced novichok" – the deadly Soviet-era family of nerve agents used to poison Alexey Navalny.

False: "COVID-19 was an act of U.S. bioterrorism, and the virus that causes the illness was created in Lugar Lab."

False: "U.S. biologists conduct secret experiments on Georgians in the Lugar Lab."

False: "The Lugar Lab spreads deadly pathogens among humans and animals."

The U.S. Embassy in Georgia told Polygraph.info in 2018 that, "Lugar Center's mission is to contribute to the protection of citizens from biological threats, promote public and animal health through infectious disease detection, epidemiological surveillance and research for the benefit of Georgia, the Caucasus region and the global community." At that time, the embassy said, the lab had never conducted any clinical trials. More on the continuing campaign against the lab can be found here.

Russia's chem-bio disinformation campaign against the U.S. has a years-long history. China's attacks multiplied after the coronavirus pandemic in China's Wuhan province raised questions about whether Chinese authorities were slow to report the virus or withheld information, particularly because of suspicions concerning research activities at the Wuhan Institute of Virology.

The precise origins of the SARS-2-Cov virus behind the pandemic remain a matter of scientific debate. Nonetheless, Chinese officials and state media have made numerous false accusations, particularly attacking the U.S. Army's bioresearch laboratory in Fort Detrick, Maryland:

False: "AIDS/HIV made in the U.S."

False: "SARS-CoV-2, the virus that causes COVID-19, was made in the U.S. Army biolab in Fort Detrick." And other Fort Detrick-related claims…

False: "Ralph Baric, a top coronavirus researcher at the University of North Carolina (UNC) at Chapel Hill, North Carolina, created the virus."

False: "The U.S. Army brought coronavirus to Wuhan."

China and Russia have targeted disinformation at the U.S. Defense Threat Reduction Agency (DTRA), which is tasked with evaluating and eliminating challenges posed by weapons of mass destruction, including chemical and biological weapons.

A DTRA branch called the Cooperative Threat Reduction Program (CTR), which focuses on biological threats, has been frequently targeted by "certain countries" that "try to falsely undermine and discredit the program's efforts," DTRA said in a recent video rebuttal.

The United States unilaterally halted its biological weapons program in 1969 and destroyed all biological warefare agents in 1971-1973. The U.S. currently conducts related research but only as part of its biodefense program, according to the independent watchdog Armscontrol.org.

Chemical weapons

Both the U.S. and Russia developed and stockpiled chemical weapons during the Cold War era. By 1968, the U.S. stockpile reached some 40,000 tons. According to the U.S. Centers for Disease Control and Prevention, the United States has never used chemical weapons in warfare.

The United States started disposing of its chemical weapons in the late 1960s, decades before it joined the International Chemical Weapons Convention Treaty in 1997.

From 1967 to 1970, the United States loaded thousands of tons of chemical weapons on old ships and sank them in the sea. This raised environmental concerns, and in 1970 the U.S. Congress passed a law directing that the Defense Department's plans for destroying chemical weapons must be reviewed and approved by public health agencies to ensure the safety to people, animals and the environment.

In 1986, the U.S. Congress passed a law requiring that all U.S. chemical stockpiles be destroyed.

After the U.S. ratified the Chemical Weapons Convention in 1997, the OPCW set a deadline for the U.S. by 2007. That deadline was extended to 2012, and then to 2023. Now, the U.S.

says it has eliminated about 90 percent of its chemical weapons and that those remaining are at two locations – Pueblo, Colorado, and Blue Grass, Kentucky.
According to the Russian Center of Ecological Policy and other sources, at the time of its collapse in 1991, the Soviet Union had stockpiled some 110,000 tons of chemical warfare agents.
The OPCW initially set a deadline for Russia to destroy its stockpiles by 2007. The United States, Canada and United Kingdom contributed hundreds of millions of dollars to Russia's chemical weapons destruction program.
In 2017, Russia declared it had destroyed all its chemical weapons. One key difference, however, is that Russia's definition of "destruction" is different than that of the United States.
For the United States, "destruction" of chemical weapons is a multistep process ending with the complete and safe elimination of all stockpiles. Here is how experts working at the Pueblo Chemical Agent-Destruction Pilot Plant described that process:

> *"Under the close supervision of trained operators, the pilot plant uses dozens of automated systems to disassemble and drain the munitions and thermally heat the drained munition bodies.*
> *"The liquid agent is neutralized, and the product, hydrolysate, is then fed to living microorganisms in a process known as biotreatment. Water is recycled at the pilot plant and the remaining salt is shipped off-site to a permitted treatment, storage and disposal facility.*
> *"The plant is equipped with a robust pollution abatement system made up of 12 carbon filter banks that filter out particles before air from inside the plant is released back into the atmosphere."*

According to an agreement between the OPCW and Russia, Moscow can claim full disposal of its chemical weapons stockpiles after completing only the first stage of that process, which doesn't address massive amounts of toxic waste.
Paul Walker, director for Environmental Sustainability at Green Cross International, who has personally inspected chemical weapons stockpiles and U.S. and Russian disposal processes, told Polygraph.info in 2018:
"If you define the destruction process as only first-stage, then they've [Russia] completed the process. They've destroyed the whole stockpile. But if you define it as needing a second-stage process, then they far and away haven't finished the process yet. In reality, they still have a long way to go to finish the process – clean up the toxic waste they've left."
Moreover, Russia reportedly admitted using the same method of disposing of its chemical weapons that the U.S. abandoned due to environmental hazards in late 1960s. According to Russia's TASS and Interfax state news agencies, as of 1995, "at least 160,000 tons of chemical weapons" were "buried in Russian seas, posing a grave threat to ecology and the health of man."
Lev Fyodorov, a Russian scientist who is president of the Union for Chemical Safety, has compiled the most comprehensive database on Russia's chemical weapons industry, including a list of land and sea dumping sites. According to Fyodorov, dumping was the main method Russia used to get rid of its chemical stockpiles, which created "enormous" environmental problems that would pose danger for generations.

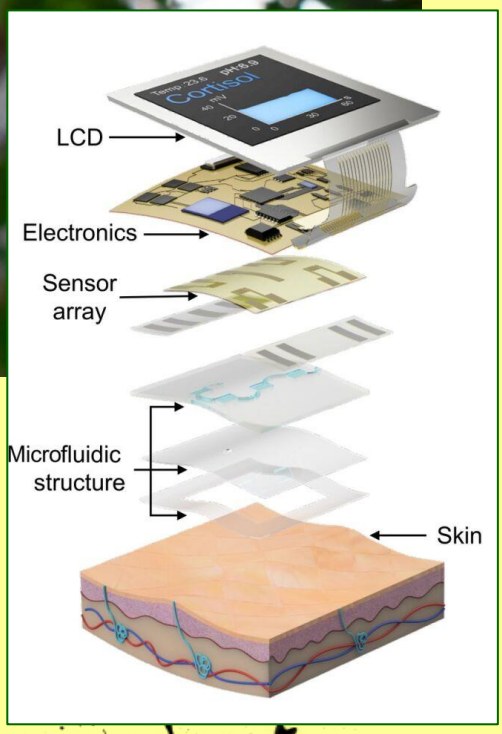
Novichok

The activities of the Organization for the Prohibition of Chemical Weapons are regulated by the 1993 Chemical Weapons Convention (CWC), to which the U.S., China and Russia are signatories. Under the CWC, chemical weapons are categorized by "Schedules," with the most dangerous identified as "Schedule 1" – the category for chemicals and their precursors that have primarily military uses.
In 2019, the CWC, for the first time since its creation, modified the list of Schedule 1 chemicals to include Russia's "novichok" nerve agents. Russia opposed the move, claiming that the chemicals had been used for legal commercial purposes, but it lost the argument. The OPCW said novichok family chemicals have "no known uses beyond serving as chemical warfare agents and their precursors."
The Schedule 1 modification was triggered by two alleged cases of the Russian state using novichok to poison people.
British authorities accused Russia of using novichok in the town of Salisbury in 2018 to poison a former Russian military spy, Sergey Skripal, and his daughter. Russia denied it, producing an array of false explanations for the poisoning.
Then, in August 2020, Russian opposition leader Alexey Navalny was poisoned and flown to Germany for treatment. Authorities there said novichok had nearly killed him.
Bellingcat, a group of investigative journalists, reported in 2020 that Russia, after announcing in 2017 that it had destroyed its CW, continued a clandestine program to further develop and weaponize chemical agents for the use by its military and intelligence services.
In a series of investigations, Bellingcat provided compelling evidence of the Russian security services' involvement in poisoning Navalny with novichok.
"Navalny," a documentary film based on Bellingcat's investigations, premiered in January at the Sundance Film Festival and will be distributed by HBO MAX and CNN later this year.

On January 26, the European Union's Parliamentary Assembly (PACE) said Russia must cooperate with the OPCW to investigate the "alleged development, production, stockpiling, and use of a chemical weapon." PACE concluded that "ample medical evidence" showed that Navalny was poisoned with novichok, and that agents of Federal Security Service (FSB), Russia's main state security agency, were "possibly involved."
The United States and other countries have accused Russia at the United Nations Security Council of complicity in war crimes in Syria. The accusations were based on OPCW reports that forces of Syria's President Bashar Assad used chemical weapons against civilians during the country's civil war, killing and injuring thousands. Russia is allied with the Assad regime.

Sweat-analyzing smartwatch could warn wearers of elevated stress

Source: https://newatlas.com/health-wellbeing/sweat-cortisol-smartwatch-stress/



Feb 10 – It's important for people with conditions such as depression and anxiety to know when they're becoming stressed, so they can initiate coping strategies. An experimental new smartwatch could someday warn them, by detecting a stress hormone in their sweat.
When someone becomes stressed, their body produces a hormone known as cortisol – the greater the level of stress, the higher the concentration of cortisol in their bloodstream. And while those concentrations can be measured by analyzing blood samples, doing so obviously isn't an effective way of continuously monitoring stress in real time.
Fortunately, cortisol concentrations in the sweat correspond to those in the bloodstream. That's where the prototype smartwatch comes in – it's currently being developed at UCLA, by teams led by Prof. Anne Andrews and Assoc. Prof. Sam Emaminejad.
On the underside of the device is a thin adhesive film, which utilizes microfluidic channels to draw in tiny amounts of sweat from the wearer's skin. That sweat is carried through to a sensor that contains engineered strands of DNA, called aptamers.

Each cortisol molecule in the sweat attaches itself to an aptamer, "like a key fits a lock." The aptamer changes shape as a result, altering the electrical fields on the surface of an adjacent transistor. A microprocessor analyzes the fluctuations of those fields, using them to determine the wearer's current cortisol levels. Those levels are displayed on an LCD screen on the top surface of the watch. Because every person produces different amounts of cortisol, the watch would initially have to be calibrated to each user, establishing a baseline for their default cortisol levels. Once that baseline was set, the device could warn them when they were becoming dangerously stressed. It could additionally track their cortisol levels over time, to see when and how often they were experiencing elevated stress.
"I anticipate that the ability to monitor variations in cortisol closely across time will be very instructive for people with psychiatric disorders," said Andrews. "They may be able to see something coming or monitor changes in their own personal patterns."

●▶ **A paper on the study – which is *not* related to a somewhat similar project at Switzerland's EPFL research institute – was recently published in the journal *Science Advances*.**

EDITOR'S COMMENT: I am sure that all CBRN First Responders thought the same thing: this smartwatch night be very useful in our line of work – especially for those working with Level-A PPEs.

Hazardous Area Response Teams

Source: https://naru.org.uk/what-we-do/hart/

Hazardous Area Response Teams – more commonly known as HART – are comprised of specially recruited personnel who are trained and equipped to provide the ambulance response to high-risk and complex emergency situations.
HART teams are based in each of England's ten NHS Ambulance Trusts, which means they can cover the whole of the country, in some cases working together on specific, large scale or high-profile incidents, either accidental or deliberately caused.
HART teams work alongside the police and fire & rescue services within what is known as the 'inner cordon' (or 'hot zone') of a major incident. The job of the HART teams is to triage and treat casualties and to help save lives in very difficult circumstances.
They are also there to look after other emergency personnel who may become injured whilst attending these difficult and challenging incidents.
HART teams are tactically capable of responding to the following types of challenging incident:

- **Hazardous Materials** – Working inside the inner cordon where hazardous materials are present; dealing with the aftermath of industrial accidents; transporting patients with high risk infectious diseases, for example Ebola; undertaking complex transportation cases (for example, after large scale accidents).
- **CBRN(e) – Chemical, Biological, Radiological, Nuclear and Explosives** – Providing the NHS specialist healthcare inner cordon response to CBRN(e) events.

- **MTA – Marauding Terrorist Attack** – Providing the NHS specialist healthcare response to acts of terrorism involving explosive devices, firearms, knives and / or weaponised vehicles.
- **SWAH – Safe Working at Height** – Providing the specialist healthcare response to patients taken ill at height, either on man-made structures or within the natural environment.
- **Confined Spaces –** Providing the specialist healthcare response to patients caught in substantially enclosed spaces; following building collapses; where compromised atmospheres are present; where entrapment of patients is hampering the delivery of care.
- **Unstable Terrain –** Providing the specialist healthcare response to patients caught within active rubble piles or where rural access or difficult terrain is providing a specific challenge to the rescue and extrication effort.
- **Water Operations –** Providing the specialist healthcare response to patients caught in water environments, for example swift water rescue, or where urban or rural flooding has occurred, and including deployment to boat operations.
- **Providing support to security operations** – Providing healthcare support to specific Government security operations, support to police operations such as incidents where illicit drug laboratories are present, and VIP close protection support.

Specialist training

HART personnel must undergo rigorous specialist training at the National Ambulance Resilience Unit Training & Education Centre before they can be deployed. This involves:

- Training in the use of Personal Protective Equipment (PPE) such as PRPS, CR1 suits, Breathing Apparatus and Gas Tight Suits.
- A three-week residential IRU training module which covers everything from clinical training, CBRNe and equipment & vehicles, through to team building, welfare and command & control.
- A three-week residential USAR training module which covers issues such as safe working at height; specialist clinical training such as crush and blast injuries, suspension trauma, triage and confined space medicine; equipment and vehicles; a thorough range of practical exercises and; welfare and health & safety issues.

- A three-day Inland Water Operations course featuring flood theory, water incident organisation and multi-agency working' self-rescue techniques and bank-based rescues, river crossing and wading techniques, working in boats and specific clinical issues related to water.

HART training is ongoing and features regular fitness assessments, ongoing PPE training and refresher training, reflective practice and Continuing Professional Development (CPD).

CBRNe

This interoperable capability revolves around specialist operations ambulance staff providing the NHS specialist healthcare response to incidents where Chemical, Biological, Radiological, Nuclear and Explosives are present.

The key features of this capability are:

- Initial Operational Response (IOR)
- Specialist Operational Response (SOR – provided by HART)
- Interim decontamination of casualties affected by CBRNe
- Full wet decontamination of casualties affected by CBRNe

U.S. Addiction to Chemical and Biological Warfare

By Danny Haiphong

Source: https://www.laprogressive.com/chemical-and-biological-weapons/

Feb 11 – The United States frequently employs human rights as a weapon against so-called "adversaries." Chemical and biological weapons have played a prominent role in cultivating the U.S.'s identity as the foremost humanitarian interventionist power. The 2003 invasion of Iraq was based on accusations made by U.S. intelligence that Saddam Hussein was harboring Weapons of Mass Destruction (WMDs). In recent years, U.S. officials have accused the Syrian government on multiple occasions of engaging in chemical weapons attacks on civilian populations.

These evidence-free allegations have served as justification for wars far more destructive than whatever the targeted nations were accused of. Furthermore,chemical The most well-known case is World War II, when the U.S. dropped two nuclear atomic bombs on Japan. Since then, the U.S. has used chemical and biological weapons on a number of occasions in its quest for global dominance. The following article offers eight examples which are by no means exhaustive.

Korea

Beginning in 1950, U.S. forces invaded Korea and murdered upwards of twenty percent of the entire population. The murderous event ended in an armistice in 1953. By 1952, Korean forces and Chinese volunteers had accused the U.S. of using biological weapons or "germ warfare" in its campaign of terror against the Korean people.

The World Peace Council, a Soviet Union-led internationalist organization, formed a delegation of scientists to investigate the matter . The International Scientific Commission (ISC) was led by the U.K.'s Director of Natural Sciences at UNESCO, Joseph Needham, and was comprised of experts from Brazil, Sweden, the Soviet Union, and France. Their report on the facts relating to the use of bacterial warfare in Korea and China was dismissed by the United States as "communist propaganda" and heavily suppressed. The journalist who broke the story, John W. Powell , was indicted on charges of sedition.

Through on the ground investigation, eyewitness testimony, and interviews with American Prisoners of War (POWs), the ISC found that U.S. use of biological weapons in Korea and China was commonplace. Examples include the dropping of containers of fleas by air and boxes of clams on foot which were infected with bacterial diseases such as cholera and the plague. In one instance, 24 eyewitnesses in the Chinese provinces of Liaotung and Liaohsi observed American F-86 and B-26 war planes drop containers of down feathers from a fowl and a species of beetle. The death of five people in the area from respiratory anthrax correlated with the handling of these infected agents. This conclusion was further supported by evidence that respiratory anthrax was completely unknown in China at the time.

Cuba

Like Korea, Cuba has been subject to endless aggression from the United States. Debilitating sanctions on Cuba remain ongoing. The CIA made more than six hundred attempts on Fidel Castro's life over the course of his political life as head of state. The U.S.'s overarching goal has always been the overthrow of Cuba's socialist revolution.

A *Newsday* article published in 1977 revealed that the CIA was linked to an outbreak of African swine fever in Cuba six years prior. An intelligence source told *Newsday* that he was given the virus in a sealed, unmarked container at a U.S. Army base in the Panama Canal Zone with instructions to turn it over to an anti-Castro armed group. The CIA would deny the validity of the report six days after the *Newsday* publication.

The spread of African swine fever has been linked to a U.S. bioweapons research facility on Plum Island, the only known place in the Western hemisphere where the virus was kept. New U.S. Navy transcripts have emerged that indicate investigations were underway in 1971 regarding the presence biological toxins on Haiti's Navassa Island, the very place where the African swine fever virus was transferred from the CIA to counterrevolutionaries seeking to overthrow the Cuban government.

Vietnam, Laos, Cambodia

The intervention in Vietnam remains the most highly recognized war in the history of the United States. A mass anti-war movement coupled with the heroic struggle of the Vietnamese people ejected the U.S. military from Vietnam after decades of interference, including a decade-long brutal invasion. Opposition to U.S. involvement in Vietnam was spurred in part by the numerous examples of egregious human rights violations. The use of torture in the Phoenix Program, the infamous My Lai massacre, and the human devastation caused by napalm bombing campaigns exposed the cruelties of U.S. imperialism over a long period.

Biological warfare was another such cruelty. From 1961 to 1973, the U.S. dropped a toxic chemical weapon nicknamed Agent Orange onto millions of acres across Vietnam, Laos, and Cambodia. The U.S. saw the destruction of food and agriculture as a key component of its mission to obliterate the socialist and national liberation movements fighting for independence in these countries. Agent Orange was composed of two powerful herbicides: 2,4-dichlorophenoxyacetic acid and 2,4,5-trichlorophenoxyacetic acid and was therefore perfect for the job. Together, these herbicides possessed trace amounts of TCDD dioxin—one of the most toxic chemicals known to science. Of the 81,000,000 liters of chemicals dropped onto Vietnam, Laos, and Cambodia, 60 percent contained Agent Orange chemicals.

The human and environmental costs of Agent Orange have been enormous. At least 400,000 people in Vietnam alone have died due to complications from the toxic brew of chemicals. Birth defects, cancers, and a host of other severe diseases continue to affect millions, including U.S. military veterans exposed to Agent Orange during the war. Agent Orange has also caused a significant level of deforestation and destruction of the natural environment, with 60-80 percent of animal and plant life destroyed in sprayed areas. Because dioxin does not degrade naturally, water and food supplies possess dangerous levels of the chemical to this very day.

While the U.S. has responded to public pressure by paying a small sum to Vietnam and former U.S. military personnel for the costs of Agent Orange, it is not nearly enough to make up for the devastation wrought upon the people and the planet. Laos and Cambodia have yet to receive even a formal acknowledgement of wrongdoing from the United States. Neither the U.S. government nor Dow Chemical and Monsanto, the two corporations that produced Agent Orange, have faced any real consequences for their role in one of the most devastating war crimes in the history of humanity.

Iraq

The U.S. invasion of Iraq (2003-2011) is estimated to have killed at least a million people. It also served as a catalyst for the destabilization of the Arab and Muslim world. A historic event in the U.S. war in Iraq was the siege of Fallujah in 2004. The U.S. destroyed tens of thousands of buildings during the siege, including more than a quarter of the city's mosques through intense bombing campaigns and logistical support for military contractors and death squads.

White phosphorus, a deadly chemical agent that reaches upwards of 4,800 degrees Fahrenheit once it makes contact with the air, was frequently used during the razing of Fallujah. White phosphorus causes deadly, painful burns and trauma to the body. The combined impact of white phosphorus and depleted uranium weapons on the people of Iraq has been described by researchers as worse than that of the atomic bomb dropped on Hiroshima. Infant mortality, cancer, and leukemia are just some of the long-term perils of the U.S.'s use of chemical weapons in Iraq.

The U.S. used white phosphorus again in Mosul, Iraq more than a decade later as the war transitioned from a military invasion to a proxy war carried out by a U.S.-led military alliance and various groups of armed militants. While white phosphorous is technically prohibited under international law in heavily populated areas, its multifaceted application in creating

smokescreens and flashes of light for military purposes has allowed the weapon to remain in use.

Syria

White phosphorus was deployed again by U.S.-led coalition forces in its fraudulent fight against ISIS, this time in the Syrian city of Raqqa. While the effects of white phosphorus in Syria are not yet known, Syrian media reported that the U.S.-led coalition targeted civilian agriculture . This demonstrates that a chemical weapon possessing the ability to cause severe trauma and long-term health complications cannot be used for humanitarian purposes. The U.S. war on Syria is a dirty war, one where the U.S. has deployed chemical weapons to terrorize the population while accusing the Syrian government of the very same crime without a shred of evidence.

The United States

From smallpox blankets to modern biological and chemical weapons, the U.S.'s foundations are built upon a genocidal and colonialist campaign of violence. It should come as no surprise, then, that weapons of war would be turned against working class and oppressed people in the United States. The U.S. military operated a biological weapons testing program from 1949-1969 and conducted 239 large scale trials on civilian populations .

Over this period, the U.S. military tested zinc cadmium sulfide on the urban populations of St. Louis and Minneapolis. U.S. military personnel released the chemical by air and on the ground, mainly from rooftops. Cadmium is highly cancerous. The high rates of cancer in the majority-Black neighborhoods where the tests occurred have raised suspicions about the military's culpability in poisoning oppressed communities.

Other such experiments include the breaking of lightbulbs filled with bacteria linked to food poisoning in the New York City subway system. A particularly controversial experiment involved the packing of crates with fungal spores at the Norfolk Naval Supply Center. This experiment sparked understandable anger when details emerged in 1980 that the majority of workers exposed to the fungus were Black American. Black American communities possess a long history of being exploited in medical experiments which have caused undue suffering and death, the most well-known case being the Tuskegee Syphilis experiment .

Many of the U.S. military's biowarfare experiments remain shrouded in secrecy. They were investigated in detail in the book *Clouds of Secrecy: The Army's Germ Warfare Tests Over Populated Areas* by Dr. Leonard Cole.

Puerto Rico

While Puerto Rico is considered a de facto "territory" of the United States, the fact is that the Caribbean nation was colonized by the U.S. in 1898 and has been treated as such ever since. High rates of poverty, migration, and debt are just a few expressions of the U.S.'s colonial relationship with Puerto Rico.

Military occupation is another clear sign of Puerto Rico's colonial status. Beginning in the 1940s, the U.S. Navy occupied 22,000 acres or two-thirds of Vieques. Vieques was used as a testing ground for war . Napalm, depleted uranium, and other toxic chemicals bombarded the island during regular training operations. The U.S. military also conducted numerous biological weapons experiments in Vieques throughout the 1960s and 1970s. In one example, military personnel were sprayed with trioctyl phosphate, a cancer-causing agent.

Massive protests successfully ousted the U.S. Navy in 2003. but the long-term effects of the occupation on the health and wellbeing of the people of Puerto Rico remain. Cancer rates are higher in Vieques than any other municipality in Puerto Rico . Residents of Vieques are seven to eight times more likely to die of diabetes and cardiovascular disease than anywhere else on the island. Furthermore, the U.S.'s occupation laid waste to the local economy of the island and paved the way for the gentrification and corporatization that ensued once the U.S. Navy departed.

The U.S. Navy conceded amid public pressure that its hardware possessed harmful toxins but has denied any connection to the disproportionate rates of illness experienced by residents of the island.

Marshall Islands

Puerto Rico isn't the only "territory" of the United States to experience the cruelties of U.S. military occupation. The U.S. possesses a similarly oppressive relationship with island nations across the Asia Pacific. Large-scale contamination from Agent Orange and other hazardous chemical waste from U.S. military hardware have devastated the people and the environment of nations such as Guam and Okinawa.

More specifically, 70,000m3 of radioactive waste is stored in the "Dome" on Runit Island, a region of the Marshall Islands. The waste from "the Dome" is leaking into the sea. According to the book, *Poisoning the Pacific* , the U.S. has disposed of 454 tons of radioactive waste

and 29 million kilograms of mustard agent and nerve agents into the Pacific Ocean off the coast of the Marshall Islands and neighboring territories.
The Marshall Islands is also the location where the U.S. military exploded sixty-seven nuclear bombs from 1948 to 1958, the equivalent of one Hiroshima every day for twelve years. In 1954, the U.S. dropped a hydrogen bomb, Bravo, on Rongelap atoll and resettled the population in contaminated areas for radiation experiments . These crimes against humanity have rendered the Marshall Islands largely unlivable. Staple foods and water sources have been poisoned. According to the US Cancer Institute, future generations of Marshall Islands residents exposed to radiation are likely to experience at least 530 types of cancer.

Conclusion
The U.S.'s chemical and biological weapons programs were outgrowths of a Cold War mentality that pursued hegemony at all costs. This was in keeping with the history of the United States as a capitalist society founded upon slavery, exploitation and, war. While these programs were supposedly phased out decades ago, the COVID-19 pandemic has raised new questions about the character of biological and chemical warfare. Claims of a "lab leak" theory that suggest China leaked COVID-19 from its Wuhan Institute of Virology have been thoroughly debunked and met with concerns about the continued operation of Fort Detrick in Maryland, the epicenter of the U.S.'s biological weapons program. Fort Detrick has been linked to the experimentation of pathogens such as Ebola and Anthrax.
The United States remains the foremost imperialist power and therefore the principal leader in global war crimes. Biological and chemical weapons are a vile expression of how far U.S. imperialism will go to maintain its economic and political supremacy. Systemic crisis has led U.S. imperialism into an end game strategy of escalating aggression toward Russia and China. Massive annual increases to the U.S military budget mean that the endless wars currently underway in Syria, Yemen, and elsewhere will be complimented by a set of new wars as the U.S. seeks to curtail China and Russia's growing influence.
The ongoing reality of the U.S.'s addiction to chemical and biological warfare should serve as a reminder that the nuclear option is not off the table. The doomsday clock is ticking in the wrong direction. Militarists and imperialists led by the United States cannot be trusted to scale back the mass destruction that their endless wars impose upon the people.
That's why a new peace movement must develop in the imperialist orbit which addresses the challenges of the current period, one armed with a positive vision of internationalism and a strategy for organizing the masses to confront, and stop, the war machine in its deadly tracks.

Danny Haiphong is a socialist activist, writer, and political analyst. For the last five years, Haiphong has been a weekly contributor to Black Agenda Report. His articles have also appeared in publications such as MintPressNews, Counterpunch, The American Herald Tribune, The Center for Global Research (Canada) and The Herald (Zimbabwe). Haiphong has frequently appeared on Black Agenda Radio, CPRNews with Don Debar, The Taylor Report, RT, and Sputnik International. His work was recently featured in former Congresswoman and Green Party presidential candidate Cynthia McKinney's latest book How the U.S. Creates "Sh*thole Countries (2018).

Revolutionary Coating to Protect Military Equipment from Chemical Warfare Agents

Source: https://i-hls.com/archives/113042

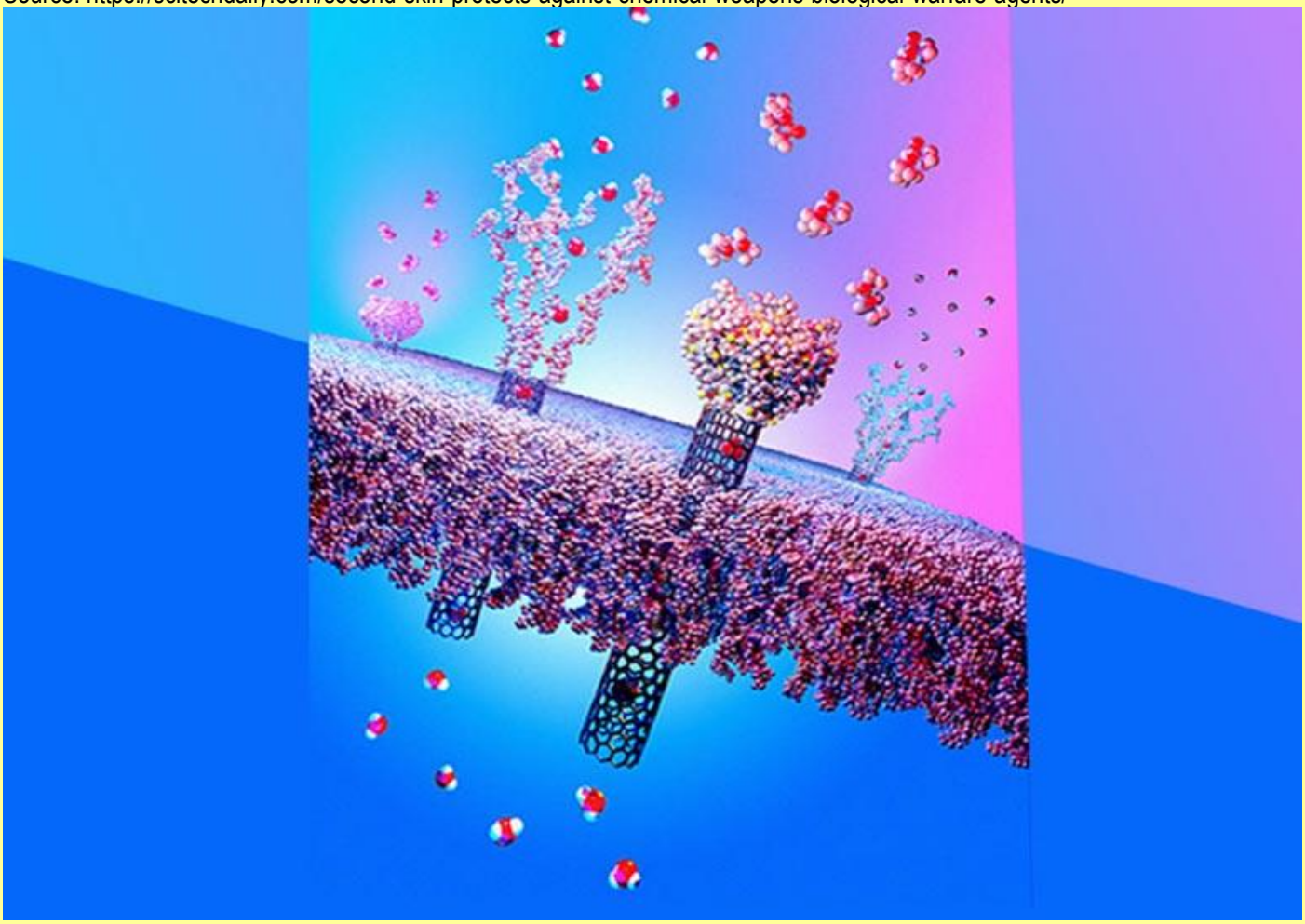
Feb 10 – The ability to recover assets after a chemical agent attack and rapidly resume normal operations is a military priority. An innovative coating that can temporarily shield tactical military equipment from chemical warfare agents (CWAs) is under development. The US Defense Threat Reduction Agency (DTRA) is working with Pentagon and commercial partners to produce and refine the technology.
To date, military machinery and battlefield tools have been coated in substances that can provide visual camouflage and corrosion protection. But existing coatings have thus far been unable to offer the most adequate boosted resistance against chemical agents.

"We have been exploring ways to make military equipment as easy to clean as possible and prevent [CWAs] from penetrating into standard coatings," Science and Technology Manager in DTRA's Protection and Hazard Mitigation Division, Dr. Bernadette Higgins, told Nextgov.com. The ultimate intent is not to create a unique permanent coating — but instead, officials want to develop, test and improve temporary overcoats that can be sprayed, wiped or brushed on equipment by troops, then work and withstand exposure for at least six months out in the field. The researchers are leaning on some of the latest advances in polymer synthesis, engineering, and coating formulations to improve both resistance from dangerous chemicals and the decontamination process of painted military surfaces "down to the stainless-steel level." They are turning to a recently validated test standard known as the Chemical Agent Resistance Method to compare and quantify CWA resistance for existing and in-the-making coating systems.

Tests of newly-made overcoats so far have demonstrated a reduction in the amount of absorbed CWAs "by fivefold to a hundredfold," officials reported, and the coatings worked for more than 8 weeks in normal environmental conditions.

Second Skin Protects Against Chemical Weapons, Biological Warfare Agents

Source: https://scitechdaily.com/second-skin-protects-against-chemical-weapons-biological-warfare-agents/



The smart protection mechanism of responsive nanotube membranes against environmental threats. The collapse of actuating polymer chains on the contaminated membrane surface prevents nerve agents like sarin from entering the SWCNT pores. In a safe environment, the responsive polymer chains remain extended and allow rapid transport of water vapor, thus conferring high breathability to the membrane material. Credit: Ryan Chen/LLNL.

May 2020 – Recent events such as the COVID-19 pandemic and the use of chemical weapons in the Syria conflict have provided a stark reminder of the plethora of chemical and biological threats that soldiers, medical personnel and first responders face during routine and emergency operations.

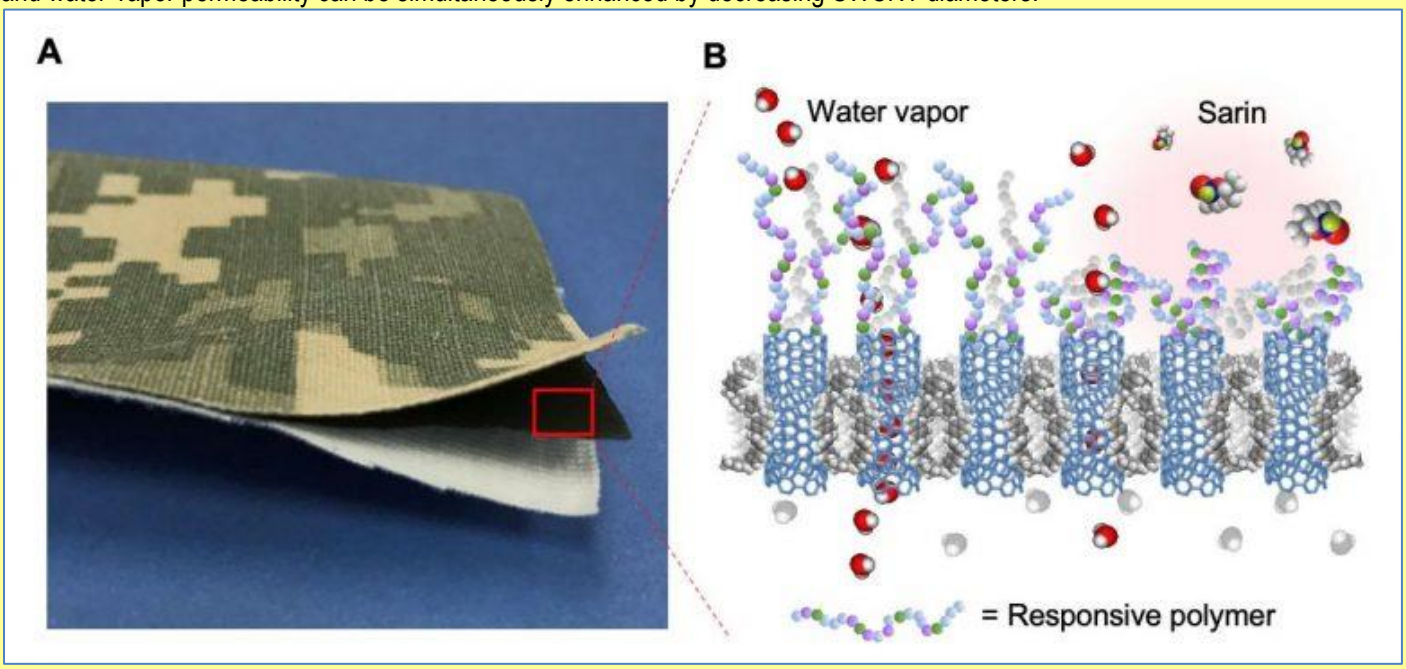
Personnel safety relies on protective equipment which, unfortunately, still leaves much to be desired. For example, high breathability (i.e., the transfer of water vapor from the wearer's body to the outside world) is critical in protective military uniforms to prevent heat-stress and exhaustion when soldiers are engaged in missions in contaminated environments. The same materials (adsorbents or barrier layers) that provide protection in current garments also detrimentally inhibit breathability.

To tackle these challenges, a multi-institutional team of researchers led by Lawrence Livermore National Laboratory (LLNL) scientist Francesco Fornasiero has developed a smart, breathable fabric designed to protect the wearer against biological and chemical warfare agents. Material of this type could be used in clinical and medical settings as well. The work was recently published online in *Advanced Functional Materials* and represents the successful completion of Phase I of the project, which is funded by the Defense Threat Reduction Agency through the Dynamic Multifunctional Materials for a Second Skin "D[MS]^2" program.

"We demonstrated a smart material that is both breathable and protective by successfully combining two key elements: a base membrane layer comprising trillions of aligned carbon nanotube pores and a threat-responsive polymer layer grafted onto the membrane surface," Fornasiero said.

These carbon nanotubes (graphitic cylinders with diameters more than 5,000 times smaller than a human hair) could easily transport water molecules through their interiors while also blocking all biological threats, which cannot fit through the tiny pores. This key finding was previously published in *Advanced Materials*.

The team has shown that the moisture vapor transport rate through carbon nanotubes increases with decreasing tube diameter and, for the smallest pore sizes considered in the study, is so fast that it approaches what one would measure in the bulk gas phase. This trend is surprising and implies that single-walled carbon nanotubes (SWCNTs) as moisture conductive pores overcome a limiting breathability/protection trade-off displayed by conventional porous materials, according to Fornasiero. Thus, size-sieving selectivity and water-vapor permeability can be simultaneously enhanced by decreasing SWCNT diameters.



At left, an example of trilayer laminate mimicking a protective military garment and consisting of a nylon/cotton outer-shell fabric with a camouflage pattern, an intermediate protective carbon nanotube membrane layer, and a cotton comfort liner. To the right, a schematic representation of the membrane response mechanism to environmental chemical stimuli, in which the collapse of actuating polymer chains grafted on the membrane surface prevents nerve agents like sarin from entering the membrane pores. Credit: LLNL

Contrary to biological agents, chemical threats are smaller and can fit through the nanotube pores. To add protection against chemical hazards, a layer of polymer chains is grown on the material surface, which reversibly collapses in contact with the threat, thus temporarily blocking the pores.

"This dynamic layer allows the material to be 'smart' in that it provides protection only when and where it is needed," said Timothy Swager, a collaborator at the Massachusetts Institute of Technology who developed the responsive polymer. These polymers were designed to

transition from an extended to a collapsed state in contact with organophosphate threats, such as sarin. "We confirmed that both simulants and live agents trigger the desired volume change," Swager added.
The team showed that the responsive membranes have enough breathability in their open-pore state to meet the sponsor requirements. In the closed state, the threat permeation through the material is dramatically reduced by two orders of magnitude. The demonstrated breathability and smart protection properties of this material are expected to translate in a significantly improved thermal comfort for the user and enable to greatly extend the wear time of protective gears, whether in a hospital or battlefield.
"The safety of warfighters, medical personnel and first responders during prolonged operations in hazardous environments relies on personal protective equipment that not only protects but also can breathe," said Kendra McCoy, the DTRA program manager overseeing the project. "DTRA Second Skin program is designed to address this need by supporting the development of new materials that adapt autonomously to the environment and maximize both comfort and protection for many hours."
In the next phase of the project, the team will aim to incorporate on-demand protection against additional chemical threats and make the material stretchable for a better body fit, thus more closely mimicking the human skin.

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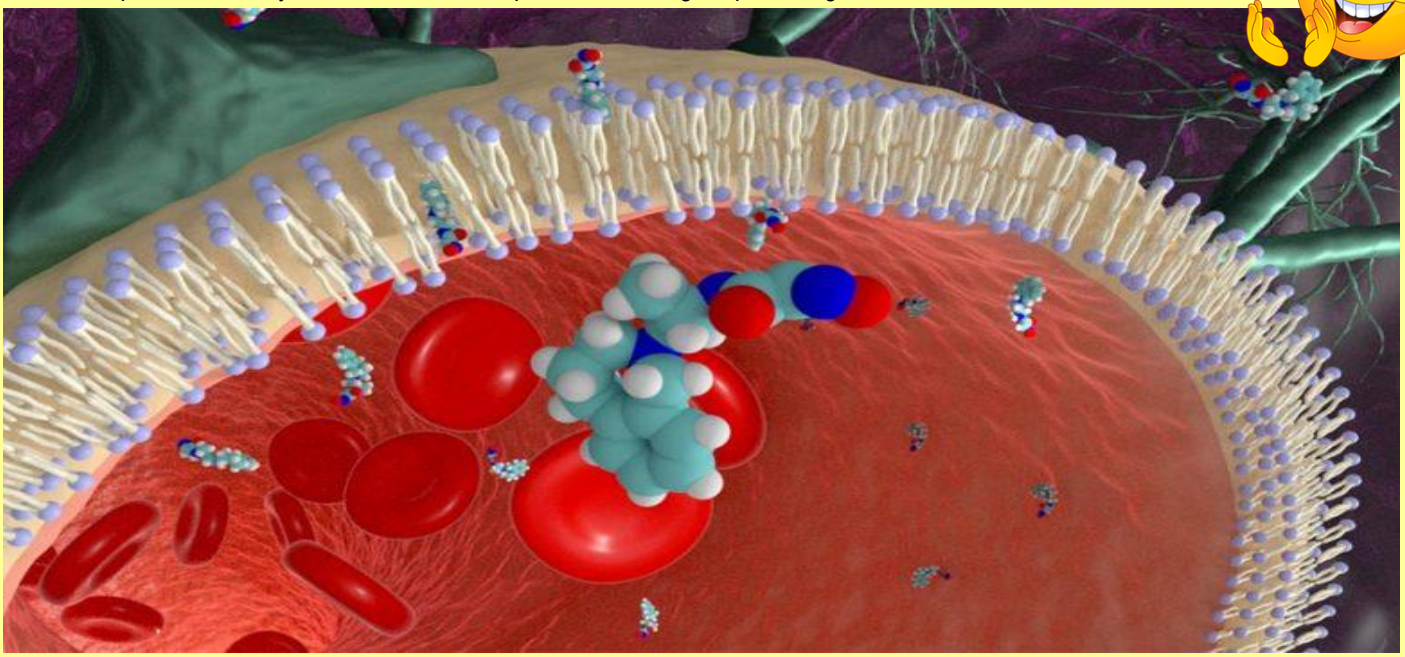
Antidote Developed for Nerve Agent Poisoning

Source: https://scitechdaily.com/antidote-developed-for-nerve-agent-poisoning/

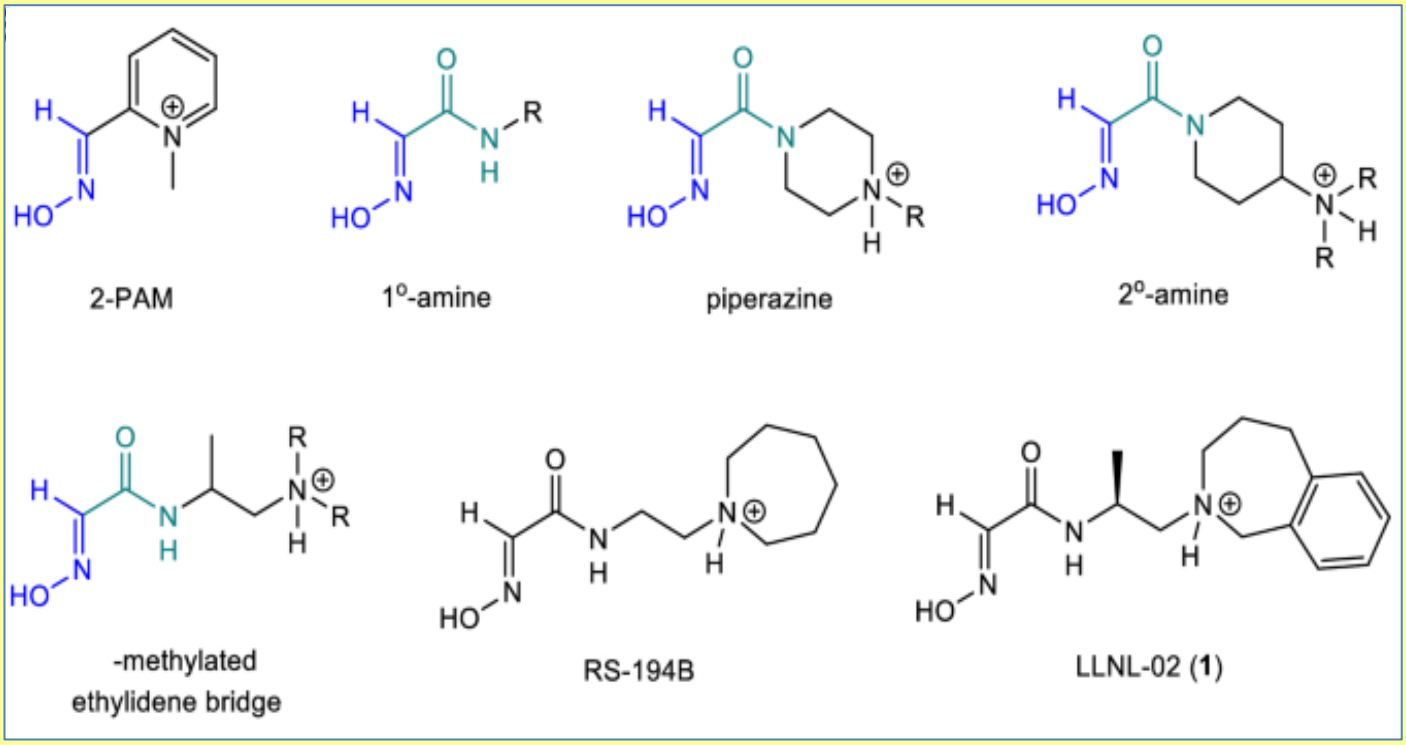


LLNL-02 can pass through the blood-brain barrier (pictured), making it more effective in protecting the central nervous system. Credit: Liam Krauss/LLNL

Sept 21 – Scientists at Lawrence Livermore National Laboratory (LLNL) have developed a new, versatile antidote to counteract exposure to nerve agent poisoning. The work, appearing in the journal *Scientific Reports*, was the result of a highly iterative process built in collaboration between LLNL's Global Security Directorate, its Forensic Science Center and the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD).

Chemical weapon nerve agents like Sarin or Novichok typically function by blocking the transmission of messages from the central nervous system (CNS), composed of the brain and the spinal cord, to the peripheral nervous system (PNS), which controls many processes, including respiration. **The brain's natural protection — the blood-brain barrier (BBB)** — has long been a major obstacle to the development of effective nerve agent antidotes, which historically only protect against damage to the PNS because they cannot cross the BBB.

After the most promising compounds were identified using a parallel effort involving computational modeling and medicinal chemistry, the best candidates were evaluated in several biochemical assays, resulting in the **discovery of LLNL-02**. LLNL-02 was found to protect both the CNS and the PNS against the effects of the nerve agent Sarin. **LLNL-02 is the first antidote of its kind, as it does cross the BBB to confer protection to the brain.**



"The process was extremely challenging — most of the synthesized compounds, upon biochemical evaluation, were found to either effectively cross the BBB models but were not effective, or vice-versa," said corresponding author Carlos Valdez and LLNL lead chemist of the project. "I will go so far as calling [LLNL-02] a needle in a haystack and we were ecstatic to find it when we did. It was quite an accomplishment by our team."

After two years of laboratory and computational testing, LLNL-02 was shown to be nontoxic to human cell lines in biochemical assays conducted at the USAMRICD. The next step was to evaluate LLNL-02 in an animal model. "It worked as well as the 'gold standard' antidote that the U.S. Army currently uses," Valdez said.

Research continues into LLNL-02's effectiveness against VX and newer agents like the Novichoks, most notably used in the assassination attempts of Sergei Skripal and his daughter in 2018 in the U.K., and of Alexei Navalny in 2020.

"These people were lucky they were able to be rushed to a hospital and kept alive until their bodies were able to properly deal with the agent," Valdez said. "This is what we're looking forward to seeing now — if LLNL-02 has some protective activity that goes beyond Sarin."

"The results show that LLNL's unique collection of facilities and scientific talent is pushing the boundaries of what's possible," said Audrey Williams, director of LLNL's Forensic Science Center. "LLNL-02 is a promising and versatile compound built by a unique process that demonstrates a path forward for protecting victims of bioterrorism and chemical weapons."

●▶ **Reference:** "Development of a CNS-permeable reactivator for nerve agent exposure: an iterative, multi-disciplinary approach" by Brian J. Bennion, Michael A. Malfatti, Nicholas A. Be, Heather A. Enright, Saphon Hok, C. Linn Cadieux, Timothy S. Carpenter, Victoria Lao, Edward A. Kuhn, M. Windy McNerney, Felice C. Lightstone, Tuan H. Nguyen and Carlos A. Valdez, 30 July 2021, *Scientific Reports*. DOI: 10.1038/s41598-021-94963-2

State Department's New Chemical Forensics International Technical Working Group

Source: https://www.homelandsecuritynewswire.com/dr20220212-state-department-s-new-chemical-forensics-international-technical-working-group

Feb 12 – The U.S. Department of Statehas established the Chemical Forensics International Technical Working Group (CFITWG) to address gaps in chemical forensic science and capabilities through an international partnership of experts from science, policy, academic, law enforcement, and export-control organizations.
The Department says that the effort is an ad hoc and voluntary association of practitioners of chemical forensics, including participation by policy makers, members of the Organization for the Prohibition of Chemical Weapons (OPCW) designated laboratories network and Scientific Advisory Board (SAB), academic institutions, and the law enforcement community. The group's efforts have contributed to the work of the SAB to help strengthen the OPCW's investigative options in the future. The group meets biennially.

What Is Chemical Forensics?
Chemical forensics and forensic chemistry are fields that encompass the application of chemistry, sample collection techniques, analysis methods and tools, and analytical instrumentation to assess crime scenes by gathering and analyzing chemical evidence.

CFITWG Areas of Interest

- Identification of chemical attribution signatures and associated data analytics capabilities for selected classes of chemical threat agents including toxic industrial chemicals (TICs), chemical warfare agent surrogates, explosives, pharmaceutical agents (including counterfeits), drugs of abuse, pesticides, and toxins;
- Development of forensic tools such as analytical and chemometric procedures and standardize methods of data handling and security for advancement of best practices to support forensic-based analyses (such as those governed by the legal standards of admissible evidence and criminal procedure); and
- Investigation of chemical analysis tools and capabilities from other fields for forensic and retrospective analytical purposes (to include survey, compilation, and analysis of reports and publications, in the public sphere).

Patient transport in case of chemical and particle cross-contamination: the ORCA™ Operational Rescue Containment Apparatus

Source: https://www.emergency-live.com/marketplace/patient-transport-in-case-of-chemical-and-particle-cross-contamination-the-orca-operational-rescue-containment-apparatus/

Patient containment in case of cross-contamination: ISOVAC's solution is ORCA™
The clinical unit model ORCA-2016CN is a portable patient isolation unit (PIU) designed to prevent chemical and particle (biological and radiological) cross-contamination between an enclosed patient and the external environment during evacuation and transport activities.

It has been optimised for use in marine environments and for lifting operations using Stokes bedding.
The use of the ORCA-2016CN allows for the safe transport of contaminated patients who have been medically stabilised, while protecting boat and cutter crews, passengers, ancillary care providers and transport assets.
The ORCATM Clinical Unit is intended for:

- Isolated transport of medically stabilised patients on aircraft, ambulances, ships or any vehicle capable of safely transporting a patient on Stokes or NATO standard litter.
- Use with Stokes litter to lift and evacuate patients from ships or other marine platforms with rotary wing aircraft.
- Temporary isolation with or without transport of patients within hospitals or other medical facilities.

Cross-contamination: ORCA™ is a Class II regulatory medical device

It has been cleared by the FDA for marketing in the United States and is patent pending in the United States. Available under GSA contract GS-07F-037GA.

ORCA system testing

- Requirements for the passage of pathogens
- Permeation of chemical agents
- Aerosol leakage
- Penetration of liquids
- Comfort level (temperature/humidity variations during vital signs recording)
- Lifting operations
- TTP completed by the US Coast GuardMaterial certified to NFPA 1994-2012 Standard on Protective Assemblies for First Responders to CBRN Terrorism Incidents, Class 3.
- Meets requirements for resistance of materials used in protective clothing against penetration of blood-borne pathogens per ASTM F1671M-13.
- Has been tested and proven to meet and exceed US Military Target Performance Value (TPV) requirements for resistance to chemical warfare agent (CWA) permeation according to US Army Operations Test Procedure (TOP) 8-2-501.

Mass Gatherings and High Visibility Events: Planning, Preparedness, and Operational Considerations for CBRNE Events

By Frank Rando
NCT Magazine; 3/17, 2022
Source: https://nct-magazine.com/nct-magazine-february/mass-gatherings-and-high-visibility-events-planning-preparedness-and-operational-considerations-for-cbrne-events/

High visibility events (HVEs) and mass gatherings overall present unique and complex challenges to event planners, public safety agencies, emergency management/civil protection authorities, healthcare delivery systems, and public health stakeholders. By their very nature, large, highly populated, dynamic, and evolving, these events and occurrences call for careful, thoughtful, creative, and highly collaborative pre-incident planning and preparedness efforts, including the analysis of “lessons learned" from past events. There are a great many historic examples as case studies and after-action reports taken from a real-world operational experience which can be gleaned for their valuable and quantifiable data. The 1996 Atlanta Centennial Olympics bombing, Bali, India in 2002, Boston Marathon bombings, and the Las Vegas mass shooting, serve as stark examples of mass casualty critical incidents where much was learned from the operational responses. HVEs and other mass gathering events inherently require a multifactorial, comprehensive, and integrated approach and realistic planning and operational model based on a credible and realistic hazard vulnerability analysis (HVA) and threat assessments.

●▶ Read the full article at the source’s URL.

Frank Rando currently serves as an allied health programs educator / lead instructor and healthcare emergency preparedness/medical readiness /public health preparedness and tactical, operational - disaster medicine and homeland security Subject Matter Expert, educator, instructor and curriculum designer. He has served in instructional, guest speaker and consultative roles for DHS-FEMA, various

components of the National Domestic Preparedness Consortium, DoD, industry, academia, health, safety and regulatory entities, emergency services organizations and healthcare. He recently served during the COVID-19 public health emergency as a clinician and clinical researcher and also served in medical and health care support as a clinician for US Customs and Border Protection. Frank is also an experienced clinician, first responder and an occupational – environmental health scientist with real world experience in hazardous materials management, hazards and pollution control, biosafety, industrial, environmental and inhalation toxicology, environmental epidemiology, exposure and risk assessment and emergency response. Frank has also received advanced training in Integrated Biological -Chemical Response from the US Army -Dugway West Desert Test Center and the National Ebola and Special Pathogens Training Centers. Frank's experience includes public safety roles in law enforcement, pre-hospital medicine/EMS and military duty as a Nuclear, Biological and Chemical/CBRN Specialist, NBC medical defense instructor Special Forces Medical Sergeant, Dive Medical Technician, Intelligence Sergeant and Medical Intelligence Analyst.

Joint Hazardous Assessment Team

By Lt. Alvaro Javier Toñanez
NCT Magazine; 5/17, 2022
Source (Part 1): https://nct-magazine.com/nct-magazine-february/joint-hazardous-assessment-team-part-1/
Source (Part 2): https://nct-magazine.com/nct-magazine-february/joint-hazardous-assessment-team-part-2/

High Profile Events (HPE) that bring together large numbers of people present a certain risk to those that are responsible for planning such events. The organizers not only have to figure out how to build up and set the venue they must also take into account the safety and security of all those in attendance. One of the main risks at such events will always be that of a terrorist attack using a weapon of mass destruction or just a weapon of mass disruption. All it would take are few spectators to believe that a nefarious act is taking place to trigger a chaotic scene. This could in turn cause a stampede effect that would cause severe injury and death to those seeking shelter from a perceived attack. In order to avoid such a tragedy countermeasure would need to be set in place. Countermeasures can assist in balancing the scale between threat and protection, they provide the necessary means of deterring or neutralizing a potential attack. One of the most underutilized countermeasures at HPE is the Joint Hazardous Assessment Team, better known as JHAT's. These are teams made up of first responders that specialize in assessing possible threats during a National Special Security Event (NSSE). The teams are made up of Hazardous Materials Specialist (HZS), Explosives Ordinance Disposal (EOD) Technicians, Evidence Collection Specialist, and U.S. Army Civil Support Teams (CST) formed for the purpose of analyzing and collecting information in regard to potential hazards meant to disrupt or attack an HPE or a large population gathering.

●▶ Read both articles at the source's URLs.

Lt. Alvaro Toñanez is a Fire Lieutenant for the Miami Dade Fire Rescue (MDFR) Department, assigned to the Hazardous Materials Bureau. In his 25 years of duty he has been involved in several HPE held in Miami, such as the Free Trade of the Americas (FTAA) summit, several Nascar Cup final, NFL Super Bowl and Pro Bowl games, and the MLB World Series. He currently functions as the MDFR, JHAT Training Coordinator for the Miami Gran Prix.

Global Threats – CBRNe Protection, Preparedness, and Response during High Visibility Events (HVEs)

By Georgios Gkanalas
NCT Magazine; 8/17, 2022
Source: https://nct-magazine.com/nct-magazine-february/global-threats-cbrne-protection-preparedness-and-response-during-high-visibility-events-hves/

"Suggested actions and measures against possible threats during HVEs, concerning Chemical-Biological-Radio-Nuclear and Explosive materials and devices, as well as the combination of those, during HVEs".
As the tensions between East and West are rising and the Global Geostrategic relations are shifting with blistering speed, many of the existing State strategies and plans are becoming obsolete and even inactive, requiring thorough examination and review.
Military tensions at the Eastern flank of Europe, amidst the resurrection-revision of Mackinder and Spykman theories, are responsible for a possible global conflict that is most likely to lead the World towards a horrifying and bleak future.

Many of the involving States or Organizations are changing their direct involvement in military operations by using non-state actors (proxies) in order to intrude and inflict damage into their opponent's military and political infrastructure, using standard or hybrid methods. Provocation and fake news are used, to misinform and disorientate public opinion, and in many cases, the perpetrator is the one who tries to consider as the victim in people's eyes.

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

Major Georgios Gkanalas is active-duty EOD/IEDD/CBRNe SME, serving in Hellenic Air Force (HAF) for the last 30 years. He graduated from HAF's NCO Academy in 1992 as a General Armorer and he volunteered to attend HAF's EOD School in 1997 and ever since has entered the EOD Community. He worked as Ordnance loader and Weapons Maintainer on F-4E aircraft and F-16C/D Blk 52+Adv. At the time being he's the EOD Head of 116Combat Wing as well as the Ammunition – Explosives QA Officer of the Air Base. He graduated from US NAVSCOLEOD, Eglin AFB, FL in 2009 and he has participated in many training and operational missions (USA, Israel, Thailand, UK, Slovakia etc.). Major Gkanalas is a frequent participant in various related webinars, conventions and expos and he has extensive experience as trainer and speaker.

VIP CBRN Kit

By Mr. Nicolò Brugnera
NCT Magazine; 10/17, 2022
Source: https://nct-magazine.com/nct-magazine-february/vip-cbrn-kit/

OAK Defense BV is a recently established company, but its founders are well-experienced professionals in the field of CBRN. And it is indeed through this decades-long experience and a keen eye for details that they realized something was missing in the market: a kit specifically designed for the protection and needs of VIPs. Every so often we think of CBRN attacks as part of a large scale, massive conflict. However, recent cases such as the Anthrax attack on US congressmen, the assassinations of Kim Jong-Nam and Alexander Litvinenko, as well as the attempted one of Alexei Navalny, showed a different reality.
CBRN threats indeed are a growing concern for world leaders, politicians, and other VIPs. The recent attacks against VIPs confirm the new trend in CBRN attacks against targeted individuals: the assassination of Kim Jong-Nam using a VX nerve agent in 2017 in Kuala Lumpur airport, the Novichoks attack against the former Russian military officer Sergei Skripal and his daughter Yulia in Salisbury, in March 2018, or the more recent poisoning of the Russian opposition politician Alexei Navalny in August 2020 are amongst the most striking examples. In the case of a CBRN attack against a VIP, immediate contamination and treatment are vital to ensure the victim's survival and reduce the time of exposure.
That is why OAK Defense came up with the idea of the CBRN VIP Kit. This kit provides the end-user with the capability to protect and treat VIPs. The victim of a CBRN attack needs to be decontaminated and treated with emergency CBRN care to ensure survival and prevent death or permanent damages, and OAK CBRN VIP Kit provides security services with all the tools needed to accomplish this mission. The case is small and light, easy to carry around at all times. The products included are carefully selected and evaluated by experienced consultants in the sector. There are temperature strips to evaluate the cases' external and internal temperature, PPEs, swabs and sampling equipment, decon products, and preventive medication.

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

Nicolò Brugnera is a Consultant @ OAK Defence, The Netherlands

EDITOR'S COMMENT: The most important component of all VIP CBRN protection is to have the escape hood readily available by the VIP or its close protection escort. If the kit is in the car there will be no time to survive if CWAs are released (especially indoors). The second important thing is to train the VIP on how to use it – usually they think that the bodyguard will fit the escape hood (and then die …).

Prussian Blue, Insoluble (Radiogardase®)

Source: https://remm.hhs.gov/prussianblue.htm

This oral ion-exchange drug is indicated for decorporation of **cesium and thallium** and has been shown to be highly effective for **Cs-137 contamination**. Prussian blue is not FDA approved for rubidium.
It is benign, with the exception of occasional constipation. Prussian blue turns the stool color blue.
Marketed as **0.5 gram (500 mg) insoluble Prussian blue in gelatin capsules** for oral administration. Prussian blue is available only by prescription.

PO Dosing

- **Adults** (Two adult recommended dosing regimens exist.)
  - From Goiânia accident data (PDF - 6.4 MB):
  - 1-3 grams (2-6 capsules) PO tid
  - Usual dose starts at 1 g (2 capsules) PO tid for up to 3 weeks (or longer, as required).
  - Doses up to 10-12 g/day for more significantly contaminated adults may be used
  - FDA drug label (PDF - 208 KB): 3 g (6 capsules) PO tid
- **Children 2-12 years old**
  - FDA drug label (PDF - 208 KB): 1 g (2 capsules) PO tid. Capsules may be opened and mixed with food.
- **Children <2 years old**
  - **CAUTION: Use has not been approved by the FDA.** However, during a mass casualty emergency, medical leaders may activate an EUA for how to use Prussian Blue from the SNS in children under 2 years of age.

Duration of treatment

- Typically, a minimum of a 30-day course has been recommended, but clinical and availability conditions may alter this recommendation.
- It is useful to obtain bioassay and whole body counting to assess treatment efficacy.
- Duration of therapy depends on total body burden and response to treatment.
  - The HHS/ASPR, which manages the SNS, has included Prussian blue in the Strategic National Stockpile (SNS), a special collection of drugs and medical supplies that HHS/ASPR keeps to treat people in an emergency.
- Other names for Prussian blue: Berlin blue; Ferric ferrocyanide; Ferric(III) hexacyanoferrate; Ferric hexacyanoferrate (II); Iron blue; Radiogardase-Cs; Fe4[Fe(Cn6)]3.

Germany indicts arms control breach suspect over Russia sale

Source: https://mynorthwest.com/3359177/germany-indicts-arms-control-breach-suspect-over-russia-sale/

Feb 21 — German prosecutors said Tuesday they have indicted a businessman on suspicion of breaking arms control laws by helping Russia purchase sophisticated machinery that could be used to make chemical weapons.
The man, identified only as Alexander S. because of privacy rules, was arrested by German customs officials in the eastern city of Leipzig last year.
Federal prosecutors said the suspect has also been formally charged with breaking export rules for selling restricted goods to a company in Russia and acting on behalf of a Russian intelligence agency.
Prosecutors allege that a Russian company the suspect had business relations with was a front controlled by the intelligence agency to cover up purchases by Russia's military industry.
The purchased goods had dual uses, meaning they could be used for civilian purposes or to develop atomic, biological or chemical weapons or missiles, prosecutors said. They allege

that the suspect was aware he needed export permits for the goods he sold from Nov. 2017 for about 1 million euros ($1.1 million) to the Russian front company.
German authorities had repeatedly warned the man of their concerns about the Russian company, prosecutors said.
The suspect provided false information about the actual recipients, they said. They alleged that in one case he also exported electronics to a Russian institute involved in the manufacture of components for the nuclear weapons industry.
Germany has recently detained and indicted several people suspected of acting for Russian intelligence agencies. Earlier this month a 30-year-old Russian man went on trial in Munich accused of passing information about European rockets to Russian intelligence.

EDITOR'S COMMENT: More information is required regarding the dual-use equipment at stake. Strange purchase for something not available or able to be made in Russia. Is the West-Russia crisis just a coincidence?

2022 CBRNe-related conferences

11TH SYMPOSIUM ON CBRNE THREATS

https://nbc2022.org/

The NBC 2022 symposium on CBRNE threats has been rescheduled to take place at the **Sibelius Hall** in **Lahti**, Finland on **June 5 – 8, 2022**.

CBRNe Summit Asia 2022

Bangkok, Thailand | 04-05 April 2022

https://intelligence-sec.com/events/cbrne-summit-asia-2022/

We are pleased to announce our next edition of our CBRNe Summit Asia conference & exhibition which will take place in Bangkok, Thailand on the 4th – 5th April 2022. The world has been hit hard over the last two years by the COVID pandemic and many Asian nations have been well prepared to deal with this new pandemic we have all been living in. Infectious diseases have been a common occurrence in South-East Asia with many outbreaks that have been fought against by national public health agencies. Our CBRNe Summit Asia 2022 show will look at how different Asian nations have coped with the recent pandemic and will analyse their current pandemic preparedness and CBRNe capabilities. As well as looking at pandemic preparedness our event will also look at how Asian nations train emergency services, law enforcement and the military to prepare for a CBRNe incident and a natural disaster. By attending our international show, it will allow you to hear insightful presentations from leading government and military officials discussing many issues such as medical countermeasures, CBRNe response and techniques, cooperation in dealing with CBRNe incidents, pandemic preparedness, lessons learnt and much more.
To be part of our international CBRNe Summit Asia conference & exhibition either as a speaker, sponsor, exhibitor or delegate please contact us either by telephone +44 (0)1582 346 706 or email events@intelligence-sec.com

NCT CBRNe Pavilion @ Eurosatory 2022

13-17 June 2022 | Paris, France

https://nct-events.com/event/nct-cbrne-pavilion-eurosatory-2022

For its first edition, the NCT CBRNe Pavilion will gather the global CBRNe community under one flag at the leading defense and security exhibition worldwide: Eurosatory 2022.
During five days, you will have the opportunity to meet with leading companies in the field and discover their latest innovations. Daily **workshops and conference sessions** will tackle the trendiest topics in the field, creating a unique platform to exchange on best practices and lessons learned. Operators will also have the chance to join in the **NCT PRO Experience** for mock CBRNe scenario trainings led by expert instructors, while **Live Demonstrations** will showcase European CBRNe capabilities.
Join the CBRNe experts, industry leaders and operators to discover the world of Chemical, Biological, Radiological, Nuclear and Explosive defense. Don't miss the NCT CBRNe Pavilion @ Eurosatory 2022!

CBRNe Summit EMEA 2022

10-12 May 2022 | Kharkiv, Ukraine

https://intelligence-sec.com/events/cbrne-summit-emea-2022/

We are pleased to bring our CBRNe Summit series to Kharkiv, Ukraine for our first CBRNe Summit EMEA conference and exhibition. The event will provide you a great opportunity to hear from leading military, civil and scientific officials from across Ukraine, Middle East, South Eastern Europe and the Caucasus regions.
With the recent global COVID pandemic other key CBRNe incidents have taken place in the region which will all be discussed during the conference. CBRNe Summit EMEA will discuss national CBRNe capabilities, pandemic response, recovery and lessons learnt, chem-bio threats in the region, threat intelligence, international cooperation, first responder challenges

and lessons learnt, medical countermeasures to biological outbreaks and asymmetrical threats.
Many governments in light of the global pandemic are now creating CBRNe jobs and placing more emphasis on improving their CBRNe capabilities to be better prepared for future CBRNe incidents and global pandemics. CBRNe Summit EMEA will provide you the perfect opportunity to network with leading officials who work tirelessly in the CBRNe domain.
To be part of our CBRNe Summit EMEA conference and exhibition please contact us via email at events@intelligence-sec.com or by phone +44 (0)1582 346 706 and we will be happy to provide you further information on how you can participate either as a speaker, sponsor/exhibitor or as delegates.

CBRNe Summit USA 2022

4-6 Oct 2022 | Denver, Colorado USA
https://intelligence-sec.com/events/cbrne-summit-usa-2021-2-2/

Our 2nd annual CBRNe Summit USA will be coming to Denver, CO on the 4th – 6th October 2022. This event brings together leading officials from the military, civil and scientific agencies to provide you will a full perspective on all CBRNe threats and challenges.
Over the 2-day conference and exhibition you will hear different perspectives on CBRNe preparedness, resilience and response. With the world entering a new chapter with the global COVID pandemic behind us many governments are now seeing the importance to improve CBRNe capabilities to deal with a future pandemic.
CBRNe Summit USA will also focus on Colorado State CBRNe response capabilities and analyse the challenges they face across the State; Chem-Bio countermeasures and emergency response procedures and agency collaboration; First responder techniques and training to allow inter-agency response to CBRNe incidents; International CBRNe threats and response techniques and Military CBRNe capabilities and development.
To take part in our inaugural CBRNe Summit USA conference and exhibition as either a speaker, sponsor, exhibitor or delegate please contact us at events@intelligence-sec.com or call us at +44 7792 47 32 46.

Global Health Security Conference

28 Jun – 01 Jul 2022 | Singapore
https://www.ghsconf.com/event/ce6e8302-3682-4893-9a1f-26827766de77/summary

CBRNe Protection Symposium

20-22 September 2022 | Malmo, Sweden
https://cbw.se/

As an engaged professional within the CBRNe-protection field this symposium is for you! Contribute to the symposium through fruitful meetings, elaborated conversations and sharing of recent research. Visit the exhibition of CBRNe protection equipment, where industry and institutes display their latest products and research in an encouraging environment. The exhibition offers a good opportunity for the symposium participants to make themselves acquainted with commercially available state-of-the-art equipment related to CBRNe-protection.

Radiological Emergency Planning

18-22 Jul 2022 | Harvard Longwood Campus; Boston, MA
https://www.hsph.harvard.edu/ecpe/programs/radiological-emergency-planning/

This program moves beyond the basics of emergency planning to provide skills and strategies for communicating about radiological emergencies, medically managing casualties of incidents involving radioactive material, and supporting other organizations during these crises.
This course is designed for anyone involved in emergency planning, response, or recovery in the public, private, or nonprofit sectors. Health physicists, public safety professionals, and first receivers and responders will also find this program beneficial. Foreign and domestic participants from organizations with the following functions are likely to attend:

- Nuclear or energy-industry regulatory bodies
- Homeland security and emergency management agencies
- Defense or military organizations
- Departments of health
- Power generation, especially nuclear power generation
- State and local emergency agencies
- State radiation control agencies

Dear colleagues,
I am pleased and honoured to invite you to participate in the first edition of the Cannes International Resilience Forum (CIRF). CIRF is an international conference dedicated to crisis management and resilience, which will take place at the Palais des Festivals et des Congrès in Cannes from Sunday 23rd to Wednesday 26th, October 2022.

IsraTeam Ltd., established in Israel in 1988, has a renowned expertise in the field of emergency management and mitigation, particularly during times of war, natural disasters or terrorist attacks. Its team is comprised of highly qualified experts, including high ranking personnel in the Israel Defence Forces (IDF)and Ministry of Health.
Regarding the prevention and management of major risks, Cannes is a pioneer city as it was certified in 2018 by the Ministry of Europe and Foreign Affairs for its expertise in “preventing terror risk during the organisation of events”. In March 2021, the City of Cannes obtained an enlargement of this labelling to “sanitary and natural risk”, as part of the Ministry program meant to highlight the expertise of local authorities.
The first edition of the Cannes International Resilience Forum will focus on building resilience strategies to face the consequences of Covid-19 pandemic as well as on sanitary crisis management.
Main issues to be discussed at the conference will be - Building the Resilience today to be ready for the next generation and will dive into such topics as:
1. "COVID-19" – LESSONS LEARNT.
2. “POST – COVID-19 ERA” Health Systems Preparedness.
3. CLIMATE CHANGE EFFECTS ON EMERGENCY PREPAREDNESS
4. The Mayor leadership
5. RADIOLOGICAL DISASTER MANAGEMENT

6. BUILDING RESILIENCE.
7. "THE CYBER WORLD" Threats and responses.
8. The Financial Challenge in a Disaster
9. The Functional Continuity in the Supply of electricity and Water
10. The Activity of First Responses
11. "THE WORLD TERRORISM" Counter terrorism and responses
12. Multidisiplinary Simulation Exercise Simulation systems to emergencies and crises events
13. TECHNOLOGICAL INNOVATIOON FOR BETTER RESILIENCE
14. The advance methodology to deal with MASS CASUALTY INCIDENT (MC))

Undoubtedly, the lessons learnt form COVID-19 Pandemic would be very useful for any case of mass disaster mitigation; it will be extremely crucial factor in any mitigation planning or crisis management in the future.
Your contribution to the conference will surely lead to a better understanding of the governing powers, the participants' roles, and the possibilities to be properly prepared in the future at the national and global levels.

General Abraham Bachar
Chair of the Cannes International resilience Forum
Founder and CEO of IsraTeam
Former Chief of Staff, Israeli Home Front Command and
Former Head of the Israeli National Emergency Management Agency.

https://cbrneworld.com/events/cbrne-convergence-canada
CBRNe World prepares to take CBRNe Convergence back to Canada! Our last event there in 2019 was a sell-out success, and we are looking forward to saying the same for 2022. The event will be a combination of national and international speakers, chosen by our conference panel composed of the leading lights in CBRN defense. Bringing together military and civilians, scientists and first responders, vendors and customers it is THE place to meet people in CBRN.
Held once again in the beautiful Lac Leamy, a short drive from the nation's capital, it is a convenient location for our conference, exhibition and demonstration - all held on-site! Over 40 exhibitors and 25 speakers will be present for our two-day conference, and pre-conference workshop, with an expected 350 delegates.

March 23-24, 2022 | The Sunset Room, National Harbor, MD
https://jointcbrn.dsigroup.org/

The **10th Annual Joint Civil & DoD CBRN Symposium** will provide a forum for members of the DoD, Federal Government, State and Local Government, Private Industry, Academia, and other relevant CBRN stakeholders to discuss the latest updates in advancing a government wide approach to improving CBRN defense, readiness and response strategies and capabilities.

Topics to be covered at the 2022 Symposium:

- ✓ Transforming how the Nation Thinks about CBRN Defense
- ✓ Developing CBRN Defense Equipment and Medical Countermeasures to Protect the Joint Force
- ✓ Bridging the Valley between Concepts and Requirements to enhance CBRN Protection of Warfighters, First Responders and the Nation
- ✓ Managing a Coordinated and Effective Response to WMD Threats
- ✓ Providing a Scalable CBRN Response Capability with Flexibility to Operate in a Wide Variety of Environments
- ✓ Coordinating with Domestic and International Partners to Safeguard the United States against CBRN and Health Security Threats
- ✓ Delivering Advanced Medical Countermeasures to Mitigate Harmful CBRN Effects
- ✓ Countering Nuclear and Radiological Challenges Through Innovative Science, Technology, and Policy-Driven Solutions
- ✓ Manning, Training and Equipping the CBRN Response Enterprise
- ✓ Providing Rapidly Deployable Technical Experts, Specialized Equipment, and Incident Management Capabilities in Support of National CBRN Response Efforts

NCT Events 2022

https://nct-events.com/

NCT is back! After the stop imposed on us by the pandemic, we have a large calendar of events coming up in 2022. We will start in Abu Dhabi, February 7th and 8th. We will then reach almost every continent: NCT is scheduled for Brazil, Germany, Thailand, Croatia, the United States, and South Korea. **Visit our website** for the latest news regarding dates and locations!

NCT Middle East 2022

7-8 February 2022 | Abu Dhabi, UAE

https://nct-events.com/event/nct-middle-east-2022-uae

NCT Middle East taking place in Abu Dhabi will welcome the highest decision makers from the national CBRNe, C-IED, EOD Community, again providing a networking and knowledge exchange platform for local & federal first responders, as well as industry leaders in the fields of CBRNe, C-IED and EOD. Over the duration of three days, **NCT Middle East** will feature a **Conference**, **Exhibition** and multiple **Networking Opportunities**.

Collaboration between the public and the private sectors as well as the use of the newest technologies are key factors capable of countering CBRNe threats. In the MENA-region as well as in many other countries, it is of significant importance to adopt a multi-level and interdisciplinary approach in order to face the complexity of the challenges CBRNe threats can pose.

NCT South America 2022

22-24 March 2022 | Forte de Copacabana, Rio de Janeiro, Brazil
https://nct-events.com/event/nct-south-america-2022-brazil

South America 2022 will welcome the highest decision makers from the South American CBRNe, C-IED, EOD Community, again providing a networking and knowledge exchange platform for local & federal first responders, as well as industry leaders in the fields of CBRNe, C-IED and

EOD. Over the duration of three days, NCT South America at Forte de Copacabana will feature a Conference, Exhibition, Live Capability Demonstration and the NCT PRO eXperience. Based on the success of the previous editions, the NCT PRO eXperience will foster interoperability of responders and introduce them to the latest CBRNe, C-IED and EOD technologies.
Collaboration between the public and the private sectors as well as the use of the newest technologies are key factors capable of countering CBRNe threats.

NCT USA 2022

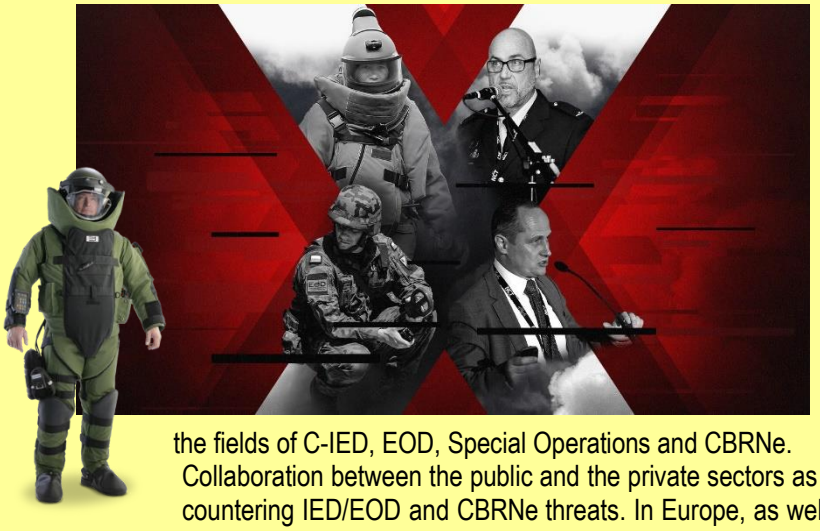
6-8 September 2022 | Aberdeen Proving Ground, Edgewood, MD, USA
https://nct-events.com/event/nct-usa-2022

NCT USA 2022 taking place at Edgewood, Maryland will welcome the highest decision makers from the national CBRNe, C-IED, EOD Community, again providing a networking and knowledge exchange platform for local & federal first responders, as well as industry leaders in the fields of CBRNe, C-IED and EOD. Over the duration of three days, **NCT USA** will feature a **Conference, Exhibition, Pro-Trainings** and multiple **Networking Opportunities**.
Collaboration between the public and the private sectors as well as the use of the newest technologies are key factors capable of countering CBRNe threats. In the USA, as well as in many other countries, it is of significant importance to adopt a multi-level and interdisciplinary approach in order to face the complexity of the challenges CBRNe threats can pose.

NCT Europe 2022

23 May – 25 May 2022 | Germany
https://nct-events.com/event/nct-europe-2022

NCT Europe 2022 taking place in Germany will welcome the highest decision makers from the national CBRNe, C-IED, EOD Community, again providing a networking and knowledge exchange platform for local & federal first responders, as well as industry leaders in the fields of CBRNe, C-IED and EOD. Over the duration of three days, **NCT Europe** will feature a **Conference**, **Exhibition, Pro-Trainings,** and multiple **Networking Opportunities**.
Collaboration between the public and the private sectors as well as the use of the newest technologies are key factors capable of countering CBRNe threats. In the USA, as well as in many other countries, it is of significant importance to adopt a multi-level and interdisciplinary approach in order to face the complexity of the challenges CBRNe threats can pose.



NCT EUROPE PRO Challenge 2022

22-27 Settembre 2022 | Croatia
https://nct-events.com/event/nct-explosive-europe-2022

NCT PRO Challenge Europe 2022 taking place in **Croatia** will welcome European teams of C-IED, EOD, and CBRNe first responders for five days of scenario-driven training sessions in a realistic environment. Industry will support the trainings by providing equipment to be used during the training sessions. The NCT PRO Challenge Europe will provide a networking and training platform for local & federal first responders, as well as industry leaders in the fields of C-IED, EOD, Special Operations and CBRNe.
Collaboration between the public and the private sectors as well as the use of the newest technologies are key factors in countering IED/EOD and CBRNe threats. In Europe, as well as in many other countries, it is of significant importance to adopt a multi-level and interdisciplinary approach in order to face the complexity of the challenges IED/EOD and CBRNe threats can pose.

NCT APAC 2022

25-27 October 2022 | Seoul, South Korea
https://nct-events.com/event/nct-cbrne-asia-2021

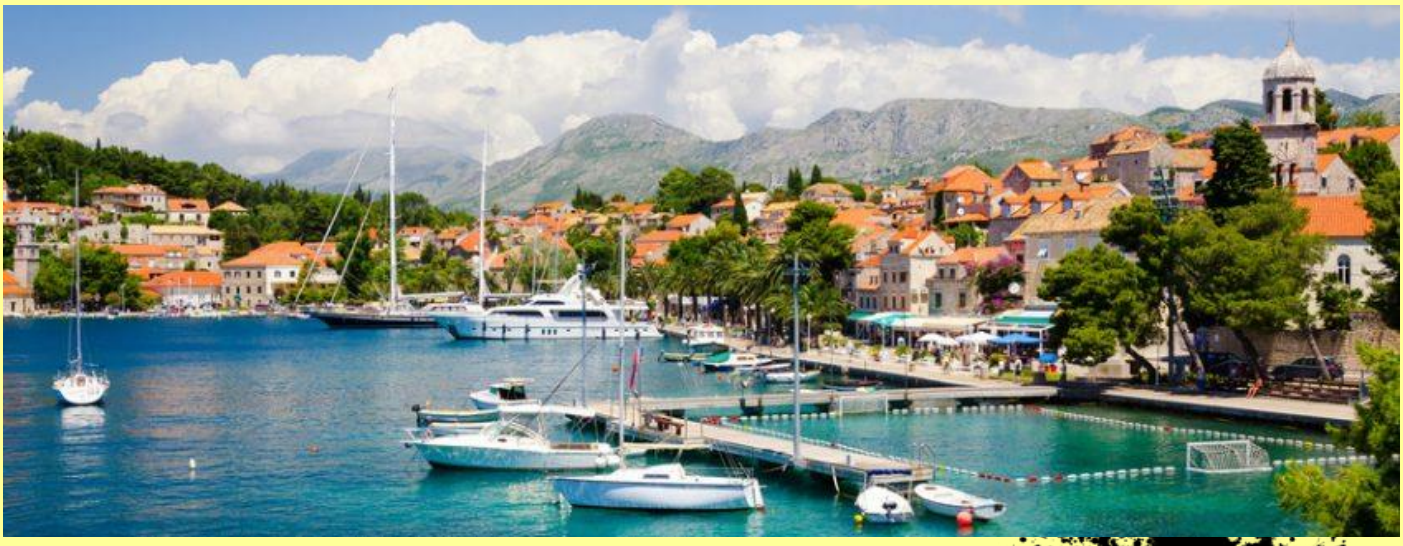
NCT APAC is coming to Seoul, Republic of Korea, for its third edition in the peninsula, organised in official partnership with the Korean Society of Chemical, Biological and Radiological Defense (KSCBRD). The event will kick start with a live capability demonstration led by the ROK Army CBRN Defense Command and will be followed by an international conference and industry exhibition in the field of CBRNe.
In these challenging times marked by the COVID-19 pandemic, it is essential to share experiences and best practices. The Republic of Korea has successfully led the fight against the virus and serves as an example for other nations in the containment of the virus. Being faced

with the concrete threat of CBRNe weapons by its North Korean neighbor, the country is the regional leader in CBRNe defense.

At **NCT APAC 2022** military, civil and industry stakeholders operating in the field of CBRNe, C-IED, EOD and demining from all over Asia, the USA and Europe will have the chance to gather in a three days event featuring a live capability demonstration, a conference stream and an industry exhibition showcasing the newest solutions to counter the threat of CBRNe, IEDs and mines.

CBRNe Applied Science & Consequence Management World Congress

26-29 September 2022 | Cavtat, Croatia
http://www.cscm-congress.org/



https://eusemcongress.org/

●▶ ABSTRACT SUBMISSION OPENS 15 FEB, 2022

The European Emergency Medicine Congress (EUSEM 2022) is an annual congress for healthcare professionals working in emergency medicine. The congress attracts over 3000 Emergency Medicine specialists from around the world. There are opportunities to learn about the new developments in emergency medicine, share best practices and network with like-minded people.

As well as didactic lectures, the congress also hosts hands on workshops and team led education through special events like the SIM Cup. This year's highlights include a spotlight on prehospital and disaster medicine with special sessions for paramedics. A focus will be made on ground breaking research, we encourage research groups to present their latest practice changing data. EUSEM supports the education and professional development of young doctors through its YEMD track programme. There's a number of sessions and specialized events for the young doctors organized by the YEMD section.

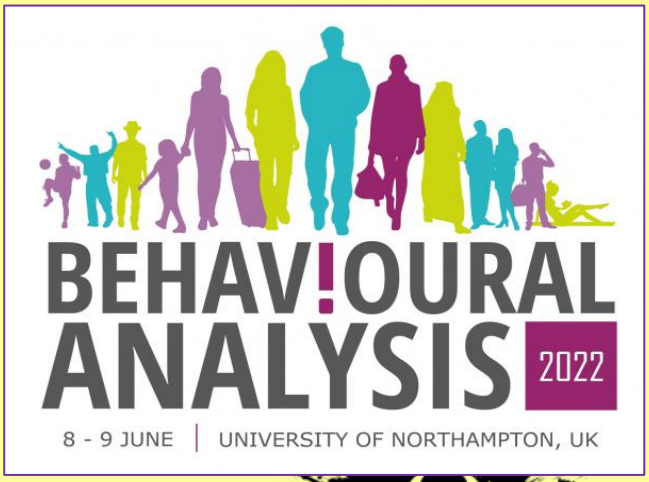
As well as being a highly valued educational congress, there are many opportunities to network with peers, colleagues and friends, to discuss new projects, to catch up on recent events and make new friends and colleagues.

If it is your first time at the congress, you will not be disappointed. If you are regular to the congress, this is the highlight of your year!

See you in Berlin!

Behavioral Analysis 2022

https://behaviouralanalysis.com/



We are thrilled to announce the resumption of our Behavioural Analysis series of conferences designed for security practitioners and academic researchers alike.

After previous editions of Behavioural Analysis were held at a sports stadium (Cardiff, 2018), shopping mall (Minneapolis, 2019), and online (2020), we are delighted to move our 2022 event to an academic setting. From the heart of England, and in recognition of the fact that our venue will be launching its own Forensic Psychology

degree later this year, we look forward to welcoming delegates and speakers alike to University of Northampton.
Behavioural Analysis will, as always, help keep delegates in tune with the latest research into how hostile or criminal intent can be identified through the observation of behavioural indicators and the use of tactical risk analysis and non-racial profiling techniques.
Delegates will benefit from:

- Academic presentations … to increase understanding
- Operational case studies … to aid deployment
- Panel discussions … to stimulate debate
- And live Q&A sessions … so you can have your say

We may have become used to virtual conferences and the opportunity to learn from our homes, but Behavioural Analysis 2022 is all about people and interaction. We are running live as we cannot underestimate the benefit of delegate networking opportunities conferences offer; they are just as important as the presentations themselves!

Behavioural Analysis 2022 is a must-attend event for those responsible for the security of:

- Sports stadia
- Airports
- Transportation networks
- Hotels
- Entertainment venues
- Museums and galleries
- Tourist attractions
- Outdoor festivals & events
- Shopping centers
- Casinos
- Places of worship
- Governmental institutions

The program for Behavioural Analysis 2022 is in development, topics will include:

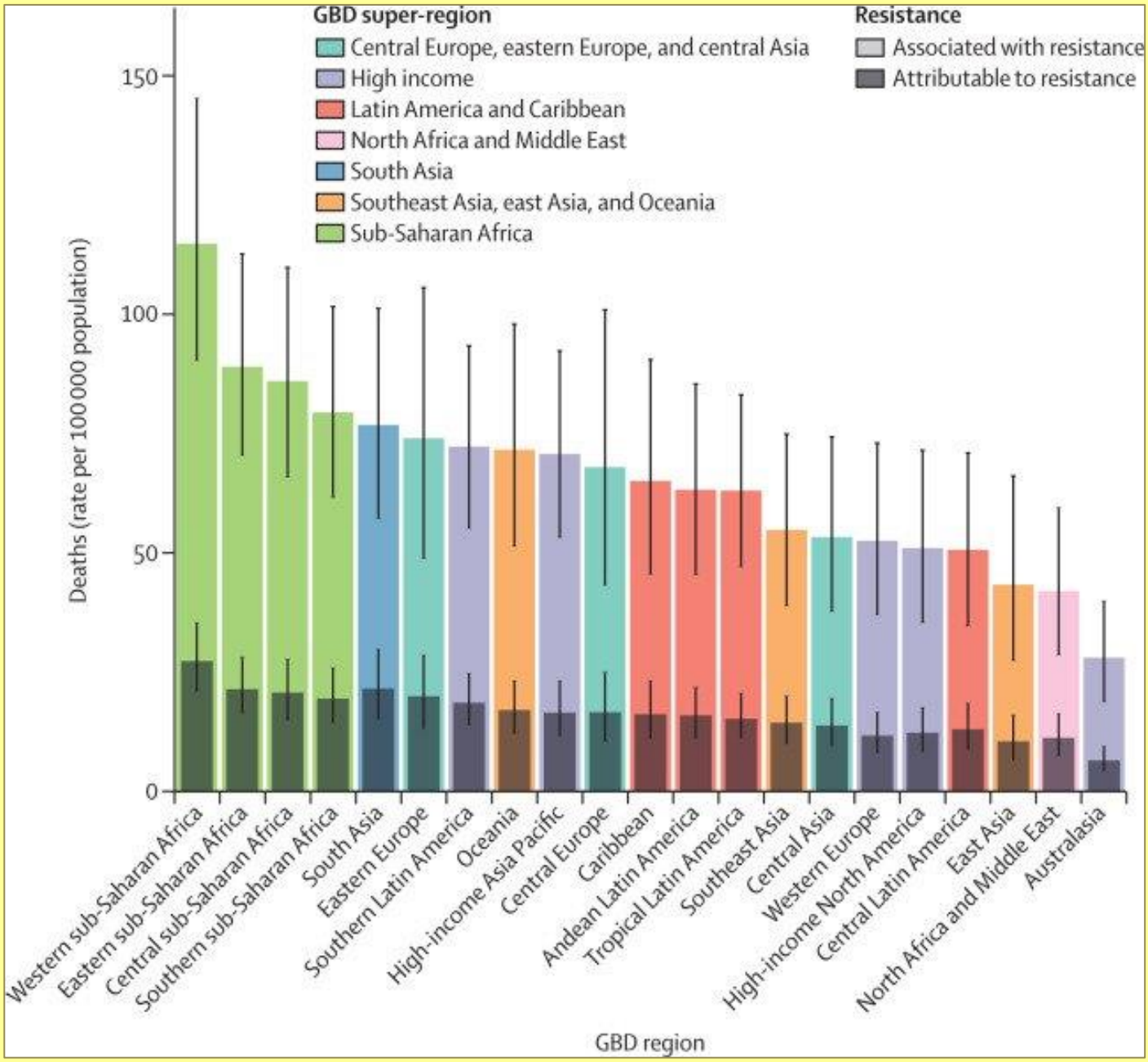
- Academic research supporting the use of behavioural detection
- Approaching and questioning suspicious individuals
- Technology facilitating behavioural analysis
- Suicide bomber intervention
- Identifying and addressing mental health concerns


ICI
International
CBRNE
INSTITUTE
CBRNE-Terrorism Newsletter
W
M
O
D
C2BRNE
DIARY
BIO NEWS

The 3rd Leading Global Cause of Death Is Likely Not What You Think, New Study Reveals

Source: https://www.sciencealert.com/the-third-leading-cause-of-death-globally-in-2019-was-antibiotic-resistant-bacterial-infection

Jan 24 – In 2019, 4.95 million deaths were associated with drug-resistant bacterial infections, of which 1.27 million deaths were directly caused by antimicrobial resistance – a huge burden in all areas of the world, but particularly impacting low- and middle-income countries.



Rate of deaths attributable to and associated with bacterial antimicrobial resistance in 2019. (Antimicrobial Resistance Collaborators, The Lancet, 2022)

These calculations suggested that only stroke and heart disease caused more deaths than antimicrobial resistance that year.

Post-COVID brain fog linked to immune abnormalities in spinal fluid

Source: https://newatlas.com/health-wellbeing/long-covid-brain-fog-immune-biomarkers-spinal-fluid

Jan 23 – A small study has built on a growing body of evidence indicating long COVID symptoms may be linked to abnormal immune system activity. The new research found unexpected markers of inflammation in the cerebrospinal fluid of several patients experiencing persistent brain fog in the months following a mild case of COVID-19. Led by researchers from the University of California, San Francisco, LIINC (Long-term Impact of Infection with Novel Coronavirus) is an ongoing project studying the impact of COVID-19 on patients in the months and years following an acute infection. The latest study to emerge from this project is an investigation into abnormal cerebrospinal fluid biomarkers in long COVID patients experiencing brain fog. The small but thorough study took cerebrospinal fluid (CSF) samples from 17 subjects. All of the cohort were around 10 months past a mild case of COVID-19. Thirteen subjects were experiencing persistent signs of brain fog, while the remaining four served as controls with no post-COVID cognitive problems.

While no CSF abnormalities were detected in the control group, 77 percent (10 out of 13) of those experiencing persistent brain fog showed a number of unexpected anomalies. These abnormalities included elevated levels of proteins indicating the presence of neuroinflammation and unusual volumes of immune antibodies. Joanna Hellmuth, senior author on the new study, said the sign of elevated immune activity months after the virus has presumably been cleared is an indication the cognitive problems that have been associated with long COVID may be linked to lingering inflammation. "It's possible that the immune system, stimulated by the virus, may be functioning in an unintended pathological way," said Hellmuth. "This would be the case even though the individuals did not have the virus in their bodies." Interestingly, nearly half of those who reported persistent cognitive problems following a COVID infection indicated a delayed onset of their cognitive symptoms. This reported brain fog did not arise until a month after the first COVID symptom in 43 percent of subjects and 29 percent reported their cognitive problems didn't appear until two months after initial symptoms. "The large proportion of participants reporting a delayed onset of cognitive PASC [post-acute sequelae of SARS-CoV-2] implies that events occurring after the acute period of SARS-CoV-2 infection may contribute to pathogenesis and respond to early intervention," the authors wrote in the study. "Mechanisms that may have a delayed onset include microvascular injury, persistent immune activation, and a post-infectious autoimmune response."

Several recent studies have pointed to immune dysfunction in long COVID patients. Most recently a study in the journal *Nature Immunology* comprehensively described blood-based patterns of immune biomarkers characterizing the majority of long COVID patients up to eight months after their acute illness. Another robust recent study, led by researchers from Yale University, demonstrated how SARS-CoV-2 can directly infect brain cells.

According to Hellmuth, long-term cognitive problems have been linked with several kinds of viral infections, including HIV and other coronaviruses. So it is plausible to assume infection with SARS-CoV-2 can lead to lingering cognitive problems and these long COVID symptoms can be seen in patients experiencing a mild initial illness.

"If people tell us they have new thinking and memory issues, I think we should believe them rather than require that they meet certain severity criteria," said Hellmuth.

●▶ **The new study was published in the journal** *Annals of Clinical and Translational Neurology*.

University of Minnesota and OpenBiome Agree to Treat *C. difficile* Infections

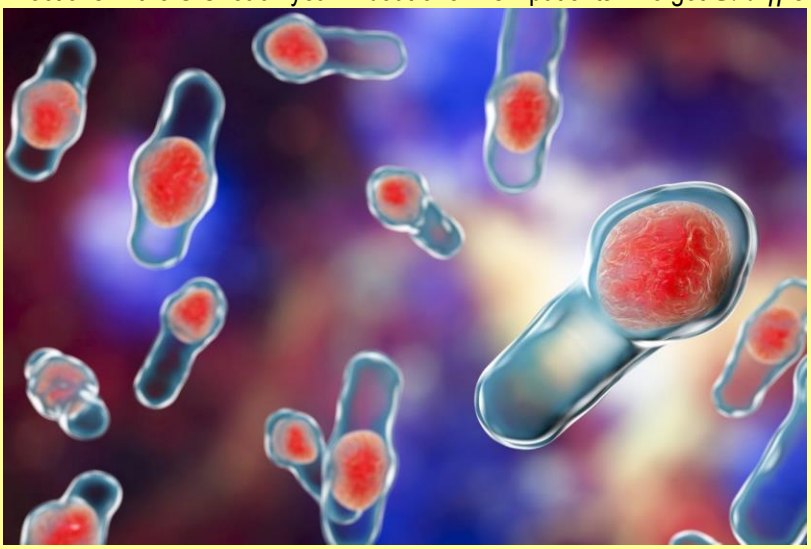
Source: https://www.genengnews.com/topics/translational-medicine/infectious-diseases/university-of-minnesota-and-openbiome-agree-to-treat-c-difficile-infections/

Jan 24 – OpenBiome reported that it is collaborating with the University of Minnesota's Microbiota Therapeutics Program (MTP) to ensure that patients with recurrent *Clostridium difficile (C. difficile)* infections have access to fecal microbiota transplantation (FMT) until an FDA-approved alternative is available.

Through this collaboration, OpenBiome, a nonprofit organization founded to catalyze research on the microbiome's role in human health, will distribute preparations of intestinal microbiota manufactured using Good Manufacturing Practices protocols by the University of Minnesota under the guidance of gastroenterologist Alexander Khoruts, MD, who serves as

the medical director of the MTP, and microbiologist Michael Sadowsky, PhD, professor in the department of microbiology and immunology.

According to the CDC, *C. difficile* is a bacterium that causes severe diarrhea and colitis. It's estimated to cause almost half-a-million infections in the U.S. each year. About one in six patients who get *C. difficile* will get it again in the subsequent 2-8 weeks. One in eleven people diagnosed with a healthcare-associated *C. difficile* infection die within one month.



Clostridium difficile bacteria, computer illustration. *C. difficile* is a normal inhabitant of the human intestine, but it can become a pathogen when antibiotics disrupt the normal intestinal flora and allow *C. difficile* to become established in the colon. The bacterium has become increasingly resistant to the use of antibiotics. [Kateryna Kon/Science Photo Library/Getty Images]

Since August, OpenBiome's microbiota bank has been providing FMT preparations for non-emergency *C. difficile* infections to its FMT referral network, while also providing material to all partner sites for emergency treatment of fulminant cases.

"Our team cares deeply about patients and specializes in the clinical and operational aspects of running a bank of fecal microbiota-based products," said Khoruts, describing a program that has focused on the development of microbiota-based therapeutics.

In collaboration with the non-profit Achieving Cures Together, the MTP has provided FMT treatments to physicians and researchers since 2008, and published protocols that have been used to treat nearly 100,000 patients worldwide.

"We're excited to team up with OpenBiome and its extensive network of clinical partners to bridge the gap in patient care and collect systematic outcome data in the real world," added Khoruts.

OpenBiome expects to begin shipping FMT preparations manufactured by the University of Minnesota to its FMT referral network in the second half of 2022 and to continue using its own inventory for emergency treatments. Microbiota preparations from the University of Minnesota will be available in capsules for oral delivery of freeze-dried microbiota or in liquid formulations for lower intestinal delivery via colonoscopy, sigmoidoscopy, or enema.

To advance the practice of FMT, physicians will collect short-term safety and patient outcomes and enter those data into the American Gastroenterological Association's FMT National Registry. The registry, funded by the NIH, aims to systematically track the health of 4,000 FMT recipients to better understand the risks and benefits of microbiota therapeutics.

Glutamate dehydrogenase (GDH) is constitutive enzyme produced in large amounts by all strains of *C. difficile* independent of toxigenicity. GDH is detected in feces, which makes it a good screening marker for C. difficile. [Md Saiful Islam Khan/Getty Images]

OpenBiome's microbiota bank was founded in 2013 to provide an immediate solution to an urgent healthcare need—treating patients with recurrent *C. difficile* who had failed standard antibiotic regimens, explained Julie O'Brien, OpenBiome's executive director.

O'Brien added that since its inception, the organization has provided more than 60,000 FMT preparations to a clinical network of over 1,250 healthcare centers across the country. These investigational treatments, made available to patients outside of clinical trials through an FDA policy enacted in 2013, have served as a bridge to FDA-approved alternatives to FMT, which are expected to become available to patients in 2023, she said.

"An FDA-approved microbiota-based therapy will be a huge step forward for patient care and the microbiome field," continued O'Brien. "It's a day that patients and OpenBiome have been anticipating for years. Until then, we could not be more pleased to collaborate with the University of Minnesota to provide *C. difficile* patients with much needed treatments."

Sputnik V
Sputnik Light
400.000.000 doses

Approved in
71 countries (SV)
30 countries (SL)
4.000.000.000 people

Why?

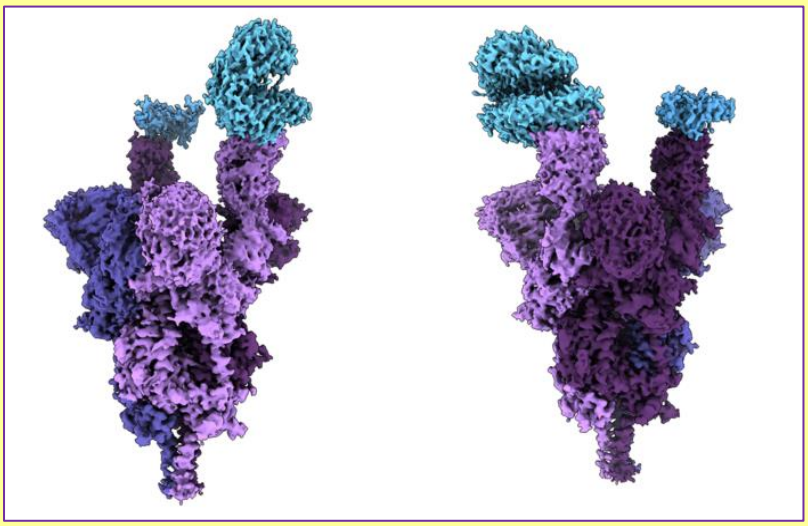
European Union

ZERO

Omicron's Spike Protein Captured via Cryo-Electron Microscopy

Source: https://www.genengnews.com/topics/translational-medicine/infectious-diseases/omicrons-spike-protein-captured-via-cryo-electron-microscopy/

Jan 24 – The first molecular-level structural analysis of the Omicron variant spike protein in complex with human ACE2 is now available. The near-atomic resolution analysis—using cryo-electron microscopy—yields insights into how the heavily mutated Omicron variant attaches to and infects human cells. "Understanding the molecular structure of the viral spike protein is important as it will allow us to develop more effective treatments against Omicron and related variants in the future," said Sriram Subramaniam, PhD, professor of biochemistry and molecular biology at the University of British Columbia. "By analyzing the mechanisms by which the virus infects human cells, we can develop better treatments that disrupt that process and neutralize the virus."



Atomic structure of the Omicron variant spike protein (purple) bound with the human ACE2 receptor (blue). [UBC Faculty of Medicine]

The spike protein, which is located on the outside of SARS-CoV-2, enables it to enter human cells. The Omicron variant has an unprecedented 37 mutations on its spike protein—three to five times more than previous variants. The structural analysis revealed that several mutations (R493, S496, and R498) create new salt bridges and hydrogen bonds between the spike protein and the human cell receptor ACE2. The researchers noted that these interactions "appear to compensate for other Omicron mutations such as K417N known to reduce ACE2 binding affinity, resulting in similar biochemical ACE2 binding affinities for Delta and Omicron variants." "Overall, the findings show that Omicron has greater binding affinity than the original virus, with levels more comparable to what we see with the Delta variant," said Subramaniam. "It is remarkable that the Omicron variant evolved to retain its ability to bind with human cells despite such extensive mutations." The researchers conducted neutralization assays and showed that pseudoviruses displaying the Omicron spike protein exhibit increased antibody evasion. In contrast to previous variants, Omicron showed measurable evasion from all six monoclonal antibodies tested, with complete escape from five. The variant also displayed increased evasion of antibodies collected from vaccinated individuals and unvaccinated COVID-19 patients.

"Notably, Omicron was less evasive of the immunity created by vaccines, compared to immunity from natural infection in unvaccinated patients. This suggests that vaccination remains our best defense," said Subramaniam. The increase in antibody evasion, the authors noted, "together with retention of strong interactions at the ACE2 interface, represent important molecular features that likely contribute to the rapid spread of the Omicron variant." Based on the observed increase in binding affinity and antibody evasion, the researchers say that the spike protein mutations are likely contributing factors to the increased transmissibility of the Omicron variant.

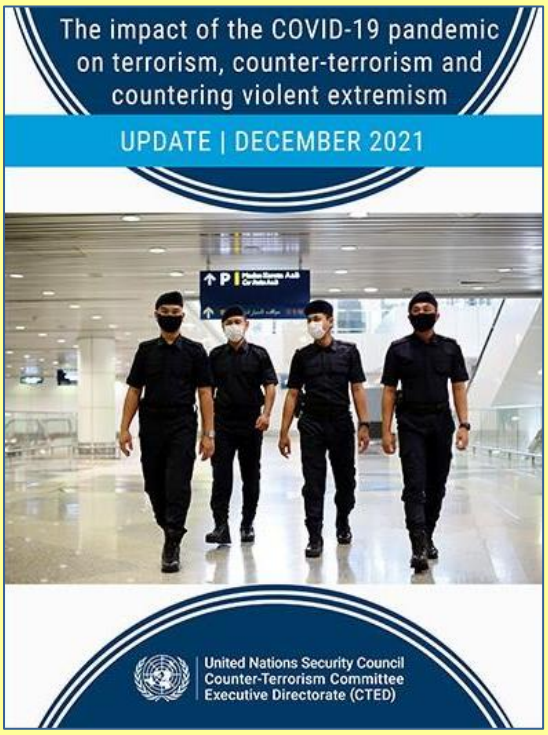
●▶ **This work is published in *Science* in the paper,** "SARS-CoV-2 Omicron variant: Antibody evasion and cryo-EM structure of spike protein–ACE2 complex."

The impact of the COVID-19 pandemic on terrorism, counter-terrorism and countering violent extremism

Source [+video]: https://www.un.org/securitycouncil/ctc/news/impact-covid-19-pandemic-terrorism-counter-terrorism-and-countering-violent-extremism-update

On 17 December 2021, the Counter-Terrorism Committee Executive Directorate (CTED) issued a report on "The impact of the COVID-19 pandemic on terrorism, counter-terrorism and countering violent extremismPDF,", thus concluding its analytical series on this issue.

The report follows on from CTED's June 2021 report, which provided an overview of the potential long-term impacts of the pandemic, as well as key regional and thematic trends, informed by CTED's ongoing dialogue with Member States (including within the framework of the hybrid assessment visits currently being conducted on behalf of the Counter-Terrorism Committee). The June 2021 report also featured survey data collected from 49 of CTED's partners from across the United Nations, civil society, academia and the private sector. More than two-thirds of respondents stated that COVID-19 had made counter-terrorism and CVE more challenging.



The December 2021 report concludes the series by summarizing CTED's analysis to date, noting that the pandemic has exacerbated many pre-existing issues and challenges that shape the terrorist threat landscape. Terrorists and violent extremists have sought to exploit pandemic-related sociocultural restrictions, including their efforts to recruit, radicalize, and organize via virtual platforms. Where pandemic-related restrictions have artificially and temporarily suppressed the threat of terrorism, their easing may result in an increase in terrorist violence.

However, there is limited data on the long-term impacts of recruitment and radicalization efforts, and further research is required to understand any correlation between pandemic-related impacts and increases in terrorist violence. CTED's analysis also stresses that the pandemic is far from over and that most geographical regions and thematic areas continue to face existing pandemic-related trends. More data and analysis will be required to draw comprehensive conclusions.

Pandemic-related counter-terrorism trends have overlapped across regions. Social restrictions, including closure of civic spaces, has made it hard for civil society organizations (CSOs) and other non-State actors engaged in countering violent extremism (CVE) to conduct programmatic interventions (including gender-related interventions) in communities vulnerable to radicalization to violence. Economic downturns have exacerbated existing grievances, increased humanitarian needs, and simultaneously led to an erosion in trust in Government. Some States have used pandemic-related restrictions to curb dissent and proliferate emergency measures, thereby raising legitimate human rights concerns.

The pandemic has not only exposed social inequities and structural challenges but also provided an avenue for those inequities and challenges to be exploited by terrorists and their affiliates. The report concludes that the counter-terrorism community should seek to address the threats of terrorism and violent extremism in a post-pandemic world based on the principles of cooperation, shared responsibility, and enhanced multilateralism. Existing policies and measures should therefore be adapted in order to ensure an adequate response to evolving challenges. CTED will continue to assess and analyse the impact of COVID-19 on the evolving terrorist threat, counter-terrorism responses, and other emerging issues and challenges, through engagement and consultations with its partners.

BIOTERRORISM at the highest levels: U.S. government caught targeting "red" states with deadlier batches of covid vaccines

By Ethan Huff

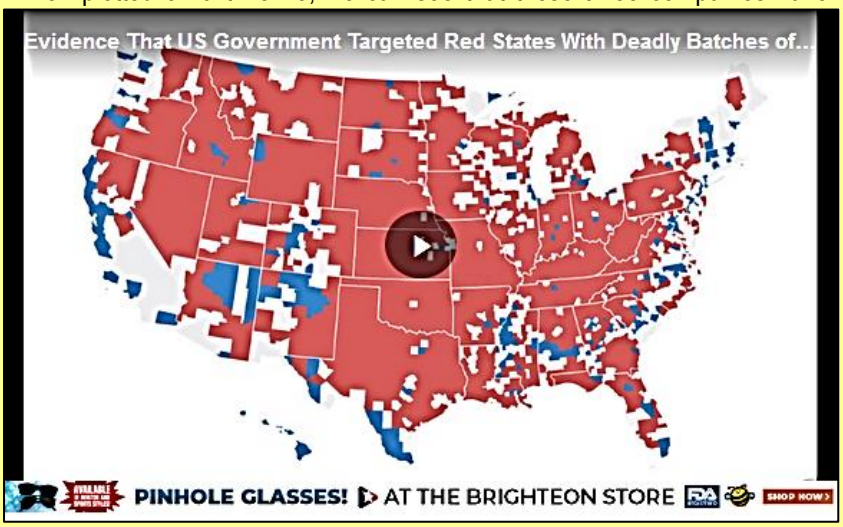
Source: https://www.naturalnews.com/2022-01-25-government-targeting-red-states-deadlier-covid-vaccines.html

Jan 25 – A deep analysis of VAERS (Vaccine Adverse Event Reporting System) data shows that "red" states – meaning those that align politically as being more conservative – are getting hit the hardest by Wuhan coronavirus (Covid-19) "vaccine" deaths.

In what appears to be a politically motivated genocide, the powers that be (i.e., the pharmaceutical industry and big government) are reportedly sending deadlier batches of Fauci Flu shots to conservative areas of the country.

Blue areas are getting cleaner jabs while red areas are being sent the more toxic varieties, says Greg Reese from *Infowars*.

"Some red states are seeing 11-times more vaccine deaths than other states," Reese claims – you can watch his video report below. "On average, red states are experiencing twice the amount of vaccine deaths and injuries than blue states."
Ex-head of respiratory research at Pfizer, Mike Yeadon and researchers like Craig Paardekooper sourced VAERS data on vaccine death and injury in the United States, which currently shows more than 700,000 adverse reactions associated with the Pfizer-BioNTech, Moderna, and Janssen (Johnson & Johnson) injections.
These jabs were deployed in different batches, or lots, that show extremely disparate rates of injury and death. Some lots are causing almost no problems while others are causing many problems.
How can this be if all of the jabs are truly the same? Back-engineering conducted by Yeadon and Paardekooper uncovered the fact that not all covid jab lots are the same – you can learn more about this at HowBadIsMyBatch.com (or at HowBad.info).
"About 0.5 percent of all the different batches are highly toxic, resulting in hospitalization, disability, and death within days or weeks of injection," Reese says. "Other batches cause minimal adverse reactions and most appear to be harmless placebos."
"When plotted on a timeline, we can see that these three companies have been working together to quietly monitor the lethal effectiveness of specific deadly batches."



Reese also says that while one company is deploying a lethal batch, the other two are deploying harmless ones. This creates a scientific environment for the genocidal eugenicists to perform dose-range finding, or the maximum tolerated dose for each specific batch of injections.

This video is from the channel "Health Ranger Report" on Brighteon.com.

"The timeline shows that each lethal batch deployment is preceded and followed by a quiet period, allowing them time to establish their baseline before the next deadly batch is deployed," Reese explains.
"Private leaked documents from the CDC show a list of expiry dates, and only certain lots are included – the very same lots found to be highly toxic in Paardekooper's database, which makes sense. There would be no reason to list expiration dates for saline placebo; only the deadly ones." The hardest-hit state in terms of toxic jab batches appears to be Montana at 11.3 deaths per 100,000, followed by Tennessee at 9.1 deaths per 100,000. In third place, however, is Minnesota, a blue state, at 9.0 deaths per 100,000.
"Analysis of the number of dying per 100,000 vaccinated in 50 states shows us that the overwhelming majority of vaccine deaths are happening in red states," Reese warns. "Some red states are experiencing 11 times more vaccine deaths than other states. On average, red states are experiencing twice the amount of vaccine deaths and injuries than blue states."
Could it be that the establishment is specifically targeting states with largest populations of people who oppose the "Build Back Better" (6uild 6ack 6etter) of the current regime? Is there an effort afoot to exterminate people who oppose the "Great Reset?"
More related news about the government's covid injection genocide campaign can be found at ChemicalViolence.com.

EDITOR'S COMMENT: Incredible accusation! An urgent official response is required! Most probable fake news.

Two Studies Show Omicron's Immune-Evasive Powers, Role of Boosters

By Marcia Frellick (freelance journalist)
Source: https://www.medscape.com/viewarticle/967148

Jan 24 – Two new studies further demonstrate the ability of the Omicron variant to evade vaccine- or infection-induced immunity. The studies, published January 20 in the journal *Nature Medicine,* also reinforce the importance of boosters worldwide.
In one study, Samuel M.S. Cheng, of the School of Public Health, University of Hong Kong, and colleagues compared differences in antibody responses to infection with wild-type or the

Omicron variant of SARS-CoV-2 in several groups who had either recovered from COVID-19 (30 people) or received vaccinations.
The groups who received vaccinations included: uninfected people 1 month after their second dose of either the Pfizer-BioNTech vaccine (31 participants) or the CoronaVac vaccine (developed by the Chinese company Sinovac Biotech) (30 people); those who received two doses of CoronaVac and an additional booster of CoronaVac (30 participants); or three doses of Pfizer-BioNTech (25).
The researchers found that a Pfizer booster after two initial doses of the mRNA vaccine or the CoronaVac inactivated virus vaccine provided acceptable immunity against Omicron at 1 month after booster-dose administration.
Acceptable was defined as "antibody levels sufficient to elicit greater than 50% protection against SARS-CoV-2."
However, the study shows that just two original doses of the Pfizer or CoronaVac vaccines brought about low protection against Omicron even 3-5 weeks after vaccination.
The authors found that a CoronaVac booster after two original shots of CoronaVac failed to develop neutralizing antibodies against Omicron in most recipients.
"Our findings suggest that countries that primarily use CoronaVac vaccines may need to consider mRNA vaccine boosters in response to the spread of Omicron," the authors write.
The researchers note that more than 750 million doses of CoronaVac have been given in more than 40 countries.

Comparing Protection Against Variants

In the second study, first author Eddy Pérez-Then, MD, MPH, with the Ministry of Health in Santo Domingo, Dominican Republic, and colleagues examine the effectiveness of a three-part vaccine, consisting of two doses of CoronaVac followed at least 4 weeks later by a Pfizer booster against the Delta and Omicron variants (in 101 participants) in the Dominican Republic.
The three-part vaccine induced elevated levels of virus-specific antibodies and strong antibody neutralization against both the original form of SARS-CoV-2 and the Delta variant compared with levels prior to the mRNA booster.
Researchers found that neutralization of Omicron was undetectable in those who had received just two doses of CoronaVac. However, adding an additional Pfizer booster vaccination to this regimen resulted in a 1.4-fold increase in antibody neutralization against Omicron, compared with those who received two doses of either the Pfizer-BioNTech or Moderna vaccines.
Carolina Lucas, PhD, postdoctoral associate in the Department of Immunobiology, Yale University School of Medicine in New Haven, Connecticut, told *Medscape Medical News* the data suggest that the Pfizer booster is extremely effective for people who received the CoronaVac regimen.
"However," she said, "It is still important to note that the neutralization titers against Omicron were significantly reduced compared to [neutralizing antibody] levels against ancestral virus and Delta variant post booster (7.1-fold and 3.6-fold respectively), suggesting a greater risk of vaccine breakthrough infections."
In comparing the two studies in *Nature Medicine*, Lucas said both studies highlight data surrounding CoronaVac, important since it is the world's most widely used vaccine.
The methodology of both studies is very similar, she noted, "and we both demonstrated the benefit of the booster shot using [Pfizer's] BNT162b2 mRNA vaccine, highlighting the global need for vaccine boosters to combat the impact of emerging variants."
"The biggest discrepancy is among the analysis of neutralizing antibodies [after] 2 doses of Pfizer," Lucas said. "Their results are lower compared to our [studies] and other studies, but the analysis [after] the heterologous booster regimen is consistent."
The authors say in a press release: "Notably, previous infection with SARS-CoV-2 did not significantly elevate the levels of antibodies against Omicron in participants who had received the mixed-vaccine regimen."
Sara Cherry, PhD, professor of pathology and laboratory medicine at the University of Pennsylvania in Philadelphia, told *Medscape Medical News*, "These papers suggest that one correlate of protection, neutralizing antibodies, are low upon the standard vaccination schemes, but that a booster can significantly increase the levels of neutralizing antibodies to Omicron. This is good news for those who have access to boosters."
She said it's important to remember that globally there is clear evidence that vaccination protects from hospitalization and death, even with low neutralization titers.
That suggests that neutralization is one of many facets of immune protection [that] vaccination confers, she said.
"The good news is that the current vaccines do protect from the worst outcomes, and the even better news is that a boost will improve our immunity to Omicron," Cherry said.

●▶ ***Nature Medicine.*** **Cheng et al. Published online January 20, 2022.** Full text
●▶ ***Nature Medicine*****. Pérez-Then et al. Published online January 20, 2022**.Full text

US Opposes Plans to Strengthen World Health Organization

By Francesco Guarascio, Trevor Hunnicutt, and Stephanie Nebehay
Source: https://www.medscape.com/viewarticle/967048

Jan 24 – The United States, the World Health Organization's top donor, is resisting proposals to make the agency more independent, four officials involved in the talks said, raising doubts about the Biden administration's long-term support for the U.N. agency.
The proposal, made by the WHO's working group on sustainable financing, would increase each member state's standing annual contribution, according to a WHO document published online and dated Jan. 4.
The plan is part of a wider reform process galvanised by the COVID-19 pandemic, which has highlighted the limitations of the WHO's power to intervene early in a crisis.
But the U.S. government is opposing the reform because it has concerns about the WHO's ability to confront future threats, including from China, U.S. officials told Reuters.
It is pushing instead for the creation of a separate fund, directly controlled by donors, that would finance prevention and control of health emergencies.
Four European officials involved in the talks, who declined to be named because they were not authorised to speak to the media, confirmed the U.S. opposition. The U.S. government had no immediate comment.
The published proposal calls for member states' mandatory contributions to rise gradually from 2024 so they would account for half the agency's $2 billion core budget by 2028, compared to less than 20% now, the document said.
The WHO's core budget is aimed at fighting pandemics and strengthening healthcare systems across the world. It also raises an additional $1 billion or so a year to tackle specific global challenges such as tropical diseases and influenza.
Supporters say that the current reliance on voluntary funding from member states and from charities such as the Bill and Melinda Gates Foundation forces the WHO to focus on priorities set by the funders, and makes it less able to criticise members when things go wrong.
An independent panel on pandemics that was appointed to advise on the WHO reform had called for a much bigger increase in mandatory fees, to 75% of the core budget, deeming the current system "a major risk to the integrity and independence" of the WHO.

Long-standing skepticism
The WHO itself responded to a query by saying that "only flexible and predictable funds can enable WHO to fully implement the priorities of the Member States".
Top European Union donors, including Germany, back the plan, along with most African, South Asian, South American and Arab countries, three of the European officials said.
The proposal is to be discussed at the WHO's executive board meeting next week but the divisions mean no agreement is expected, three of the officials said.
The WHO confirmed there was currently no consensus among member states, and said talks were likely to continue until the annual meeting in May of the World Health Assembly, the agency's top decision-making body.
European donors in particular favour empowering, rather than weakening, multilateral organisations including the WHO.
One European official said the U.S. plan "causes scepticism among many countries", and said the creation of a new structure controlled by donors, rather than by the WHO, would weaken the agency's ability to combat future pandemics.
Washington has been critical of the WHO for some time.
Former President Donald Trump pulled the United States out of the WHO after accusing it of defending China's initial delays in sharing information when COVID-19 emerged there in 2019.
The Biden administration rejoined soon after taking office, but officials told Reuters they think the WHO needs significant reform, and raised concerns about its governance, structure and ability to confront rising threats, not least from China.
One of the European officials said other big countries, including Japan and Brazil, were also hesitant about the published WHO proposal.
Two of the European officials said China had not yet made its position clear, while a third official listed Beijing among the critics of the proposal.
The governments of Japan, China and Brazil had no immediate comment.

EDITOR'S COMMENT: There is no doubt that WHO should either change or postponed. Its response is slow; its guidelines are confusing; science is mixed with politics.

Covid-19 vaccinations

If it is to come,
it will come;
otherwise,
It will pass by!

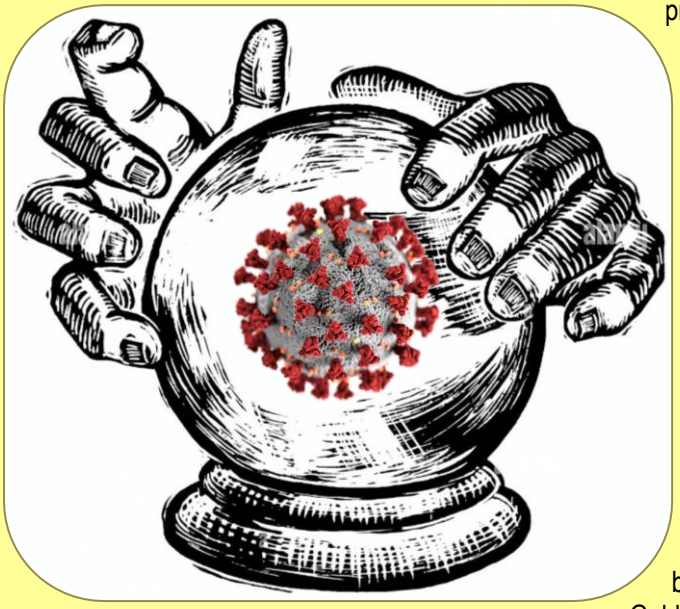
Kostas Ouranis
Greek poet

Αν είναι να ’ρθει,
θε να ’ρθεί – αλλιώς
θα προσπεράσει!

How to predict who is most likely to develop long COVID

Source: https://newatlas.com/health-wellbeing/predict-diagnose-immune-long-covid-pasc/

Jan 25 – A pair of new studies have homed in on key biomarkers that could help identify, at the point of initial infection, those most at risk of developing long COVID. The studies suggest a combination of immune biomarkers and acute symptoms can be used to predict a person's likelihood of long COVID.



Anywhere from 10 to 70 percent of COVID-19 cases can display persistent symptoms lasting weeks, or even months, past an initial acute infection. Dubbed PASC (Post Acute Sequelae of COVID-19), the condition is more informally known as long COVID and often includes symptoms such as fatigue, shortness of breath, and brain fog.

It is currently a mystery as to which acute COVID patients will go on to experience lingering symptoms. The more severe an initial bout of COVID-19 is, the more likely that person will experience long COVID, but that is one of the few measures doctors currently have to assess a patient's likelihood of the condition.

"Long COVID is causing significant morbidity in survivors of COVID-19, yet the pathobiology is poorly understood," explained Jason Goldman, co-corresponding author on one of the new studies. "Our study pairs clinical data and patient-reported outcomes with deep multi-omic analyses to unravel important biological associations that occur in patients with PASC."

Goldman and colleagues followed more than 300 COVID-19 patients, collecting blood samples at various points both during their acute infection and in the months that followed. The study identified a number of factors that could be measured during the initial illness and correlated with subsequent long COVID.

In particular, the research found patients with higher SARS-CoV-2 RNA levels in the blood during their acute illness were more likely to go on to develop long COVID. Levels of immune cells known as autoantibodies were also found to correlate with lingering symptoms. A recent Ceders-Sinai study also found elevated levels of autoantibodies in long COVID patients over six months past their initial infection.

One of the more curious findings in this first study was the detection of increased Epstein-Barr virus (EBV) activity in the blood of COVID-19 patients more likely to experience long COVID. EBV infection commonly occurs in most people while they are young and the virus is known to remain dormant in most people for the rest of their lives.

EBV infection has also recently been linked to multiple sclerosis and is commonly associated with chronic fatigue syndrome. Elevated blood levels during a COVID-19 infection could be linked to the immune system abnormalities some researchers have connected to long COVID.

Jim Heath, president of the Institute for Systems Biology and co-corresponding author on the study, said these kinds of investigations into the early biomarkers of long COVID will not only help identify and treat those patients experiencing persistent disease, but should also shed light on other post-viral syndromes.

"Identifying these PASC factors is a major step forward for not only understanding long COVID and potentially treating it, but also which patients are at highest risk for the development of chronic conditions," said Heath. "These findings are also helping us frame our thinking around other chronic conditions, such as post-acute Lyme syndrome, for example."

The second new study comes from a team led by researchers from the University of Zurich who followed more than 100 COVID-19 cases for up to a year. Around half of those initially mild COVID cases and 82 percent of severe cases experienced persistent long COVID symptoms.

Two immune biomarkers specifically stood out to the researchers as predictive of long COVID. Low levels of immunoglobulin M (IgM) and immunoglobulin G3 (IgG3) during primary infection correlated with an increased likelihood of long COVID.

The researchers then created a model that could generate a long COVID risk score for a patient experiencing acute illness. The model combined levels of these two blood-based

biomarkers with age, history of asthma, and presence of five key symptoms during the first week of illness (fever, fatigue, cough, shortness of breath, and gastrointestinal symptoms).
The model was tested in an independent cohort of 395 COVID-19 patients. Each patient was given a risk score calculating their chances of going on to develop long COVID. Called a PASC score, the study indicated this model was more accurate than any current protocol for predicting which patients would develop long COVID.
Further work is needed to validate these predictive signs of long COVID in larger cohorts of patients, but if those most susceptible to the chronic condition can be identified early, then treatments can be tested to hopefully prevent it from developing.

●▶ **The new studies were published in the journals *Cell* and *Nature Communications*.**

COVID-19 Vaccine Before or After Infection? For Super Immunity, It Makes No Difference

Source: https://www.genengnews.com/topics/drug-discovery/covid-19-vaccine-before-or-after-infection-for-super-immunity-it-makes-no-difference/

Jan 26 – At this point in the COVID-19 pandemic, two years in, people have reached varying levels of immunity to SARS-CoV-2. And, they have taken different paths to get there. Whether the path includes vaccination, a natural infection, an infection after vaccination, or vice versa, many people are left wondering what their level of immunity is. Now, a new study finds that there are two routes to enhanced immune protection—breakthrough infections following vaccination or vaccination after natural infection—both of which provide roughly equal levels of enhanced immune protection.
The research follows a study published in December that described extremely high levels of immune response following breakthrough infections—so-called "super immunity." That study was the first to use multiple live SARS-CoV-2 variants to measure cross-neutralization of blood serum from breakthrough cases.
The new study found that it doesn't matter whether someone gets a breakthrough infection or gets vaccinated after a natural infection. In both cases, the immune response measured in blood serum revealed antibodies that were equally more abundant and more potent—at least 10 times more potent—than immunity generated by vaccination alone.
"It makes no difference whether you get infected-and-then-vaccinated, or if you get vaccinated-and-then-a-breakthrough infection," said Fikadu Tafesse, PhD, assistant professor of molecular microbiology and immunology in the Oregon Health & Science University (OHSU) School of Medicine. "In either case, you will get a really, really robust immune response—amazingly high."
Researchers divided 104 people, all vaccinated by the Pfizer vaccine, into three groups: 42 who were vaccinated with no infection, 31 who were vaccinated after an infection, and 31 who had breakthrough infections following vaccination. Controlling for age, sex, and time from vaccination and infection, the researchers drew blood samples from each participant and exposed the samples to three variants of the live SARS-CoV-2 virus.
They found both of the groups with "hybrid immunity" generated greater levels of immunity compared with the group that was vaccinated with no infection.
The study was done before the emergence of the Omicron variant, but researchers expect the hybrid immune responses would be similar with the new highly transmissible variant. "The likelihood of getting breakthrough infections is high because there is so much virus around us right now," Tafesse said. "But we position ourselves better by getting vaccinated. And if the virus comes, we'll get a milder case and end up with this super immunity."
"I would expect at this point many vaccinated people are going to wind up with breakthrough infections—and hence a form of hybrid immunity," said Bill Messer, MD, PhD, assistant professor of molecular microbiology and immunology and medicine (infectious diseases) in the OHSU School of Medicine.
The scientists say they haven't tested multiple rounds of natural infection, although many people will likely find themselves in that category given that millions of people in the United States and around the world remain entirely unvaccinated.
Given the spread of the Omicron variant, many unvaccinated people who were previously infected are likely to confront the virus again. For that group, previous research reveals a more variable level of immune response than vaccination, Messer said. "I can guarantee that such immunity will be variable, with some people getting equivalent immunity to vaccination, but most will not," he said. "And there is no way, short of laboratory testing, to know who gets what immunity. Vaccination makes it much more likely to be assured of a good immune response."
"These results," said Marcel Curlin, MD, associate professor of medicine (infectious diseases) in the OHSU School of Medicine, "together with our previous work, point to a time

when SARS-CoV-2 may become a mostly mild endemic infection like a seasonal respiratory tract infection instead of a worldwide pandemic."

●▶ **This study is published in *Science Immunology* in the paper,** "Vaccination before or after SARS-CoV-2 infection leads to robust humoral response and antibodies that effectively neutralize variants."

The Pandemic of Unknowns

By Michael T. Osterholm and Mark Olshaker
Source: https://www.foreignaffairs.com/articles/world/2022-01-22/pandemic-unknowns

Jan 22 – In just two years, the COVID-19 pandemic has transformed how societies understand public health and disease. It has made previously esoteric epidemiological terms such as "flattening the curve," "mRNA vaccines," "rapid antigen tests," and "variants of concern" the stuff of everyday conversation. But it has also drawn attention to the limits of epidemiological expertise and precision. The Delta variant, which swept through the United States last summer, confounded the hope that mass vaccination would bring the pandemic to an end—and made U.S. President Joe Biden's declaration of imminent victory over the virus in July 2021 seem hubristically premature. The emergence of the substantially more infectious Omicron variant has led to the deaths of upward of 1,800 Americans each day and underlined the great uncertainty of this pandemic: it is challenging to know what will come next.

The pandemic has revealed the messiness of how science evolves in real time. The last two years have witnessed a grand experiment of leadership practices, public health policies, and medical countermeasures. Despite the herculean efforts of the public health and medical communities, Omicron has now reached all parts of the globe. Although the percentage of serious and fatal cases among those infected will be relatively low compared with Delta, the far greater overall number of cases is overwhelming health-care systems, which are suffering the loss of ten to 30 percent or more of already overburdened and burned-out staffs. Breakthrough infections among vaccinated people are occurring at least five times as frequently as they did with Delta, and Omicron appears to infect children more than previous strains. The crush of patients has been so severe that in a number of U.S. states and countries around the world, health-care workers with mild cases of the disease have had to continue working through their illness.

But the long-term view of how societies return to a version of normalcy remains murkier. The evolution of COVID-19 has proved more difficult to predict than past pandemic diseases. The two virus-caused pandemics of the past century were influenza and AIDS. Influenza, like the SARS-CoV-2 virus that causes COVID-19, is a highly infectious respiratory-transmitted virus. However, over time, the most dangerous influenza strains evolved into more routine seasonal viruses on their own. Even with the devastating influenza pandemic of 1918 that left 675,000 dead in the United States and somewhere between 50 million and 100 million dead worldwide, the virus's ability to kill and cause serious disease diminished until the flu turned into its milder seasonal variety; this process occurred without the benefit of vaccines.

The COVID-19 pandemic has so far followed a different pattern with the emergence of more highly infectious SARS-CoV-2 variants that can evade the protection and immunity afforded by vaccination and previous infection. The track record of influenza pandemics, therefore, cannot offer a great deal of guidance as to how this pandemic will end. Beyond expertise and knowledge, trying to map out the future course of this disease requires humility. Governments and international institutions must recognize that they cannot have all the answers and prepare for the unknown.

The end of the beginning

Nobody can say with any certainty when and how the pandemic will end. We have been warning about the "unknown unknowns" of COVID-19 in various publications since the start of the pandemic in early 2020. In March and April of last year, one of us (Osterholm) was roundly criticized for warning that the darkest days of the pandemic were still ahead, since it was unknown how infectious new variants would be and how able to evade immune protection. Several television producers told us this message was too scary and defeatist to put on the air. At that time, case numbers in the United States had dropped rapidly from their January 2021 peak, and vaccines were becoming widely available nationwide. But what was clear to us was that the variants of the virus were simply not behaving according to the accepted pandemic model, which was based primarily on the experience of influenza.

The current Omicron surge is also different from previous SARS-CoV-2 surges, driven primarily by the greater infectiousness of this variant. The Alpha, Beta, Gamma, and Delta varieties of the virus caused regional surges of cases. Omicron, by contrast, has created a simultaneous viral blizzard of infections throughout the world. The virus also has not behaved like previously documented coronaviruses, none of which caused pandemics. With the Middle

East respiratory syndrome, also known as MERS, it appears that only dromedary camels are infected with the virus and can transmit it to humans. Other SARS coronaviruses have limited persistent animal reservoirs, especially among bats. By contrast, SARS-CoV-2 has spread to numerous species. A virus thought to have originated in bats jumped to humans, who then gave it to white-tailed deer and many other creatures, thereby creating animal populations in which the virus can continue to mutate and potentially spill over to humans again.

Just as alarming, ongoing human infections also serve as a critical source for new variants. Nearly 40 percent of the world's population has yet to receive a single shot of a COVID-19 vaccine and remains exceptionally vulnerable. The continuing spread of the virus could lead to the emergence of variants that might be even more transmissible than Omicron, at least as virulent as Delta, and even more capable of evading the immunity provided by vaccines or prior infection.

A virus that defies scientific expectation poses incredible challenges to policymakers and public health officials. Its tenacity makes a mockery of predictions of its demise. Last spring, Biden projected July 4 as the United States' "Independence Day" from the pandemic's ravages, echoing the optimism of his predecessor, Donald Trump, who repeatedly declared that COVID-19 was under control. Both the Delta and Omicron variants have proved how imprudent it would be to prematurely declare victory again. But that shouldn't stop policymakers from determining the path forward. Vaccines and other countermeasures still offer tremendous hope. As British Prime Minister Winston Churchill declared in 1942 after tentative Allied victories in World War II, "This is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

No silver bullets

The most optimistic view of the future course of the pandemic predicts that Omicron will be the last major variant of concern. Omicron tends to cause milder disease than Delta and is more infectious than all prior variants, allowing it to outcompete Delta and other iterations of the virus. A large number of Omicron infections coupled with increasing rates of vaccination would lead to greater levels of immunity that would ultimately transform SARS-CoV-2 from pandemic to endemic status, with the virus evolving into a seasonal respiratory disease as scientists had originally hoped it would, following the path of the flu.

A more pessimistic view predicts that Delta and Omicron are but harbingers of the waves to come; that new variants will emerge over time with the same or greater transmissibility as their prior iterations, as well as the capacity to cause more severe disease and the ability to evade immunity. In fact, we hesitate even to use the term "endemic," as transmission of the virus might lull for several months and then new variants may emerge, leading to a new epidemic or pandemic. Given the natural history of this virus, policymakers would be extremely foolish to discount this possibility.

In either case, vaccines remain the most powerful tool for bringing the pandemic to an end, but they are not a silver bullet. They have generated undue controversy and become unfortunately politicized in the highly polarized media landscape of the United States and various other countries. Even as many people in low- and middle-income countries are desperate for the vaccine, many people in places with ample supply refuse to get vaccinated or vaccinate their children. Misinformation and mistrust have reached near pandemic proportions.

Policymakers must recalibrate, improve their public messaging, and set more realistic expectations for what vaccines can and cannot accomplish. Omicron has caused substantial numbers of breakthrough infections, but those who are fully vaccinated and have received a booster with vaccines developed in the Western world, particularly the ones based on messenger RNA (mRNA) technology, represent only a tiny fraction of individuals who end up in hospitals, intensive care units, or morgues—at least so far. Leaders should underline this real science in clearly making the case for the continued importance of vaccination. Other vaccines, such as the Chinese-made Sinovac and Sinopharm shots, appear to have limited effectiveness in fending off Omicron, an ominous development for the more than one billion people depending on them. Many Russians have resisted the homegrown Sputnik V vaccine because they simply don't trust it or their government. As with the Chinese vaccines, early laboratory data on Sputnik V suggests that recipients will be more vulnerable to breakthrough infections than will recipients of mRNA vaccines.

But even the mRNA vaccines provide immunity for only a limited time; repeated doses are needed to maintain protection against the worst of the virus. Israel, which administered the mRNA vaccines earlier than most countries, has already begun offering fourth doses to people who are over 60 years of age, who have comorbidities, or who suffer from compromised immune systems—at this time, it's still unclear what protective benefit the fourth dose provides to those who are not immunocompromised. Wealthy governments might continuously seek ways to "boost" their citizens, at least until SARS-CoV-2 evolves from pandemic to endemic or milder disease status. But that is a daunting challenge, as it will be unfeasible to try to vaccinate the entire world's population once, or even twice, every year against the virus. After all, only a small percentage of people around the globe take seasonal flu shots. One critical goal for the scientific community is to develop a pan–novel coronavirus vaccine that would work for all

variants, much the way an as-yet-elusive "universal" flu vaccine would obviate the need for yearly flu shots that are often poorly matched to battle the current circulating strains.

More than 9.4 billion SARS-CoV-2 vaccine doses have been administered throughout the world, but the distribution of these doses has been profoundly uneven. For example, in low-income countries, for every 100 people, only 12 vaccine doses have been delivered, whereas the figure for high-income countries stands at 168. COVAX, the World Health Organization's initiative, which is supported by high-income countries, aimed to provide COVID-19 vaccines to lower-middle- and low-income countries. Like so many international relief efforts, it got off to a slow start and has fallen significantly short of its target of delivering two billion doses by the end of 2021. It will require substantial additional support from wealthy countries to fulfill its mission. Until that can occur, low-income countries should find a way to prioritize vaccines for those most in need, such as those with immunocompromising conditions and other comorbidities, as well as older citizens.

Some have called on the World Trade Organization to issue patent waivers and facilitate the transfer of mRNA technology to developing countries in the interest of ramping up vaccine production. As promising as such transfers might sound, major logistical hurdles would remain. Allowing another company or country to produce a vaccine does not just make it happen. Production requires money, manufacturing capacity, technical expertise, and highly skilled and trained personnel on the ground. Most developing countries will not be able to produce mRNA vaccines in sufficient scale anytime in the near future. Generating vaccine production capacity and expertise around the world is a laudable and necessary goal, but it is a long-term target. With a lot of luck and even more effort, such infrastructure will be in place in time for the next pandemic, whenever that occurs.

In the meantime, making COVID-19 vaccines accessible to as many people as possible will help slow the spread and potential future mutation of the virus. But other measures are needed to address the full consequences of the pandemic. The necessary focus on the virus has had detrimental overall effects on global public health. In the United States and other high-income countries, hospitals have been obliged to suspend elective surgeries as well as routine screenings that can prevent serious health problems down the line. In many countries in sub-Saharan Africa, the pandemic has hampered the ongoing efforts to tackle large-scale threats such as malaria and AIDS. Public health is a key driver of national stability in emerging-market economies. For the social, political, and economic benefit of the world, governments, international institutions, and the private sector will need to rebalance and substantially increase their investments in public health. Wealthier countries will need to direct more resources to international efforts for disease surveillance, testing, transparent reporting of outbreaks and emerging threats, and the sharing of human and material resources.

Governments must also work more transparently and collaboratively in dealing with these threats that know no borders. Although China did publish the SARS-CoV-2's genome fairly quickly once the virus had begun to spread, its government still has not fully cooperated in establishing what went on inside the Wuhan Institute of Virology—which some suspect to be the source of the virus—or what its officials knew about the virus's early transmission. At this time, we have not seen any data that support the idea of the virus escaping a Chinese laboratory. Chinese leaders should recognize that their early attempts to suppress mention of the outbreak of the virus and their general lack of transparency led to failures in preventing the worldwide spread of the virus—and dented the credibility of the Chinese government. South Africa, by contrast, won universal praise for swiftly alerting the globe to the emergence of the Omicron variant last November, even though it suffered brief—and essentially pointless, given that the virus had already spread far and wide—travel bans in the subsequent weeks.

China, with its de facto position as the world's main supplier of manufactured goods, is uniquely at risk, with significant implications for the rest of the planet. As the country with the longest history of fighting the virus, China is still trying to maintain a "zero-COVID policy" of imposing draconian control measures whenever a single case appears, including severely restricting internal and international travel and shutting down entire municipal regions and manufacturing centers. Not only do the Chinese Sinovac and Sinopharm vaccines appear to have limited effectiveness against Omicron, China's health-care system and physician network are not set up for wide-scale outpatient treatment. Hospital facilities could be quickly overwhelmed. Maintaining a zero-COVID policy is to chase an ever-moving target and risk further isolation from the rest of the world. Owing to Omicron's substantially increased infectiousness, lockdowns will not work with this variant as they largely have in China (despite the economic and societal costs) with previous variants. COVID-19 could explode throughout the country.

The official posture is unsustainable from epidemiological, economic, and political perspectives. China should turn away from lockdowns and move toward a policy oriented around the distribution of more effective vaccines, better respiratory protections, improved ventilation systems, social-distancing directives, and candid communication with the public. The current zero-COVID strategy will fail and challenge the Chinese Communist Party's carefully cultivated image of infallibility—and it will have major consequences for the global supply chain and could lead to a worldwide recession even greater than that caused by the initial onset of the pandemic.

A new normal

For too long, many governments have clung to the notion that vaccines and antiviral drugs would be enough to end the crisis. This was not an irrational aspiration, and it may yet prove viable. AIDS, once considered a death sentence, can now be well managed as a chronic disease through medication, even as a vaccine has proved elusive. Scientific knowledge about COVID-19 has progressed in leaps and bounds, and more drugs to limit the impact of the virus will become available within a few months.

Any "new normal" is likely to include COVID-19 as one of several yearly circulating respiratory infections, along with influenza, respiratory syncytial virus, and others. When that happens, public health and political leaders everywhere should set specific goals for managing disease levels, including benchmarks for the imposition or relaxation of restrictions on restaurants, shops, schools, sporting events, theaters, and so on. These thresholds would consider peak weekly hospitalizations, death counts, and rates of community transmission.

In the long term, the countries that can do so should build up digital, real-time, integrated data infrastructures that can generate comprehensive, up-to-date information to guide policy, just as Israel and the United Kingdom have done. A system of community public health workers, such as exists in Costa Rica, could relieve hospitals of their burden and augment the overall health-care system. The workers could test and vaccinate, conduct health screenings, offer prenatal support, and ensure that patients keep receiving treatments for tuberculosis, diabetes, AIDS, and other chronic conditions. For children, school nurses could also perform many of these functions. Such systems aren't cheap, but the costs pale in comparison to the money saved by preventing worse health outcomes down the line.

Wealthy countries need to work together to greatly expand vaccination, cooperating on financing, logistics, and education. They will also need to improve their public health messaging, which in general has been confusing and often contradictory, with regard to mask wearing, improved ventilation, physical distancing, what vaccines can and cannot accomplish, and the enormous mutual benefits of what the Danes call *samfundssind*, a term that combines the concepts of "society" and "mind" and denotes an ethos of communal cooperation, institutional trust, decreased political polarization, and concern for the well-being of others. Authorities should distribute, in sufficient (meaning massive) quantities, effective N95 and KN95 respirator masks, to limit the spread of the virus. They should tighten ventilation and environmental standards for schools and all public buildings, support testing programs throughout the world, and ensure that infected people have swift access to effective drugs. The success of PEPFAR—the U.S. President's Emergency Plan for AIDS Relief, launched in 2003 to address the global HIV/AIDS epidemic—suggests that a similar effort with COVID-19 can yield positive and lasting results.

In the 1960s and 1970s, the countries of the world banded together to eliminate smallpox in what is arguably the greatest public health triumph in history. This was achieved because all countries, particularly the two superpowers, the United States and the Soviet Union, decided it was the right thing to do and worked together despite their profound differences. That example offers inspiration for the present moment. Only more rigorous preparation and generous collaboration will see the world through this pandemic—and future ones. COVID-19 may be shrouded in uncertainty, but one thing is certain: another pandemic is always around the corner.

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Chinese scientists announce discovery of NeoCov coronavirus in South Africa

Source: https://www.tellerreport.com/news/2022-01-26-chinese-scientists-announce-discovery-of-neocov-coronavirus-in-south-africa.B1WLBvNJRt.html

Feb 26 – Chinese biologists from Wuhan University announced the discovery of the **NeoCov bat coronavirus** in the Republic of South Africa, which, according to them, can spread to humans. This is stated in a preprint published on the bioRxiv portal.

The preprint will have to be reviewed by experts in the future.

The report refers to the need for careful monitoring of this group of viruses in connection with their "potential of occurrence in humans."

●▶ **Read also:** NeoCoV Is Closer to MERS-CoV than SARS-CoV

RNA Sequencing in COVID-19 patients identifies neutrophil activation biomarkers as a promising diagnostic platform for infections

By Richard Wargodsky, Philip Dela Cruz, John LaFleur, Timothy A McCaffrey, et al.

PLoS One. 2022 Jan 26;17(1):e0261679.
Source: https://pubmed.ncbi.nlm.nih.gov/35081105/

Abstract

Infection with the SARS-CoV2 virus can vary from asymptomatic, or flu-like with moderate disease, up to critically severe. Severe disease, termed COVID-19, involves acute respiratory deterioration that is frequently fatal. To understand the highly variable presentation, and identify biomarkers for disease severity, blood RNA from COVID-19 patient in an intensive care unit was analyzed by whole transcriptome RNA sequencing. Both SARS-CoV2 infection and the severity of COVID-19 syndrome were associated with up to 25-fold increased expression of neutrophil-related transcripts, such as neutrophil defensin 1 (DEFA1), and 3-5-fold reductions in T cell related transcripts such as the T cell receptor (TCR). The DEFA1 RNA level detected SARS-CoV2 viremia with 95.5% sensitivity, when viremia was measured by ddPCR of whole blood RNA. Purified CD15+ neutrophils from COVID-19 patients were increased in abundance and showed striking increases in nuclear DNA staining by DAPI. Concurrently, they showed >10-fold higher elastase activity than normal controls, and correcting for their increased abundance, still showed 5-fold higher elastase activity per cell. Despite higher CD15+ neutrophil elastase activity, elastase activity was extremely low in plasma from the same patients. Collectively, the data supports the model that increased neutrophil and decreased T cell activity is associated with increased COVID-19 severity, and suggests that blood DEFA1 RNA levels and neutrophil elastase activity, both involved in neutrophil extracellular traps (NETs), may be informative biomarkers of host immune activity after viral infection.

Rutgers Develops COVID Test That Can Detect Omicron Variant

Source: https://finance.yahoo.com/news/rutgers-develops-covid-test-detect-190432417.html

Jan 25 — Researchers at Rutgers say they have developed a test that can specifically identify the omicron variant of coronavirus. Rutgers announced the news Tuesday. According to the school, this is a molecular PCR test that can correctly identify all the known variants of the virus, **including alpha, beta/gamma, delta and omicron.**

All of those have been named "variants of concern" by the Centers for Disease Control and World Health Organization.

The Rutgers test has not yet been approved by the Food & Drug Administration, and Rutgers just published their findings last Friday, Jan. 21, in this study in a medical journal. Their study has also not been peer reviewed. Still, Rutgers said it is now working to obtain rapid approval from the New Jersey Department of Health to use the new test on patients in New Jersey.

If approved, this test could be a game changer. That's because many of the current tests that are considered to be the gold standard in diagnosing COVID — the molecular PCR tests — are unable to confirm the omicron variant. The omicron variant is also the variant that can evade vaccine protection.

The test was developed in the laboratory of Dr. David Alland, director of the Rutgers New Jersey Medical School Public Health Research Institute and the school's Center for COVID-19 Response and Pandemic Preparedness. Padmapriya Banada was the project leader.

Dr. Alland and his team say their test is 100 percent sensitive and has correctly identified each variant in clinical trials they've done at Rutgers. Banada says it does this by identifying genetic mutations of the virus.

The test can find virus particles in a nasal swab or saliva, she said. The test looks at the RNA extracted from someone's saliva or nose.

The test uses special probes called “sloppy molecular beacons” that are particularly good at detecting mutations in organisms that mutate frequently, such as viruses.

“Our approach is unusually flexible in being able to detect unanticipated mutations,” Dr. Alland said. “We had recently improved an older version that could detect the delta variant, but when omicron appeared, we suspected it would be able to specifically identify this variant as well. We are happy to find that our testing shows that we were correct.”

Banada explained the Rutgers Genomics lab (Rutgers Institute of Genomic Medicine) is submitting the test for state Dept. of Health approval as a "laboratory developed test," or LDT. As per this document from the FDA, LDTs do not require FDA clearance or approval before use.

There are no photos available of the new test.
They say that if used widely in the general public, their test would be very helpful because it would help determine the correct type of antibody therapy and potentially help identify patients at high risk for severe COVID-19.

The Case Against Masks at School

By Margery Smelkinson, Leslie Bienen, and Jeanne Noble
Source: https://www.theatlantic.com/ideas/archive/2022/01/kids-masks-schools-weak-science/621133/

Jan 26 – About the authors: Margery Smelkinson is an infectious-disease scientist whose research has focused on influenza and SARS-CoV-2. Leslie Bienen is a veterinarian and faculty member at the OHSU-Portland State University School of Public Health. Jeanne Noble is an emergency medicine doctor at UCSF.
In the panicked spring of 2020, as health officials scrambled to keep communities safe, they recommended various restrictions and interventions, sometimes in the absence of rigorous science supporting them. That was understandable at the time. Now, however, two years into this pandemic, keeping unproven measures in place is no longer justifiable. Although no district is likely to roll back COVID policies in the middle of the Omicron surge, at the top of the list of policies we should rethink once the wave recedes is mandatory masks for kids at school.

The CDC guidance on school masking is far-reaching, recommending "universal indoor masking by all students (age 2 and older), staff, teachers, and visitors to K–12 schools, regardless of vaccination status." In contrast, many countries—the U.K., Sweden, Norway, Denmark, and others—have not taken the U.S.'s approach, and instead follow World Health Organization guidelines, which recommend against masking children ages 5 and younger, because this age group is at low risk of illness, because masks are not "in the overall interest of the child," and because many children are unable to wear masks properly. Even for children ages 6 to 11, the WHO does not routinely recommend masks, because of the "potential impact of wearing a mask on learning and psychosocial development." The WHO also explicitly counsels against masking children during physical activities, including running and jumping at the playground, so as not to compromise breathing.
But in America about half of the country's 53 million children remain compulsorily masked in school for the indefinite future. Sixteen U.S. states and the District of Columbia follow the CDC guidance closely and require masks for students of all ages, regardless of vaccination status; other states rely on a patchwork of policies, usually leaving decisions up to local school districts. (Nine states have banned school mask mandates, though in five of them, lawsuits have delayed implementation of the ban.) Many deep-blue areas such as Portland, Oregon; Los Angeles; and New York City have gone beyond CDC guidance and are masking students outdoors at recess, in part because of byzantine rules that require an unmasked "exposed" student to miss multiple days of school, even if the putative exposure is outside.
Many public-health experts maintain that masks worn correctly are essential to reducing the spread of COVID-19. However, there's reason to doubt that kids can pull off mask-wearing "correctly." We reviewed a variety of studies—some conducted by the CDC itself, some cited by the CDC as evidence of masking effectiveness in a school setting, and others touted by media to the same end—to try to find evidence that would justify the CDC's no-end-in-sight mask guidance for the very-low-risk pediatric population, particularly post-vaccination. We came up empty-handed.

To our knowledge, the CDC has performed three studies to determine whether masking children in school reduces COVID-19 transmission. The first is a study of elementary schools in Georgia, conducted before vaccines became available, which found that masking teachers was associated with a statistically significant decrease in COVID-19 transmission, but masking students was not—a finding that the CDC's masking guidelines do not account for.

A second and more recent study of Arizona schools in Maricopa and Pima Counties concluded that schools without mask mandates were more likely to have COVID-19 outbreaks than schools with mask mandates. Yet more than 90 percent of schools in the "no mask mandate" group were in Maricopa County, an area that has significantly lower vaccination rates than Pima County. This study had other serious shortcomings, including failure to quantify the size of outbreaks and failure to report testing protocols for the students.

The third CDC study found that U.S. counties without mask mandates saw larger increases in pediatric COVID-19 cases after schools opened, but again did not control for important differences in vaccination rates. The CDC has cited several other studies conducted in the previous school year to support its claim that masks are a key school-safety measure. However, none of these studies, including ones conducted in North Carolina, Utah, Wisconsin, and Missouri, isolated the impact of masks specifically, because all students were required to mask and no comparisons were made with schools that did not require masks.

Therefore, the overall takeaway from these studies—that schools with mask mandates have lower COVID-19 transmission rates than schools without mask mandates—is not justified by the data that have been gathered. In two of these studies, this conclusion is undercut by the fact that background vaccination rates, both of staff and of the surrounding community, were not controlled for or taken into consideration. At the time these studies were conducted, when breakthrough infections were much less common, this was a hugely important confounding variable undermining the CDC's conclusions that masks in schools provide a concrete benefit in controlling COVID-19 spread: Communities with higher vaccination rates had less COVID-19 transmission everywhere, including in schools, and those same communities were more likely to have mask mandates.

This isn't to say that these studies conclusively demonstrate that masks have no benefit in schools, but that any effect they have, if they have one, is tangled up in these other variables. To demonstrate any independent effect of masks on COVID-19 transmission would have required comparing communities with similar vaccination rates or statistically controlling for differences in vaccination rates, including by specific groups such as teachers and students. Without making these adjustments, it is impossible to attribute differences in case rates, let alone differences in in-school transmission, to mask wearing in school.

At least pre-Omicron, adjusting for vaccination rates in the surrounding community was vitally important when looking at case rates. Comparisons of counties in California that did and did not have mask mandates showed that vaccination rates were highly predictive of hospitalization rates, but mask mandates were not. Neighboring Los Angeles and Orange Counties, which had similar vaccination rates but differing masking requirements, had similar case and hospitalization rates. Likewise, our analyses of data from Maryland show a tight correlation between hospitalizations and immunity rates by county, despite some counties requiring masks in all indoor facilities, some requiring masks only in county buildings, and some not requiring masks at all.

To justify mask requirements in school at this point, health officials should be able to muster solid evidence from randomized trials of masking in children. To date, however, only two randomized trials have measured the impact of masks on COVID transmission. The first was conducted in Denmark in the spring of 2020 and found no significant effect of masks on reducing COVID-19 transmission. The second is a much-covered study conducted in Bangladesh that reported that surgical masks (but not cloth) were modestly effective at reducing rates of symptomatic infection. However, neither of these studies included children, let alone vaccinated children.

Other studies—not randomized trials—have looked at the effects of masks in schools, and their results do not support pervasive, endless masking at school. A study from Brown University, analyzing 2020–21 data from schools in New York, Massachusetts, and Florida, found no correlation between student cases and mask mandates, but did see decreased cases associated with teacher vaccination. A study published in *Science* looking at individual mitigation measures in schools last winter found that, although teacher masking reduced COVID-19 positivity, student masking did not have a significant effect.

Even though the first half of this school year was dominated by the highly transmissible Delta variant, the picture in more recent studies looks similar. In Tennessee, two neighboring counties with similar vaccination rates, Davidson and Williamson, have virtually overlapping case-rate trends in their school-age populations, despite one having a mask mandate and one having a mask opt-out rate of about 23 percent. One would expect a quarter of the students opting out of masking to affect transmission rates if masks played any significant role in controlling COVID-19 spread, but that was not the case.

Another recent analysis of data from Cass County, North Dakota, comparing school districts with and without mask mandates, concluded that mask-optional districts had *lower* prevalence of COVID-19 cases among students this fall. Analyses of COVID-19 cases in Alachua County, Florida, also suggest no differences in mask-required versus mask-optional

schools. Similarly, the U.K. recently reported finding no statistically significant difference in absences traced to COVID-19 between secondary schools with mask mandates and those without mandates.

Despite how widespread all-day masking of children in school is, the short-term and long-term consequences of this practice are not well understood, in part because no one has successfully collected large-scale systematic data and few researchers have tried. Mental and social-emotional outcomes are hard to observe and measure, and can take years to manifest. Initial data, however, are not reassuring. Recent prospective studies from Greece and Italy found evidence that masking is a barrier to speech recognition, hearing, and communication, and that masks impede children's ability to decode facial expressions, dampening children's perceived trustworthiness of faces. Research has also suggested that hearing-impaired children have difficulty discerning individual sounds; opaque masks, of course, prevent lip-reading. Some teachers, parents, and speech pathologists have reported that masks can make learning difficult for some of America's most vulnerable children, including those with cognitive delays, speech and hearing issues, and autism. Masks may also hinder language and speech development—especially important for students who do not speak English at home. Masks may impede emotion recognition, even in adults, but particularly in children. This fall, when children were asked, many said that prolonged mask wearing is uncomfortable and that they dislike it. This last reason is important in considering a pivot to requiring children to wear N95 or KN95 masks, which are thought to be more effective at preventing the spread of Omicron. A few school districts, in response to the growing awareness of the ineffectiveness of cloth and surgical masks, have decided to escalate rather than scale back masking by requiring these types of medical-grade masks, which are significantly less comfortable to wear and can hinder communication more than other types of masks. As with our existing school-mask policies, no real-world data indicate that these masks decrease transmission in school settings—data that matter greatly, as these masks require a very tight fit to function effectively, and that may not be possible for many kids. N95s are not approved or sized for children, proper fit is hard to achieve even with adults, and a June 2020 study shows they have very high failure rates when taken on and off or worn for multiple hours. Though KN95s, the manufactured-in-China equivalent, are available in kids' sizes, they also require a very tight seal to function properly, which is unrealistic for schoolchildren to maintain for multiple hours a day. Early-pandemic recommendations to mask at school, soon followed by mandates, were laid down in the absence of data. We should not repeat this mistake with a new generation of masks.

Over the past 21 months, slowly and with much resistance, the layers of mythology around COVID-19 mitigation in schools have been peeled away, each time without producing the much-ballyhooed increases in COVID-19. Schools did not become hot spots when they reopened, nor when they reduced physical distancing, nor when they eliminated deep-cleaning protocols. These layers were peeled away because the evidence supporting them was weak, and they all had substantial downsides for children's education and health. Masking is the last and most stubborn layer, possibly because its drawbacks are more subtle and not yet well documented. We understand that many public-health professionals and parents may want to keep that layer in place, perhaps because they think the possible drawbacks to masking are even less well quantified than the possible benefits. They may point to the low vaccination rate among children to argue against any loosening of mitigation measures, even if they cannot directly connect those measures to reduced transmission. They may also point to the Omicron surge increasing children's hospitalizations. But hospitalizations have risen among all age groups, and, even at the country's peak, remained extremely low among children, on par with pediatric flu hospitalizations during a typical season.

Imposing on millions of children an intervention that provides little discernible benefit, on the grounds that we have not yet gathered solid evidence of its negative effects, violates the most basic tenet of medicine: First, do no harm. The foundation of medical and public-health interventions should be that they work, not that we have insufficient evidence to say whether they are harmful. Continued mandatory masking of children in schools, especially now that most schoolchildren are eligible for vaccination, fails this test.

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Jeanne Noble is an emergency medicine doctor at UCSF.

Parents' COVID-19 Vaccine Protects Unvaccinated Children from Infection

Source: https://www.genengnews.com/virology/coronavirus/parents-covid-19-vaccine-protects-unvaccinated-children-from-infection/

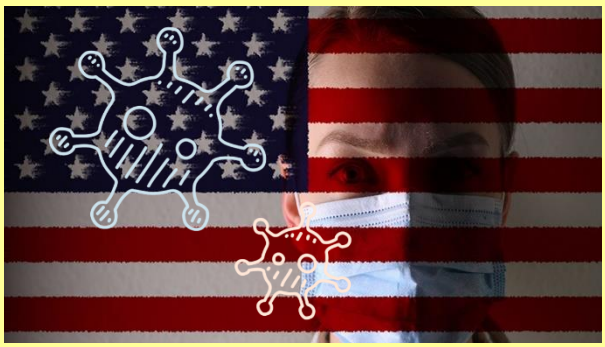
Jan 28 – It has been hard to determine, since COVID-19 vaccinations first rolled out, the extent that vaccines protect unvaccinated close contacts from infection. Now, an Israeli team has found that parental vaccination confers substantial protection for unvaccinated children in the same household. Through studying households without prior infection, consisting of

two parents and unvaccinated children, the team estimated the effect of parental vaccination on the risk of infection for unvaccinated children.
●▶ **The results are published in *Science* in the article,** "Indirect protection of children from SARS-CoV-2 infection through parental vaccination."

In Israel, the Pfizer-BioNTech mRNA COVID-19 vaccine authorization was extended in May 2021 to children and adolescents aged 12 years or older and in November 2021, it was extended to children aged 5 years or older.
Using integrated data repositories of Israel's largest healthcare organization, Samah Hayek, PhD, at the Clalit Research Institute in Israel, studied two periods separately—an early period (January 17, 2021–March 28, 2021) and a late period (July 11, 2021–September 30, 2021).
Regardless of household size, Hayek and colleagues found that parental vaccination substantially reduced the risk of children up to age 12 of becoming infected by reducing the probability of contacting an infectious individual and by a reduction in infectiousness of a vaccinated person who suffers a breakthrough infection.
More specifically, they found that "having a single vaccinated parent was associated with a 26.0% and 20.8% decreased risk, and having two vaccinated parents was associated with a 71.7% and 58.1% decreased risk, in the early and late periods, respectively."
"These results reinforce the importance of increasing vaccine uptake among the vaccine-eligible population to curb the spread of the SARS-CoV-2 pandemic and protect those who cannot be vaccinated," the authors said.
In a second study based in Israel, findings showed a similar result—that vaccination reduced both the rate of infection with SARS-CoV-2 and household transmission.
●▶ **This work is published in *Science* in the article,** "Vaccination with BNT162b2 reduces transmission of SARS-CoV-2 to household contacts in Israel."

Many studies have already estimated the impact of the vaccines on disease severity and susceptibility. However, estimates of the vaccines' impact on transmissibility are more limited.
Israel exclusively adopted the Pfizer-BioNTech mRNA vaccine. To examine this vaccine's effectiveness against transmission, Ottavia Prunas, PhD, a postdoctoral associate in the Weinberger lab at the Yale School of Public Health, and colleagues, used statistical approaches—a chain binomial model—to estimate the effectiveness of vaccination with the Pfizer-BioNTech vaccine against household transmission of SARS-CoV-2 in Israel before and after the Delta variant emerged.
The authors found that vaccinated, subsequently infected people were less infectious than unvaccinated persons. More specifically, the authors wrote that "vaccination reduced susceptibility to infection by 89.4%, whereas vaccine effectiveness against infectiousness given infection was 23.0% during days 10 to 90 after the second dose before June 1, 2021." Total vaccine effectiveness was 91.8%.
Moreover, less transmission occurred within households with vaccinated members than in those with unvaccinated individuals.
However, the ability of the vaccine to prevent transmission waned with time and the advent of the Delta variant. "It is highly unlikely that population-level transmission of SARS-CoV-2 can be eliminated through vaccination alone," the authors added.

Watchdog Group Says HHS Not Ready to Battle Future Health Crises



Source: https://consumer.healthday.com/public-health-2656499867.html

Jan 28 – The U.S. Department of Health and Human Services is falling down on the job when it comes to dealing with numerous public health crises, a nonpartisan government watchdog said Thursday.
This includes its communications to the public and healthcare providers, coordinating with federal and state agencies, and managing the medical supply chain, according to a new report from the Government Accountability Office (GAO).
As a result, leadership and coordination of public health emergencies is a "high risk" area for the government, the report noted. The health crises the GAO was referring to include the COVID pandemic, extreme weather disasters and potential bioterrorism attacks.
The report did not point to any specific individuals in current or past administrations as being responsible for the failure.

"Waiting to address the deficiencies we have identified in HHS's leadership and coordination of public health emergencies is not an option, as it is not possible to know precisely when the next threat will occur; only that it will come," the GAO said in its report.
The high-risk designation gives notice to Congress that it should more closely oversee the agency's operations.
Legislators have expressed some of the same concerns this week.
In releasing bipartisan legislation to overhaul the government's pandemic response, Sen. Richard Burr, R-N.C., said, "The American people have stopped listening to the CDC because of their confusing and conflicting guidance – justifiably so," the *Associated Press* reported.
Sen. Patty Murray, D-Wash., said, "the pain of this pandemic is unforgettable, and we have a responsibility to make sure its lessons are unforgettable, too."
The GAO specified five areas where it found "persistent deficiencies." These included establishing clear roles and responsibilities for federal, state and local agencies; collecting and analyzing data to inform decision-makers; providing clear and consistent communication to the public; establishing transparency and accountability; and understanding the strengths and weaknesses of other federal agencies it works with.
"If left unaddressed, these deficiencies will continue to hamper the nation's ability to be prepared for, and effectively respond to, future threats," the GAO said in its report.
"We're in a much stronger position than we were a year ago," HHS spokesperson Sarah Lovenheim told the *AP*. "We look forward to reading GAO's feedback on these important issues and sharing progress in this whole-of-government effort as we continue to work to ensure the American people are protected from future health-related emergencies."
The GAO report also called data collection and analysis a critical weakness, leaving decision-makers without all the information they needed during the pandemic.
The GAO noted that HHS has still not begun a nationwide "public health situational awareness" surveillance system, even though Congress required it in 2010. During the pandemic, this forced the federal government to rely on data collected in different ways by thousands of state health departments and labs, as well as multiple federal agencies.
The report also cited a pattern of "unclear and inconsistent communications" on confusing guidance from the U.S. Centers for Disease Control and Prevention, part of HHS.
One example the GAO cited of not setting clear roles and responsibilities was not addressing the 2020 recommendations for resolving supply chain issues, including COVID tests.
"Shortages of such supplies continue to plague the nation's pandemic response," the report noted.
Boosting the supply of at-home COVID tests has become a priority for the White House in recent weeks.

Most COVID-19 ICU Survivors Still Experience Symptoms a Year After Admission

Source: https://www.sciencealert.com/most-covid-19-icu-survivors-still-experience-symptoms-a-year-after-admission

Jan 28 – Efforts to bring the COVID-19 pandemic under control while still returning to some sort of normal life are delicately balanced – and new research suggests more attention needs to be paid to the long-term effects of the virus for those patients who required placement in intensive care units (ICUs).
An analysis of 246 patients admitted to intensive care in the Netherlands while having COVID-19, with an average age of 61, showed that nearly three-quarters (74.3 percent of them) were still experiencing physical problems 12 months after their hospital visit.
It's another reminder of the risk of long COVID – having significant symptoms caused by the coronavirus long after the initial disease has passed. According to earlier research, there are more than 200 symptoms associated with the condition, and it shows the importance of long-term monitoring of the effects of COVID-19.
"This study shows what an incredible impact an ICU admission has on the lives of former COVID-19 patients," says senior researcher Marieke Zegers, from the Radboud University Medical Center in the Netherlands.
"Even after one year, half of them are tired or experience lack of the energy to fully resume their work."

Most people reported physical problems, with 38.9 percent of people saying they still felt weaker a year after COVID. Mental health issues were mentioned by 26.2 percent of participants, while 16.2 percent mentioned cognition problems (such as issues with memory and attention spans).

The physical problems mentioned by the study participants included pain, muscle weakness, and a shortness of breath. As for mental problems, feelings of anxiety or post-traumatic stress were reported by around one in five.

As yet not much is known about the long-term effects of getting a serious case of COVID-19 – we're 'only' two years into the pandemic – but it seems clear that for a lot of people there are ongoing issues that match up with the same sort of short-term symptoms.
"Post-ICU symptoms can be divided within the physical, mental, and cognitive domain and are associated with increased one-year mortality, higher health care costs, and lower quality of life," write the researchers in their published paper.
Scientists do have an increasing amount of information to go off of when it comes to understanding COVID-19, including patient responses to acute respiratory distress syndrome (ARDS), which in severe cases affects people very much like COVID-19 does.
Long-term illness has knock-on effects beyond the primary patients as well, covering friends and family who might be caring for those who remain sick to some degree, as well as employers. **The study revealed that 57.8 percent of those surveyed who had a job before getting COVID-19 were still off sick or working reduced hours a year later.**
While the study has some limitations – it relies on volunteers reporting on their own condition and symptoms, rather than any clinical diagnosis – it does highlight reasons to be concerned when it comes to the way people can continue to suffer from COVID-19 long after their hospital stay is over.
"Insight into the long-term outcomes among patients with COVID-19 who received ICU treatment is important for providing adequate care and aftercare tailored to the clinical needs of these patients," write the researchers.

●▶ **The research has been published in** *JAMA*.

The Future and Past of War and Disease

By Michael Spirtas and Stephen Webber
Source: https://www.rand.org/blog/2022/01/the-future-and-past-of-war-and-disease.html

Jan 27 – Mobilizing for great power conflict is hard enough, but with a new variant of COVID-19 running rampant, the U.S. military would have its hands full if it had to fight tonight.
Fortunately, today the U.S. military is fairly well-postured to tackle a deployment during a pandemic, given its experience fighting COVID-19 over the past few years. Relatively few military personnel have been lost to the disease.
The U.S. government is actively reviewing its efforts to counter biological attacks and the Department of Defense is taking steps that could allow it to perform day-to-day operations during a pandemic, but it might not be preparing adequately for a future large-scale operation during a more-transmissible and lethal pandemic.
Imagine a war with China, with a deadlier virus decimating carrier crews and air bases in the Pacific. Would the United States and allied militaries slow operations to limit infection, at the risk of losing the war, or would they try to fight through the disease? DoD could do more to prepare for the next pandemic, which could occur within the next 60 years.
DoD could do more to prepare for the next pandemic, which could occur within the next 60 years.
War and disease have a long and wretched history. The Athenians battled plague in addition to Sparta. In the late Middle Ages, disease contributed to the fall of the Venetian Empire. Napoleon benefited from Venice's fall, but his own empire was brought low by disease. The Grande Armée that invaded Russia was hurt more by typhus than by the Russians (PDF).
Disease has also played a role in American military history. In 1777, George Washington inoculated the Continental Army against smallpox. More than 60% of casualties on both sides of the American Civil War were attributed to disease. In World War I, the 1918 influenza pandemic hampered efforts to mobilize the American Expeditionary Forces.
Fortunately, advances (PDF) in hygiene, antibiotics, and vaccination, along with the development of a world-class medical corps, has made disease something of an afterthought. But has success produced a blindspot in the U.S. defense community? DoD, created in the wake of World War II, has only existed in an era when the deadliest opponent of the U.S. armed forces has been human.
The department's structure and culture may not be helping it prepare for a future pandemic. Responsibilities are fragmented across different organizations, with entities such as the Office of the Secretary of Defense Policy, OSD Office of Research and Engineering, Northern Command, and the Defense Health Agency all playing different and potentially competing roles.
In addition, DoD personnel who create plans are not used to considering the impact of a pandemic, nor do DoD personnel who develop future forces build capabilities. Training, exercises, and wargames rarely take infectious diseases into account.
A deadlier pandemic could complicate combat operations and could even lead to defeat. Policymakers could be forced to choose between supporting civil authorities at home and the external fight. Another virus could be more lethal for younger adults, who comprise most of the fighting force.

Most of the conflicts the U.S. military contemplates involve deploying forces far from the United States, which means that U.S. forces will likely be more affected by a pandemic than an adversary. An outbreak aboard a carrier, similar to what occurred aboard the Theodore Roosevelt, could be much more deadly and could kill more forces than an adversary.

Any place forces congregate (PDF), from airfields to staging facilities to forward operating locations, could be disease vectors, and measures to slow the spread of disease could negatively impact operations. Much of the U.S. military's logistics network is dependent upon private industry and intertwined with civilian infrastructure, which may become unavailable during an outbreak. Mitigation measures such as social distancing, testing, and quarantines could slow deployment timelines.

For those who might seek comfort in the notion that a pandemic would hinder an adversary as much as it impacts U.S. forces, it would be good to remember that past pandemics have sometimes hurt one side of a conflict more than another.

The steps necessary to minimize the impact of future pandemics on military operations are not costly.

Fortunately, the steps necessary to minimize the impact of future pandemics on military operations are not costly. For example, folding pandemics into scenarios, requiring new branch plans, procuring additional personal protection equipment, increasing the department's medical corps, increasing the bio-surveillance capabilities of military labs, improving information sharing with civil partners, dispersing forces geographically, or sending additional forces to theater would not, in the grand scheme, entail large levels of investment or significant changes in current practices.

One exception to these relatively "low-cost" propositions might be placing a greater emphasis on developing unmanned platforms.

But there may not be much of an appetite in the department for devoting additional resources to new initiatives like pandemic preparedness. Defense Secretary Lloyd Austin has declared COVID-19 a priority for DoD, but it remains to be seen what form this priority will take or how long it will last. After the 1918 flu pandemic, some argued that the American defense community ignored the episode. Will a similar argument be made this time?

Michael Spirtas is a senior political scientist and an associate director of the International Security and Defense Policy Center at the nonprofit, nonpartisan RAND Corporation.
Stephen Webber is a defense analyst at RAND.

Assessment of a Smartphone-Based Loop-Mediated Isothermal Amplification Assay for Detection of SARS-CoV-2 and Influenza Viruses

By Douglas M. Heithoff, PhD; Lucien Barnes V, PhD; Scott P. Mahan, BS; et al

JAMA Netw Open. 2022;5(1):e2145669.
Source: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2788464?resultClick=3

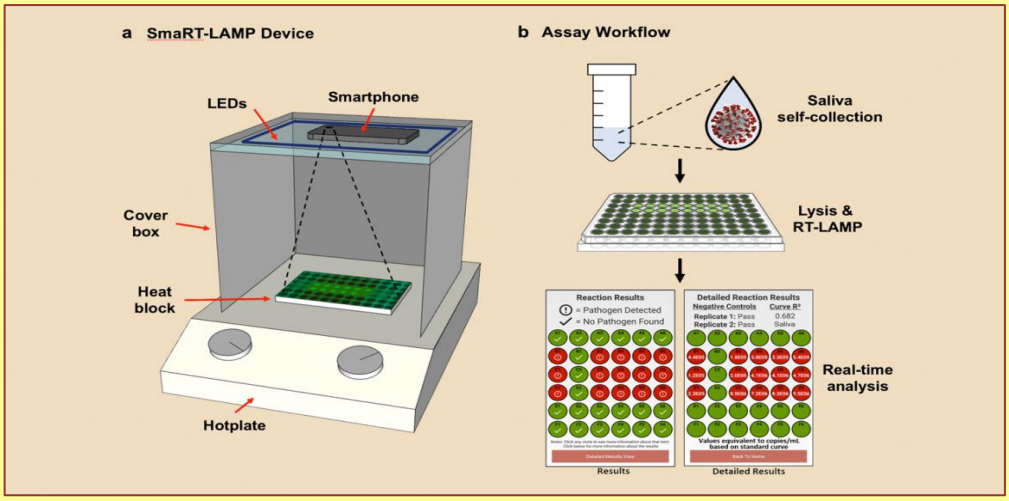
Abstract

Importance: A critical need exists in low-income and middle-income countries for low-cost, low-tech, yet highly reliable and scalable testing for SARS-CoV-2 virus that is robust against circulating variants.

Objective: To assess whether a smartphone-based assay is suitable for SARS-CoV-2 and influenza virus testing without requiring specialized equipment, accessory devices, or custom reagents.

Design, Setting, and Participants: This cohort study enrolled 2 subgroups of participants (symptomatic and asymptomatic) at Santa Barbara Cottage Hospital. The symptomatic group consisted of 20 recruited patients who tested positive for SARS-CoV-2 with symptoms; 30 asymptomatic patients were recruited from the same community, through negative admission screening tests for SARS-CoV-2. The smartphone-based real-time loop-mediated isothermal amplification (smaRT-LAMP) was first optimized for analysis of human saliva samples spiked with either SARS-CoV-2 or influenza A or B virus; these results then were compared with those obtained by side-by-side analysis of spiked samples using the Centers for Disease Control and Prevention (CDC) criterion-standard reverse transcriptase–quantitative polymerase chain reaction (RT-qPCR) assay. Next, both assays were used to test for SARS-CoV-2 and influenza viruses present

in blinded clinical saliva samples obtained from 50 hospitalized patients. Statistical analysis was performed from May to June 2021.
Exposures: Testing for SARS-CoV-2 and influenza A and B viruses.
Main Outcomes and Measures: SARS-CoV-2 and influenza infection status and quantitative viral load were determined.
Results: Among the 50 eligible participants with no prior SARS-CoV-2 infection included in the study, 29 were men. The mean age was 57 years (range, 21 to 93 years). SmaRT-LAMP exhibited 100% concordance (50 of 50 patient samples) with the CDC criterion-standard diagnostic for SARS-CoV-2 sensitivity (20 of 20 positive and 30 of 30 negative) and for quantitative detection of viral load. This platform also met the CDC criterion standard for detection of clinically similar influenza A and B viruses in spiked saliva samples (n = 20), and in saliva samples from hospitalized patients (50 of 50 negative). The smartphone-based LAMP assay was rapid (25 minutes), sensitive (1000 copies/mL), low-cost (<$7/test), and scalable (96 samples/phone).

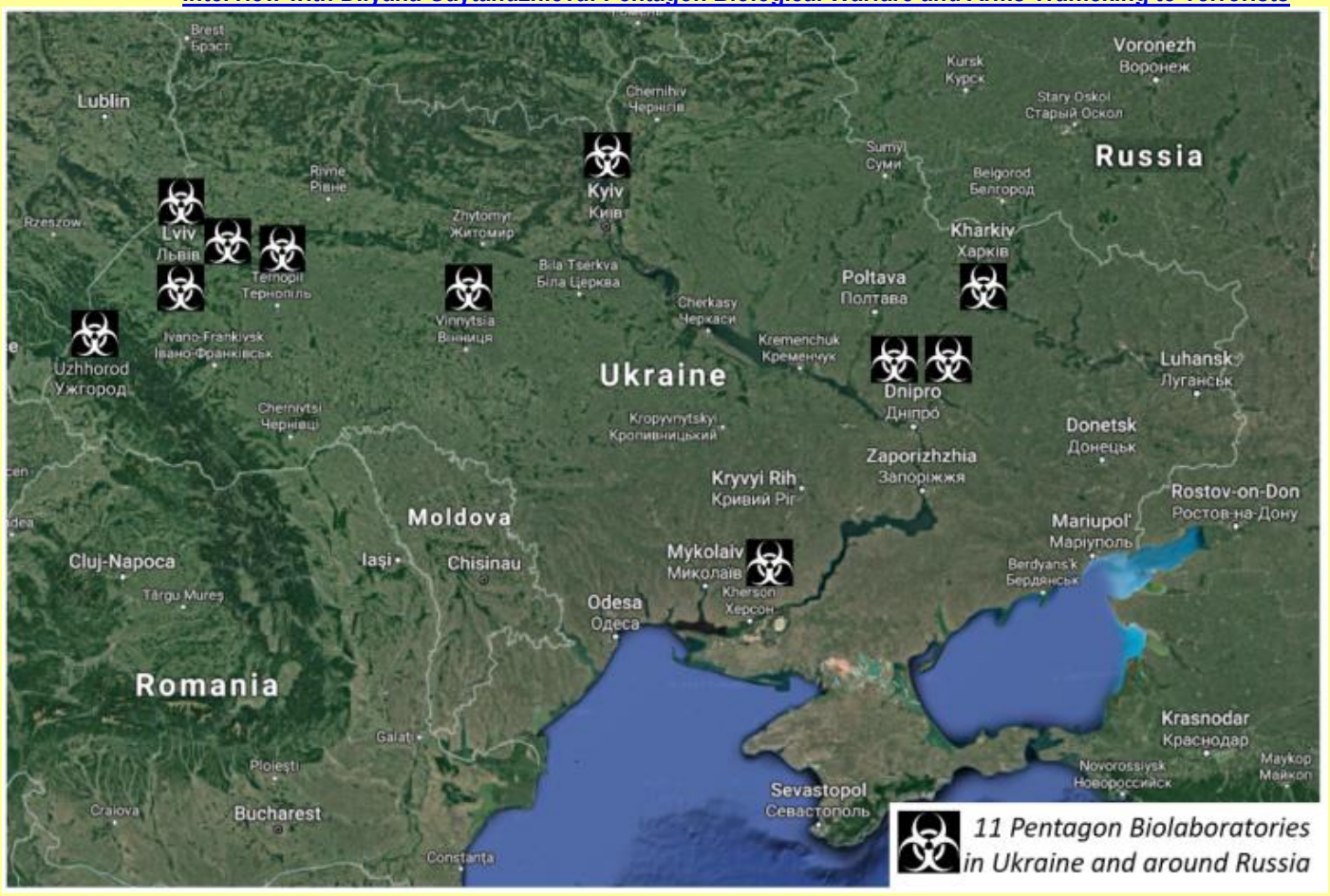


Conclusions and Relevance: In this cohort study of saliva samples from patients, the smartphone-based LAMP assay detected SARS-CoV-2 infection and exhibited concordance with RT-qPCR tests. These findings suggest that this tool could be adapted in response to novel CoV-2 variants and other pathogens with pandemic potential including influenza and may be useful in settings with limited resources.

Pentagon Biological Weapons Program Never Ended: US Bio-labs Around the World

By Dilyana Gaytandzhieva (independent journalist)
Source: https://www.sott.net/article/375723-Pentagon-Biological-Weapons-Program-Never-Ended-US-Bio-labs-Around-The-World

●▶ Read also : Documents expose US biological experiments on allied soldiers in Ukraine and Georgia
Interview with Dilyana Gaytandzhieva: Pentagon Biological Warfare and Arms Trafficking to Terrorists



Unit 731

Source: https://unit731.org/

Most of us heard about the horrible experiments on humans of the Nazis done by doctor Mengele. But the Nazis weren't alone in conducting cruel experiments on humans.
One of the lesser-known atrocities of the 20th century was committed by the Imperial Japanese Army's Unit 731. Some of the details of this unit's activities are still uncovered.
This webpage was set up to collect and organize the information known to date about Unit 731 and present it to anyone interested.
For 40 years, the horrific activities of "Unit 731" remained one the most closely guarded secrets of World War II. It was not until 1984 that Japan acknowledged what it had long denied – vile experiments on humans conducted by the unit in preparation for germ warfare.
Deliberately infected with plague, anthrax, cholera and other pathogens, an estimated 3,000 of enemy soldiers and civilians were used as guinea pigs. Some of the more horrific experiments included vivisection without anesthesia and pressure chambers to see how much a human could take before his eyes popped out.
Unit 731 was set up in 1938 in Japanese-occupied China with the aim of developing biological weapons.
It also operated a secret research and experimental school in Shinjuku, central Tokyo. Its head was Lieutenant Shiro Ishii.
The unit was supported by Japanese universities and medical schools which supplied doctors and research staff. The picture now emerging about its activities is horrifying.

Taiwan-born filmmaker Tun Fei Mou unleashed his depiction of Unit 731 in *Hēi tài yáng 731* (*Men Behind The Sun,* 1989). One of the most graphic and controversial films ever made, it's often misrepresented. Many label it an exploitation film, and dismiss it as a product that only exists to shock.

According to reports never officially admitted by the Japanese authorities, the unit used thousands of Chinese and other Asian civilians and wartime prisoners as human guinea pigs to breed and develop killer diseases.
Many of the prisoners, who were murdered in the name of research, were used in hideous vivisection and other medical experiments, including barbaric trials to determine the effect of frostbite on the human body.
To ease the conscience of those involved, the prisoners were referred to not as people or patients but as "Maruta", or wooden logs.
Before Japan's surrender, the site of the experiments was completely destroyed, so that no evidence is left.
Then, the remaining 400 prisoners were shot and employees of the unit had to swear secrecy. The mice kept in the laboratory were then released, which could have cost the lives of 30,000 people, since the mice were infected with the bubonic plague, and they spread the disease.
Few of those involved with Unit 731 have admitted their guilt.
Some caught in China at the end of the war were arrested and detained, but only a handful of them was prosecuted for war crimes.
In Japan, not one was brought to justice. In a secret deal, the post-war American administration gave them immunity for prosecution in return for details of their experiments.
Some of the worst criminals, including Hisato Yoshimura, who was in charge of the frostbite experiments, went on to occupy key medical and other posts in public and private sectors.

EDITOR'S COMMENT: In a letter to the US government, General McArthur, who has been appointed commander-in-chief of the region, wrote: " *we might be able to retrieve some additional information from Ishii and involved Japanese by reassuring them that all evidence will be preserved by secret services and will not be used as proofs of war crimes*". The US understands what a diabolical database they can access and does not think twice. In 1948 the agreement enters into force. An agreement sealed with blood. He left the murderers unpunished and returned them "clean" from all walks of life to society and the scientific community. Some were even awarded for their contribution and work. In Unit 731 and with what followed, it turned out that humanity just needs a decision to turn its back on its humanity.

Omicron can survive up to 8 days on plastic surfaces, a new study finds

Source: https://www.qatarday.com/News/omicron-can-survive-up-to-8-days-on-plastic-surfaces-new-study-finds/12535/0

Jan 30 – The Omicron COVID-19 variant can survive longer than earlier strains of the virus on plastic surfaces and human skin, new research by Japanese scientists has found.

The study by a team from the Kyoto Prefectural University of Medicine, which is not yet peer-reviewed, found that the variants survived much longer than the original strain following a series of laboratory tests.

They concluded that Omicron's high "environmental stability" - its ability to remain infectious - in particular might have helped it replace Delta as the dominant variant and spread more rapidly.

"Our study showed that on plastic and skin surfaces, Alpha, Beta, Delta, and Omicron variants exhibited more than two-fold longer survival times than those of the Wuhan strain and maintained infectivity for more than 16 h on the skin surfaces," the study's authors wrote.

On plastic surfaces, average survival times of the original strain and the Alpha, Beta, Gamma, and Delta variants were 56 hours, 191.3 hours, 156.6 hours, 59.3 hours, and 114 hours respectively.

That compared to 193.5 hours - the equivalent of eight days - for Omicron, the researchers reported on bioRxiv ahead of peer review.

On skin samples from cadavers, average virus survival times were 8.6 hours for the original version, 19.6 hours for Alpha, 19.1 hours for Beta, 11 hours for Gamma, 16.8 hours for Delta, and 21.1 hours for Omicron.

"This study showed that the Omicron variant also has the highest environmental stability among VOCs [variants of concern], which suggests that this high stability might also be one of the factors that have allowed the Omicron variant to replace the Delta variant and spread rapidly," the authors wrote.

Continuing to be a major concern around the world, Omicron is now present in all EU countries and has become the dominant variant in the majority of member states, according to the European Centre for Disease Prevention and Control (ECDC).

The countries where the highest percentage of new cases were attributed to Omicron through sequencing were Finland (99.9 per cent), Belgium (99.7 per cent), Malta (99.3 per cent) and Denmark (98.8 per cent).

Although the variants were generally more resistant to ethanol than the original strain of COVID-19, all of them were completely inactivated on skin after 15 seconds of exposure to alcohol-based hand sanitizers.

"Therefore," the researchers concluded, "it is highly recommended that current infection control (hand hygiene) practices use disinfectants... as proposed by the World Health Organization [WHO]".

Long Covid: Hidden lung damage spotted on scans

Source: https://www.qatarday.com/News/long-covid-hidden-lung-damage-spotted-on-scans/12531/0

Jan 30 – Some people with long Covid may have hidden damage to their lungs, a small pilot study in the UK suggests.

Scientists used a novel xenon gas scan method to pick up lung abnormalities not identified by routine scans.

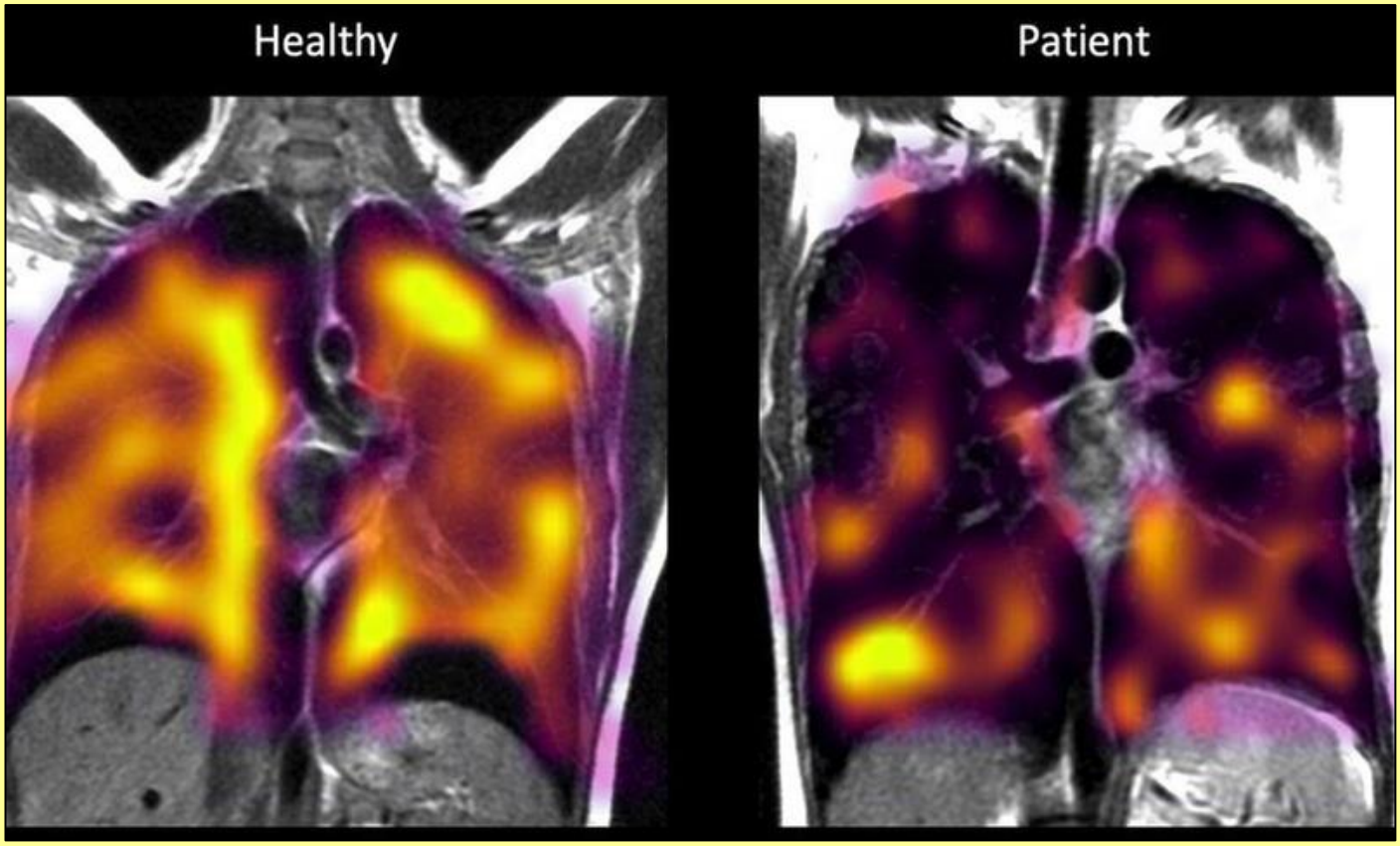
They focused on 11 people who had not required hospital care when they first caught Covid but experienced long-lasting breathlessness after their initial infection.

A larger, more detailed study is underway to confirm the results.

The work builds on an earlier study that looked at people who had been admitted to hospital with Covid.

Researchers say the findings shed some light on why breathlessness is so common in long Covid - though the reasons for feeling short of breath are often many and complex.

Long Covid refers to a host of symptoms that continue for many weeks after a coronavirus infection and cannot be explained by another cause.



The larger areas of darkness on patients' Xenon scans could represent lung abnormalities

'The oxygen journey'

The team, from Oxford, Sheffield, Cardiff and Manchester compared xenon gas scans and other lung-function tests in three groups of people.

This included people with long Covid and breathlessness who had not been admitted to hospital when infected, 12 people who had been admitted to hospital with Covid but did not have long Covid, and 13 healthy people as "controls".

Using the novel approach, developed by the University of Sheffield, all participants inhaled xenon gas during a magnetic resonance imaging (MRI) scan.

The gas behaves in a very similar way to oxygen but can be traced visually during scans, so scientists were able to "see" how well it moved from the lungs into the blood stream - a crucial step in transporting oxygen around the body.

Researchers found for the majority of people with long Covid, gas transfer was less effective than in healthy controls.

People who had been admitted to hospital for Covid had similar abnormalities.

Lead researcher and lung specialist Dr Emily Fraser said it was frustrating having people coming into clinic and not being able to explain to them exactly why it was that they were breathless. Often X-rays and CT scans show no abnormalities.

"This is important research and I really do hope this will shed more light on that."

But she added: "It is important people know that rehabilitation strategies and breathing retraining can be really helpful.

"When we see people in clinic who are breathless we can make progress."

The study's co-chief investigator, Prof Fergus Gleeson, said: "There are now important questions to answer, such as, how many patients with long Covid will have abnormal scans, the significance of the abnormality we've detected, the cause of the abnormality, and its longer-term consequences.

"Once we understand the mechanisms driving these symptoms, we will be better placed to develop more effective treatments."

The paper is a pre-print and has not yet been through the formal process of peer review.

Pandemic may affect infants' brain development; coronavirus can trigger kidney scarring

Source: https://www.qatarday.com/News/pandemic-may-affect-infants-brain-development-coronavirus-can-trigger-kidney-sca/12321/0

Jan 17 – The following is a summary of some recent studies on COVID-19. They include research that warrants further study to corroborate the findings and that has yet to be certified by peer review.

Pandemic may be affecting infants' brains

Coronavirus infection during pregnancy does not appear to affect infants' brain function, but the pandemic itself may be having an impact, a study published on Tuesday in JAMA Pediatrics suggests.

Researchers in New York City tracked 255 full-term infants born during the pandemic, including 114 whose mothers had COVID-19 during pregnancy. When the babies were six months old, the researchers saw "absolutely no effect of maternal infection with SARS-CoV-2" on neurodevelopment, said Dr. Dani Dumitriu of Columbia University and New York State Psychiatric Institute. But overall, compared with 62 infants born before the pandemic, the babies born during the health crisis had slightly lower scores on tasks involving large muscles, tasks requiring small muscle movements, and personal interactions. The findings do not necessarily mean these infants will suffer long-term consequences, Dumitriu said. Assessments at six months are poor predictors of long-term outcomes, she added.

If additional research confirms that birth during the pandemic negatively impacts neurodevelopment, she said, "because this is such an early time point there are lots of opportunities to intervene and get these babies onto the right developmental trajectory."

Coronavirus can trigger kidney scarring

The coronavirus can directly damage the kidneys by initiating a cascade of molecular events that leads to scarring, new laboratory research found. The resulting scar tissue could have long-term impacts on survivors' kidney function, according to a report published in Cell Stem Cell.

The researchers exposed tiny replicas of kidneys to the SARS-CoV-2 virus in test tubes. They found the virus could infect multiple types of kidney cells and trigger "a molecular switch" that starts the scarring process. The findings suggest that high rates of kidney

function decline seen in a separate study of more than 90,000 COVID-19 survivors might be due to scarring of the kidney by the virus, the researchers said.
Jitske Jansen of Radboud University Medical Center in The Netherlands said in a statement that her team had found another "piece of the puzzle showing the deleterious effects the virus can have in the body."

Lower COVID-19 risks seen after weight-loss surgery

Weight-loss surgery may reduce the risk of severe COVID-19 even if the infected person is still obese after losing weight, according to a report in JAMA Surgery.
Researchers studied 20,212 obese adults, including 5,053 who had undergone bariatric surgery before the pandemic and lost a substantial amount of weight. On average, the people in the surgery group, while still technically obese, weighed about 44 pounds (20 kg) less than study participants who had not undergone the surgery. Although the two groups had similar rates of SARS-CoV-2 infection at about 9%, infected patients with prior weight-loss surgery had a 49% lower risk of hospitalization, a 63% lower risk of need for supplemental oxygen, and a 60% lower risk of becoming critically ill or dying compared to the non-surgery group. Obesity is well known to be a risk factor for poor COVID-19 outcomes, but as the study was not a randomized trial it cannot prove weight-loss surgery caused the better outcomes. Still, the authors said, patients who underwent weight-loss surgery were likely healthier when they became infected.
The results "support the reversibility of the health consequences of obesity" for patients with COVID-19, coauthor Dr. Steven Nissen of the Cleveland Clinic said in a statement. "This study suggests that an emphasis on weight loss as a public health strategy can improve outcomes during the COVID-19 pandemic... That is a very important finding considering that 40% of Americans have obesity."

Used masks upcycled into batteries with the energy density of lithium-ion

As important as face masks are in our current pandemic-riddled world, they have a major environmental impact. Now scientists have demonstrated a novel method for disposing of old masks by using them to make low-cost, flexible, and efficient batteries. Read more

Novel Changes in Gene Expression and Cell Interactions Identified in COPD

Researchers discovered previously unidentified changes in gene expression and cellular interactions in three distinct cell populations commonly implicated in COPD: epithelial (in the lungs), endothelial (in blood vessels), and macrophage cells (part of the immune system). They also identified a subpopulation of epithelial cells in lungs with COPD that has abnormal expression of genes involved in metabolic, antioxidant and cellular stress responses, when compared to controls. + MORE

2-year-old saves family from house fire after COVID-19 prevented parents from smelling smoke

Source: https://www.thedenverchannel.com/news/national/coronavirus/2-year-old-saves-family-from-house-fire-after-covid-19-prevented-parents-from-smelling-smoke

Jan 31 – A Texas family says they are all safe today thanks to the quick thinking of their 2-year-old child, who alerted his parents to a house fire earlier this month.
With both of his parents without their sense of smell after a bout with COVID-19 and the home's smoke alarms not functioning correctly, there's little doubt that all seven members of the Dahl family are alive today because of 2-year-old Brandon.
"He saved our entire family," mother Kayla Dahl told WFAA-TV in Dallas. "I mean, he's our little mini hero."

According to WFAA, the fire occurred on Jan. 15. That evening, Brandon was dealing with an illness, so he slept in the family's living room so his mom could easily check on him throughout the night. That's where officials with the Decatur Fire Department say the blaze started.

At about 4:30 in the morning, Brandon came into his parents' room. "Mama, hot," he told his mom, according to The Washington Post. Kayla Dahl thought her son was talking about how many blankets he had while sleeping. Instead, she looked into the living room and saw a wall of flames.

Luckily, Kayla Dahl's husband Nathan is volunteer firefighter at the nearby Alvord Fire Department.

"We had a plan," Nathan Dahl told WFAA. "We've had a plan. This is how everything's going to go."

After being awoken by Brandon, the parents were able to round up their four other children and escape the home in under a minute. Had they waited any longer, they may not have survived.

"About maybe a minute after we got out of the house, our front door had flames coming out of it," Nathan Dahl told WFAA. "Everything was in flames."

According to Good Morning America, the family believes the fire was started by a gas heater in the living room. While the family lost nearly everything they owned in the blaze, WFAA reports that friends raised thousands of dollars for the family in an online campaign.

According to The Post, Brandon's birthday is coming up soon, and the family will celebrate with a "Baby Shark" cake.

"I don't think he quite understands the impact of what he did and the good thing that he is," Kayla Dahl said. "But he is relishing the abundance of attention. If we go to Walmart or the gas station and somebody recognizes us from the news, they'll pat him on the back and try to shake his hand [saying], 'You're a hero! I'm so happy to meet a hero!'"

EDITOR'S COMMENT: Perhaps it is a good idea to officially recommend the installation of a smoke detector in homes with Covid affected people having a fireplace.

What Would Happen if Rich Countries Gave Away Half Their COVID-19 Vaccines?

Source: https://www.sciencealert.com/model-shows-what-would-happen-if-rich-countries-gave-away-half-their-covid-19-vaccines

Feb 01 – New research gives a stark warning to richer nations that have been hoarding their supplies of COVID-19 vaccines: Doing so only has a short-term local benefit, and in the longer term leaves everyone more vulnerable to infection.

Across a five-year model, scientists found that when rich countries gave away 46 percent of their COVID-19 vaccine supply to low and middle-income countries (LMICs), it not only reduced the death rate in those countries but also reduced the risk of new virus strains appearing.

In addition, the sharing of vaccines also limited the number of waves of the pandemic, according to the modeling.

Right now, high-income countries (HICs) have access to most of the available vaccine supply, and are looking to prioritize getting their own populations vaccinated – but as the Delta and Omicron variants have shown, no-one is safe until everyone is safe.

"Our results show that vaccine inequity provides only limited and short-term benefits to HICs," the researchers write in their paper. "Sharper disparities in vaccine allocation between HICs and LMICs lead to earlier and larger outbreaks of new waves. Equitable vaccine allocation strategies, in contrast, substantially curb the spread of new strains."

The researchers looked at data including the global movement of people, vaccine efficacy, and viral evolutionary dynamics to see how different vaccine distribution patterns would work – including examining scenarios where vaccines were hoarded compared against when they were shared.

While HICs initially see a positive trend from hoarding – in terms of reducing the prevalence of COVID-19 infections and the cumulative mortality rate – the delay in vaccinations in other countries simply prolongs the pandemic.

As well as leading to more deaths in LMICs, this means more time for reinfection, a greater possibility of future waves, and more time for the SARS-CoV-2 virus to develop new strains and reinfect already vaccinated populations.
High-income countries can't protect themselves from those problems crossing their borders, even with a highly vaccinated population. In the end, not sharing vaccines ends up costing more in terms of fighting infections and keeping people healthy.
"Many researchers and public health experts have warned of the negative consequences of global vaccine inequity," the researchers explain. "Pandemics know no borders, and the public health and economic costs of inequitable vaccine allocation will be borne by all countries in the end."
If people need even more convincing, we've already seen from studies carried out with influenza spread that when vaccines are shared between countries, everybody involved benefits from reduced infection rates.
By the end of 2021, 31 different vaccines had been approved by at least one country worldwide, with some 9 billion doses administered (that's around 116 doses for every 100 people on the planet). It's been shown that a strong vaccine response to COVID-19 is possible – but it has to apply everywhere.
Inevitably there is some educated guesswork in modeling like this – it's hard to predict how quickly countries will get people vaccinated, or how stable the supply of drugs will be – but the figures are clear that recovering from the pandemic needs to be a global, cooperative effort from this point on.
"Vaccine donations by high income countries could protect both high income and low income countries," the researchers conclude. "It is in high income countries' rational self-interests to share vaccines with low income countries before vaccinating their entire population."

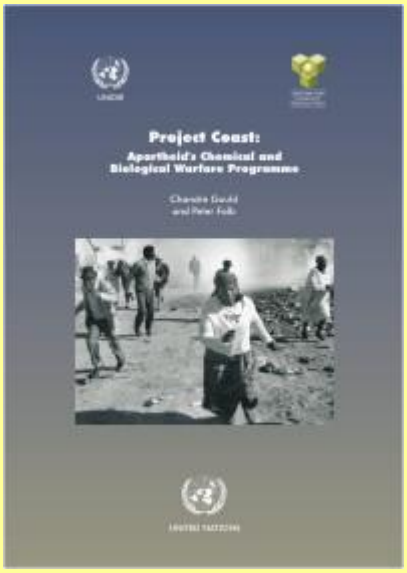
●▶ **The research has been published in** *Nature Human Behaviour*.

EDITOR'S COMMENT: Although this is a logical proposal in reality it is utopic. A better alternative is to remove patents from vaccines so they can be produced in more countries (an equally utopic proposal).

Project Coast: Apartheid's Chemical and Biological Warfare Programme

Source: https://unidir.org/publication/project-coast-apartheids-chemical-and-biological-warfare-programme

In the early 1990s, acknowledging publi cly and dismantling its nuclear weapons programme gave South Africa a moral lead in the prevention of nuclear weapons proliferation and in pursuit of global nuclear disarmament. Perhaps in much the same way, the r evelations over its covert chemical and biological weapons (CBW) programme and the transparency with which the government has dealt with them, have enabled South Africa to take a lead role in the negotiations for strengthening the 1972 Biological and Toxin Weapons Convention. Openness concerning its experience during the apartheid years lends real credibility to South Africa's ethical and practical stance on international disarmament.



South Africa's covert CBW programme, code-named Project Coast, began in 1981 and formally ended in 1995. Ostensibly motivated by the need to develop better crowd control agents and defensive CBW gear, in practice the programme focussed on the production of poisons intended for the assassination of state enemies within and outside the country and of unsuitable chemical substances. Conceived and operated beyond ordinary political, military and financial controls, Project Coast functioned on the basis of a myriad of front companies, illicit transactions, personal relationships and invisible power structures.
Drawing on the evidence presented at the criminal trial of Dr. Wouter Basson, managing officer of Project Coast, numerous interviews and other relevant documentation, Project Coast: Apartheid's Chemical and Biological Warfare Programme by Chandré Gould and Peter Folb offers a meticulous account of South Africa's clandestine CBW programme under apartheid. The book, which contains a preface by Archbishop Desmond Tutu, makes a major contribution to our knowledge of the South

African apartheid CBW programme and serves as a warning of the grave dangers posed by CBW in the absence of adequate supervision.

Project Coast

Source: https://en.wikipedia.org/wiki/Project_Coast

Project Coast was a 1980s top-secret chemical and biological weapons (CBW) program instituted by the apartheid-era government of South Africa. Project Coast was the successor to a limited post-war CBW program which mainly produced the lethal agents CX powder and mustard gas; as well as non-lethal tear gas for riot control purposes.[1] The program was headed by Wouter Basson, a cardiologist who was the personal physician of the then South African Prime Minister P. W. Botha.

History

From 1975 onwards, the South African Defence Force (SADF) found itself embroiled in conventional battles in Angola as a result of the South African Border War. The perception that its enemies had access to battlefield chemical and biological weapons led South Africa to begin expanding its own programme, initially as a defensive measure and to carry out research on vaccines. As the years went on, research was carried out into offensive uses of the newly found capability. Finally, in 1981, then-president P. W. Botha ordered the SADF to develop the technology so that it could be used effectively against South Africa's enemies. In response, the head of the SADF's South African Medical Service (SAMS) division, responsible for defensive CBW capabilities, hired Dr Wouter Basson, a cardiologist, to visit other countries and report back on their respective CBW capabilities. He returned with the recommendation that South Africa's program be expanded, and in 1983, Project Coast was formed, with Dr Basson at its head.

To hide the program, and to make the procurement of CBW-related substances, Project Coast lead to the formation of four front companies: Delta G Scientific Company, Roodeplaat Research Laboratories (RRL), Protechnik and Infladel.[2]

Progressively, Project Coast created a large variety of lethal offensive CBW toxins and biotoxins, in addition to the defensive measures. Initially, these were intended for use by the military in combat as a last resort. To this end Soviet techniques were being copied, and devices designed that looked like ordinary objects but had the capabilities to poison those targeted for assassination. Examples included umbrellas and walking sticks which fired pellets containing poison, syringes disguised as screwdrivers, and poisoned beer cans and envelopes. In the early 1990s, with the end of apartheid, South Africa's various weapons of mass destruction programs were stopped. Despite efforts to destroy equipment, stocks, and information from these programs, some still remain. This has led to fears that they may find their way into the hands of terrorist networks. In May 2002, Daan Goosen – the former head of South Africa's biological weapons program – contacted the US FBI and offered to exchange existing bacterial stocks from the program in return for US$5 million together with immigration permits for him plus 19 other associates and their family members. The offer was eventually refused, with the FBI claiming that the strains were obsolete and, therefore, no longer a threat.[3][4]

Unusual features

The South African chemical weapons program investigated all the standard CW agents such as irritant riot control agents, lethal nerve agents and anticholinergic deliriants, which have been researched by virtually all countries that have carried out CW research. The South African program differed in its aims from the CBW programmes of many countries in that a major focus of the program was to develop non-lethal agents to help suppress internal dissent.[5] This led to the investigation of unusual non-lethal agents, including illicit recreational drugs such as phencyclidine, MDMA, methaqualone and cocaine, as well as medicinal drugs such as diazepam, midazolam, ketamine, suxamethonium and tubocurarine, as potential incapacitating agents. According to the testimony given by Wouter Basson to the Truth and Reconciliation Commission,[6] analogues of these compounds were prepared and studied, and both methaqualone and MDMA (along with the deliriant BZ) were manufactured in large quantities and successfully weaponised into a fine dust or aerosol form that could be released over a crowd as a potential riot control agent. Basson was later found to have also been selling large quantities of MDMA and methaqualone as tablets on the black market, but the amount manufactured was far larger than what was sold and the court accepted that at least some genuine weaponisation and testing of these agents had been done. A black mamba and extracted venom were also part of the research, as were E. coli O157:H7 bacteria genetically modified to produce some of the toxins made by *Clostridium perfringens* bacteria.[7] A list of purchases at RRL and other documents include references to such things as the snake, biological agents such as anthrax, brucellosis, cholera and salmonella among others, and chemicals including aluminium phosphide, thallium acetate, sodium azide, sodium cyanide, mercury oxycyanide, cantharides, colchicine, powerful anticoagulants such as brodifacoum, phenylsilatranes,

strychnine, paraquat, "knockout drops", digoxin, acetylcholinesterase inhibitors such as aldicarb and paraoxon, and other poisons. Other plans referenced in the UN report included crowd control with pheromones, and discussion of the development of several novel compounds, including a locally produced variant of BZ, novel derivatives of CR gas including "...a compound which had a pyridine moiety in place of one of the benzene rings...[and] caused severe blisters on the skin", a new, more potent analogue of methaqualone, and a "dimethylketone-amphetamine" derivative of MDMA.[7] Another unusual project attempted to develop a method of sterilising crowds using a known male sterilant, pyridine[. This was to be sprayed onto the crowds from a gas cylinder pressurised with nitrogen gas, as pyridine is highly flammable. A subsequent industrial accident caused the death of a gas company employee when the experimental contaminated medical oxygen cylinder was returned to the gas supplier and filled with oxygen which exploded.[8]

Employment

Project Coast claimed its first victims at the end of 1982, when "Operation Duel" was launched, which aimed to eliminate hundreds of SWAPO prisoners and SADF informants. Col. Johan Theron, counterintelligence officer in the Special Forces, testified at the Basson trial that he received muscle relaxant pills from Basson in December 1982, and killed approximately 200 SWAPO prisoners, then dumped their bodies from aeroplanes out to sea. In November 1983, Basson was allegedly involved in the use of CBW against regime opponents in Dukuduku in KwaZulu-Natal. There, he instructed South African agents to tie their intended victims to trees and smear a gel-like ointment on their bodies. When that failed to kill them, they were allegedly injected with an anaesthetic drug and then a muscle relaxant. After they had died, their bodies were thrown into the sea. In 1985, four SWAPO detainees held at Reconnaissance Regiment headquarters were allegedly given a sleeping drug in soft drinks, taken to Lanseria airport outside Johannesburg and injected with three toxic substances supplied by Basson. Their bodies were thrown into the Atlantic Ocean.
Civil Cooperation Bureau operative Petrus Jacobus Botes (who claimed to have also directed bureau operations in Mozambique and Swaziland) asserted that he was ordered in May 1989, to contaminate the water supply at Dobra, a refugee camp located in Namibia, with cholera and yellow fever organisms. A South African Army doctor provided them to him. In late August 1989, he led an attempt to contaminate the water supply. The attempt failed because of the high chlorine content in the treated water at the camp.[9]

As a component of racial warfare

Research on birth control methods to reduce the black birth rate was one such area. Daan Goosen, the managing director of Roodeplaat Research Laboratories between 1983 and 1986, told Tom Mangold of the BBC that Project Coast supported a project to develop a contraceptive that would have been applied clandestinely to blacks. Goosen reported that the project had developed a 'vaccine' for males and females and that the researchers were still searching for a means by which it could be delivered to make black people sterile without making them aware. Testimony given at the Truth and Reconciliation Commission (TRC) suggested that Project Coast researchers were also looking into putting birth control substances in water supplies.

Moderna COVID-19 mRNA Vaccine Gains Full FDA Approval

The FDA is requiring Moderna to conduct post marketing studies to further assess the risks of myocarditis and pericarditis following vaccination with Spikevax. The agency acted after data from an ongoing Phase III trial showed increased risks, particularly within seven days following the second dose-and especially in males 18 through 24 years of age. The post marketing studies will include an evaluation of long-term outcomes among individuals who develop myocarditis following vaccination with Spikevax. **+ MORE**

A literature review and meta-analysis of the effects of lockdowns on Covid-19 mortality

SAE./No.200/January 2022

By Jonas Herby, Lars Jonung, and Steve H. Hanke

Source: https://sites.krieger.jhu.edu/iae/files/2022/01/A-Literature-Review-and-Meta-Analysis-of-the-Effects-of-Lockdowns-on-COVID-19-Mortality.pdf

This systematic review and meta-analysis are designed to determine whether there is empirical evidence to support the belief that “lockdowns” reduce COVID-19 mortality. Lockdowns are defined as the imposition of at least one compulsory, non-pharmaceutical intervention (NPI). NPIs are any government mandate that directly restrict peoples’

possibilities, such as policies that limit internal movement, close schools and businesses, and ban international travel. This study employed a systematic search and screening procedure in which 18,590 studies are identified that could potentially address the belief posed. After three levels of screening, 34 studies ultimately qualified. Of those 34 eligible studies, 24 qualified for inclusion in the meta-analysis. They were separated into three groups: lockdown stringency index studies, shelter-in-place-order (SIPO) studies, and specific NPI studies. An analysis of each of these three groups support the conclusion that lockdowns have had little to no effect on COVID-19 mortality. More specifically, stringency index studies find that lockdowns in Europe and the United States only reduced COVID-19 mortality by 0.2% on average. SIPOs were also ineffective, only reducing COVID-19 mortality by 2.9% on average. Specific NPI studies also find no broad-based evidence of noticeable effects on COVID-19 mortality. While this meta-analysis concludes that lockdowns have had little to no public health effects, they have imposed enormous economic and social costs where they have been adopted. In consequence, lockdown policies are ill-founded and should be rejected as a pandemic policy instrument.

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Steve H. Hanke is a Professor of Applied Economics and Founder & Co-Director of The Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise. He is a Senior Fellow and Director of the Troubled Currencies Project at the Cato Institute, a contributor at National Review, a well-known currency reformer, and a currency and commodity trader. Prof. Hanke served on President Reagan's Council of Economic Advisers, has been an adviser to five foreign heads of state and five foreign cabinet ministers, and held a cabinet-level rank in both Lithuania and Montenegro. He has been awarded seven honorary doctorate degrees and is an Honorary Professor at four foreign institutions. He was President of Toronto Trust Argentina in Buenos Aires in 1995, when it was the world's best-performing mutual fund. Currently, he serves as Chairman of the Supervisory Board of Advanced Metallurgical Group N.V. in Amsterdam. In 1998, he was named one of the twenty-five most influential people in the world by World Trade Magazine. In 2020, Prof. Hanke was named a Knight of the Order of the Flag.

Researchers are asking why some countries were better prepared for covid. One surprising answer: Trust.

By Adam Taylor
Source: https://www.washingtonpost.com/world/2022/02/01/trust-lancet-covid-study/

Feb 02 – Before 2020, Vietnam looked particularly vulnerable to a pandemic. The Southeast Asian country, a single-party state with nearly 100 million people, scored low on international assessments of universal health coverage and had relatively few hospital beds for its population, as well as a closed-off political system.
Instead, Vietnam emerged as an early pandemic success story. Long after the coronavirus began to spread in neighboring China, Vietnam maintained low levels of infections and fatalities even as wealthy countries with more robust health systems, including the United States and much of Europe, struggled.

A new study of pandemic preparedness across 177 countries and territories appears to have found a key element in Vietnam's success: trust.

Thomas Bollyky, one of the study's authors, said Vietnam should have failed in the fight against the coronavirus, according to traditional tenets of preparedness.
"What Vietnam does have, that seems to potentially explain what has happened, is that they have very high trust in government — among the highest in the world," said Bollyky, who is a senior fellow for global health at the Council on Foreign Relations, a think tank.
The peer-reviewed study was published Tuesday in the Lancet, a top medical journal, following 10 months of research by Bollyky, his colleague Erin Hulland, a scholar at the University of Washington, and a team of dozens.
The aim of the study was to answer a question that has been dubbed the "epidemiological mystery" of the pandemic: Why did the coronavirus hit some countries so much harder than others?

With countries already looking toward the next major outbreak, and treaties designed to ramp up preparedness for pandemics through new agreements and funding already under discussion, the question is increasingly urgent. But in review data from across the world, the study's authors found that traditional models for pandemic preparedness didn't fit what they were seeing.

"We found no links between covid outcomes and democracy, populism, government effectiveness, universal health care, pandemic preparedness metrics, economic inequality or trust in science," Bollyky said.

These factors were key for pre-coronavirus rankings such as the Global Health Security Index, which in 2019 listed the United States and Britain as most prepared for a catastrophic biological event, like a pandemic — and Vietnam 74th out of 117 countries.

Instead, better outcomes appear to have gone hand in hand with high levels of trust in government and other citizens. Perception of government corruption was correlated with worse outcomes. Researchers measured trust with polling data from the World Values Survey and Gallup. Rebecca Katz, director of the Center for Global Health Science and Security at Georgetown University Medical Center, and an expert who was not involved in the study, said the research was evidence for what many already argue.

"Trust in government and strength of community engagement is critical to public health response," Katz wrote in an email. "Experts from multiple disciplines have pointed to the importance of risk communication, community engagement and trust as critical to public health messages and policies being implemented. The findings in this paper emphasize just how important this is."

Joshua Sharfstein of the Johns Hopkins Bloomberg School of Public Health said the research showed that "the battle of human being against pathogen was mediated by governments."

"It's really a Chicken Little situation," Sharfstein added. "If people don't believe what the government is saying, then people will be less likely to take the precautions that they need to take."

The study's authors came to their conclusion by looking at standardized infection rates across countries. In reviewing factors outside of government control, such as the age of the population, researchers found clear signs that some governments had done better than others. The United States, for example, had the second-worst standardized infection rate of any high-income country. A calculation that showed a standardized ratio of infections to fatalities found the United States in the middle of the pack, which could suggest that the country's health-care system is relatively robust even if people were more likely to become infected.

The U.S. government struggled to persuade its population to take measures to combat the spread of the virus, whether it was social distancing or seeking medical intervention like vaccination. Multiple polls have shown that the United States has relatively low levels of trust in government compared with other high-income countries and high levels of political polarization.

"Trust in your government or your trust in others is strongly associated with vaccination rates," Bollyky said. "It is associated with decreased mobility, which is an indicator of social distancing policies."

The Lancet study estimated that if every country had the same level of trust in government as Denmark, one of the countries with more trust among high-income nations, 13 percent fewer people would have been infected with the coronavirus globally. "If the same were true for one's trust in others, the reduction would be even larger: 40 percent, or 440 million fewer infections over the 21-month period assessed in the study," Bollyky said.

The study has its limitations. Comparative international data can only go so far, Bollyky said, and the study focuses only on factors in place before the pandemic. In addition, later waves of infection have challenged some previous assumptions about how some countries have fared, with some high-trust countries that had evaded outbreaks, including New Zealand, seeing high case numbers. Vietnam, once a relative success story, struggled more with public trust as cases surged in the second half of the year.

Michael Bang Petersen, a professor at Aarhus University, said the study's findings fit into his understanding of how a high-trust country such as Denmark responded to the crisis, but his own research on falling levels of trust in countries amid the crisis left him with a tragic conclusion. The pandemic has "eroded trust in the government," Bang Petersen said. "It actually seems as if the pandemic has worsened the problem that this study identified."

Why Homicide Rates Spiked 30% During the Pandemic

By Dora Mekouar

Source: https://www.homelandsecuritynewswire.com/dr20220202-why-homicide-rates-spiked-30-during-the-pandemic

Feb 02 – The number of homicides in the United States spiked almost 30% during the first year of the COVID-19 pandemic, a phenomenon seen in both cities and rural areas, and in Republican and Democratic-leaning states.

The proliferation of guns, pandemic stress and diminished public trust in the police all contributed to the increase in homicides nationwide, according to Justin Nix, an associate professor of criminology and criminal justice at the University of Nebraska Omaha.

"We have evidence that gun carrying in public spaces was up. … We know that the pandemic, with all of its strains and the uncertainties that it produced, the economic anxiety produced, likely played a role," says Nix. "And then, lastly, the murder of George Floyd and the protests that happened after that sparked a police legitimacy crisis."
On May 25, 2020, George Floyd, a 46-year-old Black man, was murdered by a white police officer in Minnesota, igniting nationwide protests against police brutality.
Previous research shows that officers reduce their efforts and crime increases in the aftermath of police killings that draw significant public attention.
"Police do slow down partly out of fear of being the next officer to get dragged on social media or in the news," Nix says. "It's a fear among officers that, 'Even if I use force lawfully, even if I stopped this person, and it escalates into a use-of-force incident, even if my behaviors were perfectly legally reasonable, I still might find myself being the next star of a viral video.'"
Additionally, members of the public might be less likely to call police to report a crime, fearing their actions could do more harm than good. "[They think] 'If I call the police and they show up and they end up abusing this person or using excessive force on this person, I don't want to contribute to what I see as a problem, so it's safer for me to just not call 911,'" Nix says. "If people don't report being victimized or report seeing other people victimized by criminal activity, then a lot of that will go unnoticed by the police."
Clinical psychologist Dr. Maria Espinola, who has worked in jails and juvenile centers and is familiar with people who have violent tendencies, says certain people can grow more aggressive when they're under stress.
"People who witnessed violence at home or in their communities when they were growing up, and maybe have a genetic tendency to aggression, can develop violent behaviors as a way to cope with stressful situations," says Espinola, who is also an assistant professor in the Department of Psychiatry and Behavioral Neuroscience at the University of Cincinnati College of Medicine. "And then, when faced with a pandemic, you can see how many of them, in times of desperation, have turned to being aggressive towards others."
FBI background checks suggest that gun sales are way up since the pandemic began in early 2020.
The bureau conducted the most ever firearm background checks — 1,218,002 — during a single week in March 2021, the highest number since the federal government began tracking gun sales in 1998. In fact, the nine highest weeks ever for gun background checks all occurred in 2020 and 2021, during the pandemic. Solutions to gun violence aren't easy to come by in a nation polarized by the debate over whether to limit firearm sales. However, 19 states have passed Extreme Risk Protection Orders (ERPO), which allow police or family members to petition a court to temporarily remove firearms from a person in crisis who poses a risk of harm to themselves or others. As long as the ERPO is in place, the person is also banned from buying firearms. "I don't think anyone would argue that one of the most polarizing topics in this country is gun violence prevention policies," says Shannon Frattaroli, director of the Johns Hopkins Center for Injury Research and Policy. "We have seen almost half of states adopt this new kind of policy that allows for temporary prohibitions on purchasing and possession of guns, which is quite extraordinary, and demonstrates, in my mind, that there is a place where we can come together and agree on reasonable policies for gun violence prevention."
While there have been calls from some quarters to abolish or defund the police, the vast majority of Americans oppose getting rid of police departments. However, about half do support reducing police department budgets and shifting those funds to social programs.
"Policing is necessary in a country awash with guns, where violence is common," says Nix. "Policing is necessary and needs to be invested in. We need well-trained officers to have the tools and resources they need. We don't want fatigued, stretched-thin officers who are sleep-deprived out exercising the authority that they have. We need to invest in police officers, but we also need to invest in community organizations that respond to violence as well."

Dora Mekouar is a journalist at the Voice of America.

World-first study infecting volunteers with COVID delivers initial results

Source: https://newatlas.com/health-wellbeing/world-first-human-challenge-infecting-volunteers-covid-results/

Feb 02 – The first findings from a landmark study following healthy adults deliberately infected with SARS-CoV-2 have revealed new and unexpected insights into the earliest stages of COVID-19. The data indicates the virus's incubation period is shorter than expected and rapid antigen tests are incredibly effective at identifying people when they are most infectious.
In what are known as "**human challenge studies**," scientists have intentionally infected healthy adults with pathogens for well over a century. Although ethically controversial,

human challenge studies have informed medical innovations for a number of viral infections, including cholera, typhoid and influenza. Early in 2020, soon after the novel coronavirus SARS-CoV-2 emerged, some researchers began calling for human challenge studies to help accelerate insights into this new virus. Progress on SARS-CoV-2 challenge studies was slow as many were cautious to approve this kind of research. It wasn't until the beginning of 2021 that the first human challenge trial commenced, and now one year later we are finally seeing preliminary data from those initial studies. This first study covers **35 healthy volunteers aged between 18 and 29** with no history of previous SARS-CoV-2 infection. The trial utilized a sample of one of the first strains of SARS-CoV-2 taken from a patient early in the pandemic before more concerning variants emerged. Because this was the first SARS-CoV-2 human challenge trial, **an extremely low dose of the virus was tested**. A single drop of viral material was administered nasally to all volunteers. The amount of virus used in the study was 10 times lower than the amount recommended by an independent advisory panel. Despite the extraordinarily low dose administered, the researchers still saw 53 percent of the cohort developing a PCR-confirmed SARS-CoV-2 infection. **Of the 18 positive infections in the study, only two presented with no symptoms.** However, those two asymptomatic subjects consistently displayed significant viral levels in their upper airways similar to those symptomatic subjects. This suggests asymptomatic infections can be as infectious as symptomatic infections. Interestingly, the study found that the time from initial viral exposure to first symptoms was on average only 42 hours. This is significantly shorter than the three-to-five-day incubation period initially calculated for this original strain of SARS-CoV-2. The virus was first detected in the throats of volunteers before moving up to the nose at around the three-day point after exposure. Viral levels were seen to peak at higher volumes in the nose compared to the throat, leading the researchers to indicate shedding from the nose to be a greater threat to others than shedding from the throat. "With virus present at significantly higher titers in the nose than the throat, these data provide clear evidence that emphasizes the critical importance of wearing face coverings over the nose as well as mouth," the researchers write in the study.

Of the 16 symptomatic subjects in the study, a variety of expected symptoms were detected, including headache, sore throat, malaise and rhinitis. Seven subjects developed fever and around half the symptomatic cohort experienced complete loss of smell. Five symptomatic subjects experienced signs of long COVID, primarily a loss of smell that persisted for over six months. At a 12-month follow-up all symptoms had dissipated in all subjects. One of the most immediately valuable findings in the study was the correlation between positive rapid antigen test results and high viral loads. Chief investigator on the trial Christopher Chiu says these tests, known as lateral flow tests in the United Kingdom, are very effective at identifying when a person is most infectious with this virus.

"We found that overall, **lateral flow tests correlate very well with the presence of infectious virus**," said Chiu. "Even though in the first day or two they may be less sensitive, if you use them correctly and repeatedly, and act on them if they read positive, this will have a major impact on interrupting viral spread." Chiu pointed out that, although this study was conducted using the original strain of the virus, the findings still offer important insights into the nature of SARS-CoV-2 infections that will apply to more recently circulating variants. "While there are differences in transmissibility due to the emergence of variants, such as Delta and Omicron, fundamentally, this is the same disease and the same factors will be responsible for protection against it," said Chiu. "From the point of view of virus transmission related to the very high viral loads, we are likely if anything to be underestimating infectivity because we were using an older strain of the virus. With a newer strain, there might be differences in terms of size of response, but ultimately we expect our study to be fundamentally representative of this kind of infection."

Moving forward, perhaps the biggest outcome from this first-of-its-kind study is the demonstration of how challenge studies with SARS-CoV-2 can be safely conducted. Doug Jones, from the British Society of Immunology, says these kinds of challenge studies will be increasingly important for the development of COVID-19 therapeutics and vaccines in the future.

"This is the first step in developing human challenge studies on COVID-19," said Jones. "While the main aim of this study was to establish a safe and successful protocol to build on in the future, the significance of it should not be underestimated. In the longer-term, the hope is that these findings will now open up a new research avenue to develop a platform that will allow us to speed up the development of new vaccines, antivirals and diagnostics against COVID-19."

●▶ **The new study is yet to be peer-reviewed and published in a journal but it is available as a preprint on** Research Square.

COVID-19 and the gain of function debates

By Kelsey Lane, Warmbrod Michael, Montague Gigi and Kwik Gronvall

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The so-called "gain of function" research has been recently debated in the context of viral research on coronaviruses and whether it is too risky to undertake such experiments. However, the meaning of "gain of function" or "GOF" in a science policy context has changed

over time. The term was originally coined to describe two controversial research projects on H5N1 avian influenza virus and was later applied to specific experiments on coronavirus. Subsequent policies and discussions have attempted to define GOF in different ways, but no single definition has been widely accepted by the community. The fuzzy and imprecise nature of the term has led to misunderstandings and has hampered discussions on how to properly assess the benefit of such experiments and biosafety measures.

The fuzzy and imprecise nature of the term GOF has led to misunderstandings and has hampered discussions on how to properly assess the benefit of such experiments and biosafety measures.

The original "Gain of Function" research

During the early 2000s, H5N1 avian flu virus infected people with high rates of mortality—exceeding 60%; but fortunately, the virus had only limited person-to-person transmission (CDC, 2015). There were concerns though that it might evolve to transmit more efficiently among humans while retaining its high mortality. Two laboratories independently sought to determine genetic markers associated with mammalian transmission, which could be used for public health surveillance (Herfst *et al*, 2012; Imai *et al*, 2012). In so doing, they created non-naturally occurring viruses with higher transmissibility in mammals. When both research groups attempted to publish their findings, the US National Science Advisory Board for Biosecurity, an advisory committee to the Director of the NIH, requested that publication be halted while the security implications of publishing were examined. They were concerned that details of these experiments, including the specific genetic changes associated with transmissibility, would enable nefarious actors to create an influenza-based biological weapon. In early 2012, an international group of influenza researchers announced a 60-day pause on research with highly pathogenic avian H5N1 viruses that could lead to enhanced transmissibility in mammals. The 60-day pause eventually lasted more than 8 months, during which the topic of whether or how the research should be conducted and shared was hotly debated in forums assembled by the WHO, the US National Academies, and in the pages of newspapers and scientific journals. Eventually, both research teams could proceed with publication, and the unredacted articles—including the full sequence data—were published in *Science* and *Nature* in 2012.

Both sets of H5N1 experiments included introducing mutations to the influenza genome to observe resulting changes in phenotype related to transmissibility. The research team under Yoshihiro Kawaoka introduced random mutations within a 143–amino acid stretch of the globular head of the influenza hemagglutinin surface protein. Ferrets were infected with the mutated viruses and placed in adjacent cages with uninfected ferrets so that viral particles could travel between the cages. The team found that several mutants were able to transmit between ferrets (Imai *et al*, 2012). The team under Ron Fouchier introduced mutations previously identified to be important in host range determination and receptor binding and used adjacent cages to see if their influenza mutants would transmit between ferrets, similar to the Kawaoka team. When they found no evidence of transmission, they serially passaged the mutated viruses for ten passages to allow the mutated viruses to adapt to ferrets. Following passaging, adjacent cages were again used to test for transmission, which was successful, demonstrating that H5N1 could evolve to become transmissible between mammals (Herfst *et al*, 2012).

A couple years later, an unrelated series of biosafety and biosecurity incidents prompted another examination of GOF work. In 2014, researchers at the CDC had been accidentally exposed to anthrax, highly pathogenic influenza strains were accidentally sent by the CDC to clinical laboratories, the US Department of Defense accidentally shipped incompletely irradiated live anthrax spores to dozens of diagnostic laboratories, and an abandoned box in an NIH cold room was found to contain glass vials of smallpox samples, which should have been turned over to the WHO or destroyed decades earlier. These biosafety and biosecurity failures, though completely unrelated to influenza research, led the White House Office of Science and Technology Policy to issue a funding pause on GOF studies involving influenza, MERS, and SARS. It only applied to research with these three viruses that might result in enhanced pathogenicity and/or transmissibility in mammals via the respiratory route. This funding pause was in place until the Recommended Policy Guidance for Departmental Development of Review Mechanisms for Potential Pandemic Pathogen Care and Oversight (P3CO) policy was implemented in 2017 (Department of Health & Human Services, 2017). Currently, it applies only to research conducted at or funded by the US Department of Health and Human Services, which includes the NIH.

P3CO created a review mechanism for research with pathogens "with pandemic potential," which the policy defined as a pathogen with high transmissibility and virulence. The P3CO policy marked a shift away from the GOF language toward potential pandemic pathogen (PPP) wording to describe research of concern. In fact, PPP describes the true concern—the potential release of a pathogen that could cause widespread harm to public health—better than the more vague term GOF.

… PPP describes the true concern—the potential release of a pathogen that could cause widespread harm to public health—better than the more vague term GOF.

Benefits of GOF research

It is always challenging to appropriately measure direct benefits from basic research, including GOF research. Still, it has yielded tangible benefits. Research on highly pathogenic avian influenza has identified mutations that contribute to enhanced transmissibility in mammals and which are a warning signal when observed in environmental surveillance. In the case of H5N1 and the original GOF research, all the mutations created in the laboratory were already circulating in naturally occurring virus strains but were not encompassed in one strain. Medical countermeasure development has also benefited from GOF research, allowing researchers to determine the best targets for broad-acting therapeutics. A 2015 analysis of risk and benefits of GOF research noted that GOF experiments help researchers estimate the speed at which escape mutants to vaccines might be generated or resistance may evolve in response to selection pressures, even if the exact mutations are not directly relevant to human hosts (Casagrande *et al*, 2015). For coronavirus research, GOF-like experiments may also become necessary to develop broad-based vaccines and therapeutics.

Medical countermeasure development has also benefited from GOF research, allowing researchers to determine the best targets for broad-acting therapeutics

There is some additional imprecision for coronaviruses of the already imprecise GOF term: as SARS was already adapted to human ACE2 receptors—unlike the H5N1 avian influenza, which was not adapted to humans—Ralph Baric, a prominent CoV expert from the University of North Carolina stated that transmissibility studies for some coronaviruses would not be appropriately considered GOF (Potential Risks & Benefits of Gain-of-Function Research: Summary of a Workshop, 2015).

Definitions of GOF

Defining what is GOF remains challenging and people will often disagree on what does or does not count as GOF. One example of recent disagreement is a 2015 article that reported an experiment whereby the spike protein of a SARS-like virus circulating in bats was inserted into a SARS-CoV-1 backbone (Menachery *et al*, 2015). By inserting only the spike protein into the SARS-CoV-1 backbone, the researchers reduced other variables that could be contributing to pathogenesis to better understand the impacts of the spike protein itself. They found that the transgenic virus was able to replicate as well as SARS-CoV-1 and therapeutics against SARS-CoV-1 were not particularly effective against. During the COVID-19 pandemic, this article gained widespread attention with some arguing that this was GOF work because a transgenic virus was created, and others saying it was not because the bat virus backbone was not significantly different from the SARS-CoV-1 backbone.

Whatever the terminology, such experiments help scientists understand how close a novel pathogen is from mammalian transmission. For example, scientists can look for the lowest number of mutations needed for a naturally circulating pathogen in animals to be able to infect humans. One mutation away from spillover may incentivize a robust and well-funded intervention by public health authorities, such as implementing agricultural biosafety measures to prevent contact between different animal populations or between humans and animal populations, whereas 20 mutations may just put the pathogen on a watch list. Scientists may also explore how different environments affect evolution or the impacts of specific mutations in different environments, which can inform public health mitigation measures. For example, a mutation that has no impact on virulence in one population may cause increased virulence in another population based on host genetics or underlying comorbidities. Alternatively, certain mutations may make a pathogen more stable in one environment over another, which may inform the choice of disinfectants or hygiene measures.

Medical countermeasure development is one of the major benefits of GOF research. One of the most basic experiments is repeated passaging in animal models to create attenuated strains of the virus that are better adapted to the animal and less pathogenic for humans. This procedure has yielded many vaccines, including the yellow fever vaccine that is currently in use. This is similar to what Fouchier's team did with H5N1 in ferrets, following site-directed mutagenesis. Potential GOF research for MCM development can also identify therapeutics that are more resistant to escape mutants.

There is also a risk of *not* conducting GOF research because vital information may be otherwise missed. GOF research has helped build our understanding of CoVs before the pandemic and gave researchers an understanding of the basic patterns and rate of evolution and characterized spike proteins in different backbones; both have contributed to our ability to make effective vaccines quickly. Inserting mutations observed from public health genomic surveillance into other viral backbones can also help researchers test the efficacy of vaccines against emerging variants (Plante *et al*, 2021).

Opponents to GOF research believe that it poses an unjustified risk to public health. They are concerned that a modified virus could escape from a laboratory, spread person to person, and potentially spark a pandemic. They have also been concerned that some GOF research could be intentionally misused for nefarious purposes. Such experiments are usually classified as "dual-use research of concern" or DURC, which is "life sciences research that, based on current understanding, can be reasonably anticipated to provide knowledge, information, products, or technologies that could be directly misapplied to pose a significant threat with broad potential consequences to public health and safety, agricultural

crops, and other plant, animal, the environment, materiel, or national security." DURC involving regulated pathogens is already subject to considerable oversight. Although the extent of dual-use risks in non-regulated pathogens may never be fully accounted for, scientists should nonetheless clearly articulate the benefits before starting any research that could be considered GOF.

Challenges in defining GOF and governance

Initially, the primary concern with GOF research was about security: could someone steal a modified pathogen or use a publication to recreate a transmissible pathogen to deliberately cause an outbreak? Over time, the potential safety has taken precedence as the main concern of its opponents: could a modified pathogen accidently be released from a laboratory to cause an outbreak? Without a consensus definition of what GOF actually is, however, it has been challenging to define what is of concern and how to design appropriate oversight mechanisms. There are several US government documents and WHO documents about GOF or DURC, but the term remains vague. Oversight that is too broadly defined would impose regulatory burdens unnecessarily and potentially limit the ability of the research community to conduct vital research, whereas oversight that is too narrowly defined could potentially allow truly concerning research to proceed without oversight.

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In genetics, "gain of function" usually refers to a mutation that results in an enhanced phenotype compared with the wild-type allele. For example, a mutation that increases metabolism of a substrate by a factor of 2 would be considered a gain of function. From a technical standpoint, nearly all microbial evolution work could therefore be considered "gain of function" because any experiment that forces a microbial population to evolve could result in a pathogen with new or enhanced characteristics, which may increase a pathogen's fitness, virulence, or transmissibility.

Transmissibility and pathogenicity are complex traits, and they are not well-understood. A "gain of function" mutation does not necessarily cause an increase in virulence or pathogenesis. Additionally, one mutation may affect several different traits, some of which may increase fitness, whereas others decrease fitness. A mutation may enhance fitness in one environment but not in another: even if one trait is enhanced in a laboratory, that does not automatically mean the pathogen will be more successful in a human population. Vice versa, experiments that have nothing to do with virulence or transmissibility may inadvertently create a strain with higher virulence or transmissibility, and unless these traits are endpoint measures, the researchers will not know they have created enhanced pathogens.

Evolution, especially in pathogens, is complex and not linear. This makes it difficult to determine whether specific research activities do create unjustified risks and make it difficult to predict the outcomes of artificial selection pressure on a microbial population. Researchers would not know the exact outcome until after the experiment. If the experiment is repeated, the exact same results are not guaranteed as different mutations may arise even in the same environment. This is especially true for viral populations that exist as quasi species, that is, a large population of closely related but genetically diverse variants on which selection acts on the population as a whole, rather than a single variant. One variant in the population may have mutations that confer enhanced transmissibility or pathogenicity, but that variant is only one part of the whole. If the entire population is not fit enough to survive in a given environment, even the most transmissible of variants will not survive. Additionally, any manipulation of a pathogen, even if just passaged once, introduces selection pressures, which may change the population. Does this mean that any work with an infectious pathogen should be considered GOF? Or should GOF only refer to deliberate, directed genetic engineering? The former is too broad: even diagnostic laboratories would be considered to be conducting GOF experiments through their normal activities. The latter is too narrow: Kawaoka's H5N1 experiments would not count as GOF because his team used random mutagenesis.

Accurately defining the problem and outlining areas of research that are of concern are critical for effective and sustainable governance. A list-based approach creates a risk that low-risk work is inappropriately included. For example, the US Federal Select Agent Program provides oversight for all research with any microbial agents or toxins included on the Select Agents and Toxins List (https://www.selectagents.gov/sat/list.htm). All research with these agents, regardless of the risk level, is automatically governed by the select agent rules. This is in fact helpful as it gives oversight for all research with pathogens that pose exceptionally high risk to public health. However, list-based approaches also inherently mean that some things that may be just as risky are excluded. For instance, experiments to expand the host range of a pathogen not listed would not be covered under this governance framework. List approaches can also become outdated as technology advances.

Accurately defining the problem and outlining areas of research that are of concern is critical for effective and sustainable governance.

What functions are most concerning?

Clearly, the term "gain of function" is overly broad and applies to most microbiological research. Even something as simple as growing cells in a dish is a "passage" and provides an opportunity for mutate under the selective conditions which in turn could cause a gain of some function. However, the four functions that cause the most concern are in the context of pathogens: gain of host range, transmissibility, pathogenicity, and escaping medical countermeasures.

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Once one step away from GOF, certain commonalities and trends become apparent. Notably, most represent functions or biological traits of a pathogen on the scale of the whole pathogen infecting its host. Pathology is, for example, a complex interplay between the infection process and the host immune responses often across many different organs and tissue types. Transmission includes all of that and the complexity of social interactions at the community level. The host range adds the dynamics of inter-species contacts between various hosts. The evasion of medical countermeasures is the only class of research that might be structured in such a way that specific drug targets or specific tissue types are studied without the context of the whole host or pathogen. This is important as such carefully structured studies would make any prospect of laboratory escape much harder, especially if the pathogen does not need to be in a complete form for the research. For example, the spike protein of SARS-CoV-2 in a mammalian expression vector or as part of a pseudovirus assay is not a biosafety risk.

Even if the experiments themselves are as safe as possible, there is another danger from GOF experiments: "information hazards." Some experiments could potentially represent a danger from the publication or mere knowledge of the research itself. Nick Bostrom, a philosopher at Oxford University, has published a typography of information hazards, a full discussion of which is beyond the scope of this article (Bostrom, 2011). Oversight to mitigate information hazards should be considered and implemented separately from the regulation of laboratories.

Balancing risk and benefits

With nearly any definition of GOF, there will be measures that can be implemented to mitigate risk, including biosafety measures to reduce the risk of accidental release. Following the H5N1 experiments, several agencies updated guidance documents to recommend that research with H5N1 should be conducted in BSL3 or BSL3+ laboratories to minimize the biosafety risks and/or recommend that laboratory staff should be vaccinated against H5N1 (Russell *et al*, 2018). There are methodological measures to lower the risk, such as using pseudoviruses—a viral particle that is unable to fully replicate on its own. However, such methodological changes may not be possible in all cases or for all research questions.

It is important that diverse stakeholders are included in the risk and benefit assessments. Scientists, medical providers, ethicists, policy makers, and the public all have a say about this research. Technical expertise, however, is critical to both understanding of the potential risks and methods to reduce them; it is the abstraction of these risks into plain language that introduced the unworkable, vague, and easily misconstrued "gain of function" language into the policy lexicon.

The people who do the research should be aware of the safety and security risks associated with gains of transmissibility, pathogenicity, and evasion of medical countermeasures, and how this relates to biocontainment should be part of the review of this research. Most life scientists do not receive training in biosecurity and would therefore benefit from better knowledge of ethics, safety, and security.

Regarding biosafety, there is an ISO standard for risk management and multiple international and national efforts for enhancing biosafety. However, there is a lack of funding to study applied biosafety and identify practices that are most effective or to explore novel solutions. More funding for this field and pushing for biosafety to become its own field of research would be helpful for risk mitigation across the life sciences. In the past, the BWC has provided a forum for stakeholders to discuss and strengthen biosafety internationally. Biosafety training has been a priority in several countries, in part to address the requirements for information sharing required by the BWC. Research institutions, funders, publishers, policy makers, clinical laboratories, educational institutions, private companies, and governmental agencies all have a stake in these discussions, and each can implement their own measures to mitigate risks even if none of these groups could address the problem in its entirety.

Registered reports

Another partial solution to the oversight of potentially dangerous biological research might be the Registered Report. Introduced by Christopher Chambers in 2013, the Registered Report is a publishing model for empirical sciences in which a study is peer-reviewed for concept and methodology and accepted or rejected for publication *before* the experiments are performed or the results known (Chambers, 2013). The psychological sciences first

adopted this publication model as a response and partial remedy to the "reproducibility crisis," but it has also become popular in the life sciences. Clinical trials have been using a similar model to ensure sound methodology and appropriate consideration of ethics before a trial in humans (preprint: Chambers & Tzavella, 2020). This publishing model is intended to remedy issues of publication bias, hindsight bias, and selective reporting bias as negative results get published as often as positive ones. Registered Reports also prevent studies from being designed and carried out with inadequate statistical power or other flawed methodologies as peer review identifies such issues prior to acceptance.

In this way, Registered Reports are a *de facto* scientific self-oversight mechanism, one that might be used for biosafety self-oversight just as effectively as for statistical and scientific rigor. Unlike classical publishing models, which review results and experiments only after the fact, a Registered Reports provides peer review of the study design before it is performed and thus in time to recommend and implement additional safety steps. Unlike institutional review boards, which are a common biosafety review step that also happens before potentially dangerous research is conducted, Registered Reports intentionally selects academic peers in the same or closely related disciplines and from outside the institution conducting the research, which allows input from other experts and removes the potential for institutional conflicts of interest. This could supplement, rather than replace, IRBs, and one could envision that an IRB would require a Registered Reports publication mode for potentially dangerous research. Just as Registered Reports in the psychological sciences removes result-dependent biases on reporting, it would improve reporting of biosafety practices and failures.

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As the COVID-19 pandemic continues, the debate over GOF research is likely to continue. However, the debate should shift from where it has been to a more productive, pragmatic, and technical discussion of actual risks and means to mitigate them. Identifying what is actually of concern should be the first step, followed by a focus on policies and interventions. There are options for reducing risk—improved biosafety measures, alternative technical methodologies, and registered reports, as well as other potential solutions—but without a common understanding of the problems and good-faith efforts to address them, political debates will continue to provide heat and not light.

Key articles on origins of Covid-19, gain-of-function research and biolabs

By Gary Ruskin

Source: https://usrtk.org/biohazards/origin-of-sars-cov-2-gain-of-function-readings/

Jan 23 – Here is a reading list about what is known and not known about the origins of SARS-CoV-2, accidents and leaks at biosafety and biowarfare laboratories, and the health risks of gain-of-function (GOF) research, which aims to increase the host range, transmissibility, infectivity or pathogenicity of potential pandemic pathogens. For more information about the U.S. Right to Know investigation into these topics, see our biohazards page. Please sign up for our newsletter for updates.

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Prototype COVID breathalyzer promises new way to test for coronavirus

Source: https://newatlas.com/health-wellbeing/prototype-covid-breathalyzer-singapore-accuracy-study/

Feb 03 – Researchers in Singapore have developed a prototype breathalyzer that is claimed to be as effective as PCR testing in identifying people with COVID-19. The system is over 95 percent accurate at detecting both symptomatic and asymptomatic SARS-CoV-2 infections, delivering results in less than five minutes.

PCR (polymerase chain reaction) technology is the most accurate way to test for SARS-CoV-2 but it involves expensive and complicated lab equipment, which often mean it can take hours, or even days, to get a test result back. Rapid antigen testing, on the other hand, is a much faster way to test for the presence of the virus but it has accuracy limitations, often delivering inconsistent results.

Attempting to address the need for a fast, easy and accurate COVID-19 test, researchers in Singapore have reported on the success of a **breathalyzer prototype designed to deliver results in less than five minutes.**

It comes after a number of researchers have presented compelling blueprints for breath-based COVID-19 diagnostics over the last two years.

These COVID breathalyzers don't specifically detect the virus, but instead are designed to identify patterns of volatile organic compounds (VOCs) that correspond with a SARS-CoV-2 infection. Particular patterns of molecules such as aldehydes and ketones have been linked with COVID-19 and this makes it feasible for exhaled breath to serve as an effective way to quickly screen lots of people.

The challenge in developing an effective COVID-19 breathalyzer has been making the technology portable enough so the test is viable in real-world contexts. Many hypothetical COVID breath tests require bulky lab equipment such as gas chromatographs, meaning the test could never be widely deployed.

The new device uses a technology called Raman spectroscopy, which allows for the identification of certain patterns of molecules with great accuracy. And most importantly, there are relatively affordable portable Raman spectrometers that could allow for large-scale breathalyzer screening in real-world environments.

The specific breathalyzer device contains a trio of surface-enhanced Raman scattering (SERS) sensors attached to silver nanocubes. Only 10 seconds of breath is needed for the

sensors to collect a sample. The breathalyzer is then loaded into a small portable spectrometer that delivers results in under five minutes.

The prototype device was recently tested on 501 people who were all also tested by PCR. The impressive results showed a 0.1 percent false positive rate and a 3.8 percent false negative rate. This is equal to the accuracy seen in lab PCR testing.

More work is needed to validate these results and commercialize the technology, however, the novel breathalyzer is one of many new technological innovations emerging to make COVID-19 testing easy and portable, from a smartphone testing kit to a clip-on exposure monitor.

●▶ **The new study was published in the journal** *ACS Nano*.

South African scientists will study link between COVID variants and untreated HIV

Source: https://www.qatarday.com/News/south-african-scientists-will-study-link-between-covid-variants-and-untreated-hi/12633/0

Feb 02 – Leading South African scientists are set to investigate COVID-19 and HIV in tandem, amid mounting evidence that the collision of the two pandemics could be generating new coronavirus variants.

The team at the Network for Genomic Surveillance in South Africa (NGS-SA), which first alerted the world to the COVID variant Omicron, said it was time for a "systematic" investigation of what happens when patients with untreated HIV get COVID-19.

A number of studies, including one published by the team last week, have found that people with weakened immune systems – such as patients with untreated HIV – can suffer from persistent coronavirus infections, often for months.

The virus remains in their systems and accumulates mutations, some of which may give it an advantage. Some researchers believe this could be how Omicron and some of the other COVID variants developed, although other scientists believe it may have arisen in animals before spilling back over into humans.

Tongai Maponga, lead author of the recent paper and a researcher at Stellenbosch University, said he and colleagues at the NGS-SA were discussing more in-depth study to support the hypothesis.

"The few cases that have so far been seen and described are happening just because of random surveillance," he told Reuters.

"But I think soon we will be doing something more systematic to look specially at these severely immunocompromised HIV patients, to see what is going on." He said the work would focus on two elements: on the patients and how their systems deal with COVID-19 infection, and on proving whether new variants are likely to be emerging in this way. "If that is the case we need to up our game with how we diagnose these people, and ensure that they are getting prompt diagnosis and treatment," he added. Saoirse Fitzpatrick, advocacy manager at StopAids, said the pandemic had "severely" impacted HIV testing globally but that it was critical to address both public health challenges. "A COVID response that leaves out the HIV response is not a sufficient public health approach," she said. It was unclear how many patients were involved at this stage. South Africa has the world's biggest HIV epidemic, with 8.2 million people infected. Only around 71% of adults, and 45% of children, are being treated. Maponga added: "We must reiterate that we do not want to cause unnecessary stigma around HIV – this is the risk we take by raising these questions, but I think we need to be considering them."

●▶ **Read also:** **A New, 'Highly Virulent' HIV Variant Was Just Discovered in Europe**

Vidprevtyn COVID-19 Vaccine

January 06, 2022

Source: https://www.precisionvaccinations.com/vaccines/vidprevtyn-covid-19-vaccine

Vidprevtyn COVID-19 Vaccine (Sanofi and GSK) Description

The Sanofi - GSK Vidprevtyn (VAT00002, VAT00008) protein-based vaccine candidate combines innovative technologies to produce an adjuvanted recombinant protein-based

COVID-19 vaccine. Combining a protein-based antigen and an adjuvant is well-established and used in several vaccines.
Sanofi Pasteur is contributing its S-protein COVID-19 antigen based on recombinant DNA technology. This technology has produced an exact genetic match to proteins found on the surface of the SARS-CoV-2 coronavirus. In addition, the DNA sequence encoding this antigen has been combined into the baculovirus expression platform's DNA, based on Sanofi's licensed recombinant influenza Flublok product in the USA.
GSK has contributed to its proven adjuvant technology. An adjuvant is added to some vaccines to enhance the immune response and has been shown to create a more robust and longer-lasting immunity against infections than the vaccine alone.
On July 31, 2020, the U.S. government stated it would provide up to $2.1 billion for development, including clinical trials and manufacturing scale-up and delivery of an initial 100 million doses. The vaccines intended for the USA will be produced in Sanofi's Swiftwater, Pennsylvania facility. In addition, the U.S. government has a further option to discuss purchasing up to 500 million doses long-term.
On October 28, 2020, Sanofi and GSK announced they initiated a Phase 1/2 study on September 3rd with 440 subjects enrolled and anticipated first results in early December 2020 to support forming a pivotal Phase 3 study before the end of 2020. If these data are sufficient for licensure application, it is planned to request regulatory approval from the first half of 2021.
Sanofi and GSK announced that on December 11, 2020, a Phase 1/2 study showed an immune response comparable to patients who had recovered from COVID-19 in adults aged 18 to 49 years but a lower immune response in older adults, likely due to an insufficient concentration of the antigen.
On February 22, 2021, Sanofi and GSK announced the initiation of a new Phase 2 study with 720 volunteers aged 18 and over to select the most appropriate antigen dosage for Phase 3 evaluation of their adjuvanted recombinant protein COVID-19 vaccine candidate.
On May 17, 2021, the companies confirmed 'The Phase 2 interim results showed 95% to 100% seroconversion following a second injection in all age groups (18 to 95 years old) and across all doses, with acceptable tolerability and with no safety concerns. Overall, the vaccine candidate elicited strong neutralizing antibody levels comparable to those generated by natural infection, with higher levels observed in younger adults (18 to 59 years old). In addition, after a single injection, high neutralizing antibody levels were generated in participants with evidence of prior SARS-CoV-2 infection, suggesting strong potential for development as a booster vaccine.'
The Phase 3 study initiation follows the global interim Phase 2 results. The adjuvanted recombinant COVID-19 vaccine candidate achieved high neutralizing antibody responses in all adult age groups, with 95 to 100% seroconversion rates. In addition, after a single injection, high neutralizing antibody levels were also generated in participants with evidence of prior SARS-CoV-2 infection, suggesting strong potential for development as a booster vaccine.
The EMA confirmed on July 20, 2021, the CHMP committee had started a rolling review of Vidprevtyn. The CHMP's decision to start the rolling review is based on preliminary results from laboratory studies (non-clinical data) and early clinical studies in adults, which suggest that the vaccine triggers the production of antibodies that target SARS-CoV-2, the virus that causes COVID-19, and may help protect against the disease. The EMA will evaluate data as they become available to decide if the benefits outweigh the risks. The rolling review will continue until enough evidence is available for a formal marketing authorization application. When medicines are under rolling review, EMA's CHMP evaluates clinical trial data as soon as these become available until it decides there is enough evidence for the developer to apply for marketing authorization.
Federal funds supported the phase 2 study from the BARDA in collaboration with the U.S. Department of Defense Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense under Contract # W15QKN-16-9-1002.
GSK is a science-led global healthcare company with a special purpose: to help people do more, feel better, live longer. GSK is the leading manufacturer of vaccines globally.
Sanofi is dedicated to supporting people through their health challenges. "We are a global biopharmaceutical company focused on human health. We prevent illness with vaccines, provide innovative treatments to fight pain, and ease suffering. We stand by the few who suffer from rare diseases and the millions with long-term chronic conditions."

Vidprevtyn COVID-19 Vaccine (Sanofi and GSK) Indication

Sanofi - GSK Vidprevtyn (VAT00002, VAT00008) vaccine candidate is indicated to prevent SARS-CoV-2 coronavirus infection, leading to COVID-19 in humans. Pediatric, oncology, and pregnancy vaccine efficacy verification are pending. DrugBank Accession Number: DB16427

Vidprevtyn COVID-19 Vaccine Variants of Concern

To address the emergence of variant strains, Sanofi Pasteur is developing monovalent and bivalent vaccines for use as a universal late booster and/or variant prime vaccines, which will be studied in three additional Phase 3 study cohorts that are added to the initial Phase 2 protocol cohorts. Supplemental Cohorts 1 and 2 will evaluate booster vaccine candidates and supplemental Cohort 3 will evaluate priming immunization with variant-containing vaccines.

Vidprevtyn COVID-19 Vaccine Dosage

The randomized, double-blind, multi-center-dose-ranging phase 2 study was conducted in healthy adults aged 18 years of age and older, including those with high-risk medical conditions, to evaluate the safety, reactogenicity, and immunogenicity of two injections given 21 days apart, with 3 antigen dose levels of 5, 10 and 15 µg.
Recently published preclinical data indicated the candidate has the potential to strongly boost immune responses following primary vaccination across multiple vaccine technology platforms and against a broad spectrum of variants of concern. The booster studies4 began this summer in the U.S., Australia, France, and the U.K. The first results are expected by the end of Q4 2021, stated Sanofi.

Vidprevtyn COVID-19 Vaccine News

December 15, 2021 - The Sanofi and GSK announced their jointly developed booster vaccine showed neutralizing antibodies increased 9- to 43-fold regardless of the primary vaccine received (AstraZeneca, Johnson & Johnson, Moderna, Pfizer/BioNTech), and was found well tolerated, with a safety profile similar to currently approved COVID-19 vaccines.
September 28, 2021 - Sanofi announced it continues its efforts in the fight against the COVID-19 pandemic with its adjuvanted recombinant protein candidate vaccine, developed in partnership with GSK. In parallel to its ongoing Phase 3 efficacy and safety study, Sanofi has expanded its development program to include a study of the vaccine as a potentially broadly protective booster to address evolving public health needs.
September 21, 2021 - A non-peer-reviewed study findings show that the vaccine candidates used as a booster have the potential to offer cross-protection against a broad spectrum of variants. This has important implications for vaccine control of SARS-CoV-2 variants of concern and informs on the benefit of a booster with our vaccine candidates currently under evaluation in phase 2 and 3 clinical trials (NCT04762680 and NCT04904549).
August 7, 2021 - The online journal Springer published a 'Rolling review of COVID-19 vaccine Vidprevtyn by EMA. The review will continue until the CHMP decides that sufficient data are available for a formal marketing authorization application. Compliance of Vidprevtyn with the usual E.U. standards for effectiveness, safety, and quality will be assessed by EMA.'
July 20, 2021 - The European Medicines Agency confirmed the human medicines committee had started a rolling review of Vidprevtyn, a COVID-19 vaccine developed by Sanofi Pasteur. The CHMP's decision to start the rolling review is based on preliminary results from laboratory studies (non-clinical data) and early clinical studies in adults, which suggest that the vaccine triggers the production of antibodies that target the SARS-CoV-2 coronavirus that causes COVID-19, and may help protect against the disease.
July 8, 2021 - Sanofi and GSK received approval for their Phase 3 clinical study in India to assess the safety, efficacy, and immunogenicity of their adjuvanted recombinant-protein COVID-19 vaccine candidate. The global, randomized, double-blind Phase 3 study will include more than 35,000 volunteers aged 18 and older across the USA, Asia, Africa, and Latin America.
May 27, 2021 - Sanofi and GSK announced they started enrollment in their Phase 3 clinical study to assess the safety, efficacy, and immunogenicity of their adjuvanted recombinant-protein COVID-19 vaccine candidate. The global, randomized, double-blind placebo-controlled Phase 3 study will include more than 35,000 volunteers aged 18 and older from several countries, including sites in the US, Asia, Africa, and Latin America. The study's primary endpoint is the prevention of symptomatic COVID-19 in SARS-CoV-2 naïve adults, with secondary endpoints preventing severe COVID-19 disease and the prevention of asymptomatic infection.
May 17, 2021 - Sanofi and GSK announced the adjuvanted recombinant COVID-19 vaccine candidate achieved strong rates of neutralizing antibody responses, in line with those measured in people who have recovered from COVID-19, in all adult age groups in a Phase 2 study with 722 volunteers. Pending positive Phase 3 outcomes and regulatory reviews, the vaccine is expected to be approved in the fourth quarter of 2021.
March 11, 2021 - A non-peer-reviewed study reported: 'sera from 501Y.V2-infected patients also neutralized the 501Y.V3 (P.1) variant first described in Brazil, and now circulating globally. Collectively these data suggest that the antibody response in patients infected with 501Y.V2 has broad specificity and that vaccines designed with the 501Y.V2 sequence may elicit more cross-reactive responses.'

February 21, 2021 - Sanofi and GSK have initiated a phase 2 study to determine the appropriate dosage of their adjuvanted recombinant protein vaccine. The trial will include healthy adults 18 to 59 and an equal number of those adults over 60 years and older.
December 11, 2020 - Sanofi and GSK announce a delay in their adjuvanted recombinant protein-based COVID-19 vaccine program to improve older adults' immune response. Phase 1/2 study interim results showed an immune response comparable to patients who recovered from COVID-19 in adults aged 18 to 49 years, but a low immune response in older adults likely due to an insufficient concentration of the antigen. Sanofi and GSK adjuvanted recombinant protein-based vaccine candidate was selected in July 2020 by the U.S. government's Operation Warp Speed to accelerate its development and manufacturing.
December 3, 2020 - Sanofi vaccines chief Thomas Triomphe said 'the company will announce the price of the potential COVID-19 vaccine developing with Britain's GlaxoSmithKline after it has released Phase I/II results of the trials. The company is expected to release the Phase I/II clinical trials this month (December).'
October 28, 2020 - Sanofi and GSK announced they intend to make available 200 million doses of their adjuvanted recombinant protein-based COVID-19 vaccine, if approved by regulatory authorities and subject to contract, to the COVAX Facility.
September 22, 2020 - Sanofi and GSK announced agreements with the Government of Canada to supply up to 72 million doses of an adjuvanted COVID-19 vaccine, beginning in 2021. The Companies initiated a Phase 1/2 study on September 3, with 440 subjects being enrolled. They anticipate the first results in early December 2020 to support initiating a pivotal Phase 3 study before the end of the year.
September 17, 2020 - Sanofi and GSK finalized an agreement with the European Commission to supply up to 300 million doses of a COVID-19 vaccine once the vaccine is approved. This final agreement confirms both companies' announcement made on July 31, 2020, and marks a key milestone in protecting European populations against COVID-19. The contract will allow the purchase of a vaccine against COVID-19 for all Member States of the European Union (E.U.)
September 3, 2020 - Sanofi and GSK announced the Phase 1/2 clinical trial for their adjuvanted COVID-19 vaccine. The vaccine candidate, developed in partnership with Sanofi and GSK, uses the same recombinant protein-based technology as Sanofi's seasonal influenza vaccines with GSK's established pandemic adjuvant technology.
August 4, 2020 - Sanofi confirmed its upcoming venture to develop a COVID-19 vaccine with fellow pharmaceutical giant GlaxoSmithKline and the United States government, including plans to conduct manufacturing at Sanofi's Swiftwater PA, location. The company is currently building up its industrial capabilities to manufacture up to one billion doses a year, some of which will be done locally. "Our Swiftwater facility will conduct finish and fill for the U.S. doses."
July 31, 2020 - Sanofi and GSK announce a collaborative effort with the U.S. government to accelerate developing and manufacturing a COVID-19 recombinant protein-based vaccine. The U.S. government will provide up to $2.1 billion, more than half of which supports further development of the vaccine, including clinical trials. The remainder is used for manufacturing scale-up and delivery of an initial 100 million doses of the vaccine.
July 29, 2020 - Sanofi and GSK announced an agreement, subject to a final contract, with the U.K. government to supply up to 60 million doses of a COVID-19 vaccine. Sanofi, the vaccine candidate, in partnership with GSK, is based on the recombinant protein-based technology used by Sanofi to produce an influenza vaccine and GSK's established pandemic adjuvant technology. And, ongoing discussions with the European Commission, France, and Italy on the negotiation team and other governments ensure global access to a novel coronavirus vaccine.
June 23, 2020 - Sanofi S.A. said it expects to get approval for the potential COVID-19 vaccine developing with Britain's GlaxoSmithKline Plc. by the first half of 2021, faster than previously anticipated.
May 13, 2020 - Sanofi's Chief Executive Officer Paul Hudson said in an interview with Bloomberg News, 'he warned that Europe risks falling behind unless it steps up efforts to seek protection against a pandemic that's killed more than 290,000 people worldwide.'
April 14, 2020 - Sanofi and GSK announced that they had signed a letter of intent to develop an adjuvanted vaccine for COVID-19, using innovative technology from both companies to address the ongoing pandemic.
February 18, 2020 - David Loew, Sanofi's global head of vaccines, announced the company would partner with the U.S. Biomedical Advanced Research and Development Authority—known as BARDA—to make a vaccine using the company's recombinant DNA platform.

Vidprevtyn COVID-19 Vaccine Clinical Trials

The Sanofi and GSK adjuvanted recombinant COVID-19 vaccine candidate Vidprevtyn achieved strong rates of neutralizing antibody responses, in line with those measured in people who have recovered from COVID-19 in all adult age groups in a Phase 2 study with 722 volunteers. A global pivotal Phase 3 study is expected to start in the coming weeks.

The companies plan to initiate a global Phase 3, randomized, double-blind study with the 10µg dose, combined with GSK's pandemic adjuvant, in the coming weeks. This Phase 3 trial is expected to enroll more than 35,000 adult participants from a broad range of countries. It will assess the efficacy of two vaccine formulations, including the D614 (Wuhan) and B.1.351 (South African) variants.

So, you've got COVID. Here's what to do

By Suzette Lohmeyer

Source: https://www.npr.org/sections/health-shots/2022/02/02/1076571934/test-positive-covid-omicron

Feb 02 – Omicron is so ridiculously contagious that even if you follow recommended precautions, you still might get it. And if your job requires you to interact with people or if you have kids in your household, forget it; it can feel more like a "when" rather than an "if."

So, while it's still important to try to keep COVID-19 out of your household — since you never know when someone could end up seriously ill — here's what to do if you or someone you live with does get it.

We talked to four experts who laid out the steps you need to take to care for your physical and mental health, and how to keep your community safe, from the moment you or a member of your household has been exposed to when you can spring back into regular life post-recovery.

Because, yes, this can be a scary, stressful and logistically confusing time. So take a deep breath. You've got this. Here we go.

Step 1: Confirm whether you really have COVID

If you are showing signs of a virus (fever, headache, congestion, sore throat, gastrointestinal issues), what you do next might depend on your access to testing, says Dr. Cassandra Pierre, medical director of public health programs at Boston Medical Center and a parent of 4-year-old twins who just had COVID-19.

If you have a decent supply of at-home antigen tests, says Pierre, go ahead and take one as soon as you feel ill. "But do not," she stresses, "use that test as proof-positive that you can go out and interact in society, thinking it's just a cold." Many people are using an early negative test as a false sense of assurance, she says.

"With the omicron variant," says Pierre, "we're seeing a lot of antigen tests come back negative within the first two days of symptoms and then after a few days, come back positive." So if you have access to a number of at-home tests, it's worth taking that early one

because some people will test positive in those first couple of days and then they will know they need to isolate (here's a refresher on the difference between isolation and quarantine).
For those who are symptomatic and test negative the first time, go ahead and take a second test on Day 3 or 4, says Pierre. That's when most of the positive test results are coming in with this variant.
And if you don't have access to multiple at-home tests? Isolate immediately and save your test for the third or fourth day, she says.
If you don't have access to home tests or they aren't in your budget, check out free community testing sites in your area.
And if you test positive on a rapid test, says Pierre, "it's not necessary to go out and get a PCR test. Rapid tests have really good sensitivity – especially if you are symptomatic."
The only time you may want or need to get a follow-up PCR test, which is more sensitive to the virus, is if you get a negative test in those first couple of days and need to know immediately if you have COVID-19 for your job or other reasons.

Step 2: Let people know and cancel plans

One of the first (and the best) things you can do for your community is inform all the appropriate people that you have COVID-19, says Pierre — including everyone you've interacted with. Even though you and your household may just have mild symptoms, people that you may have passed it on to need to know, says Pierre. This is especially true for people who have not been vaccinated or those with underlying health conditions that put them at risk of severe illness, she adds.
Who exactly needs to know? You should tell friends you've seen, your employer, your kid's friends and school administration, says Dr. Michael Smith, professor of pediatrics and interim division chief of pediatric infectious diseases at Duke University School of Medicine. If you found out via an at-home test, you also need to let your local health department know, he says. If you were tested at a pharmacy, doctor, or testing site, they do that automatically.
And don't go anywhere unless it is to seek needed medical care or to get a breath of fresh air — away from other people, says Smith. "Don't go to church, don't go to the stores. You can go outside as long as you aren't interacting with anyone."
Also, don't waste your energy feeling badly about yourself because you got infected, says Vaile Wright, senior director of health care innovation at the American Psychological Association.
"There's this gut reaction to feel shame and guilt when you get COVID — in part because there's been so much judgment over the last two years about how people are behaving during the pandemic. It's hard not to internalize that and say 'What did I do wrong?' The reality is probably nothing."
When it comes to your employer, know what your supervisor expects from you if you come down with COVID-19 or if you need to take time to care for a sick family member, says Pierre. Find out your company's sick leave policy, including any documentation you might need, like test results.
Be sure to also communicate what you're capable of to your supervisor, says Wright. "If you are feeling extremely stressed, it might require asking for some flexibility right now or whatever you need to take care of yourself or your family."

Step 3: Consider seeking medical care if you're high risk or have serious symptoms

Most people will experience omicron with cold or flu-like symptoms and you definitely shouldn't rush off to a doctor with a runny nose that you can treat at home. Focus on getting rest and plenty of fluids. Still, there are some circumstances when you should seek medical care with omicron.
If you, your child, or someone in your house is at high risk, it's a good idea to reach out and make that person's care team aware, says Smith, in case any action needs to be taken. Adults should make sure to keep a sharp eye on children who are high risk, he adds.
For questions about quarantining or tests, or mild symptoms like fever and body aches, use your primary care provider's telehealth, says Dr. Matt Leonard, attending emergency physician at Suburban Hospital, Johns Hopkins School of Medicine.
And when should you head to an emergency department or urgent care? Leonard says to watch for certain key symptoms: "When people feel they can't get enough air, or if they are having severe gastrointestinal distress where they can't keep up with the fluid losses. Or if there is any confusion or change in mental status — because that is an indicator that your brain isn't getting enough oxygen or blood flow."
Smith says when it comes to kids too young to speak for themselves, you need to pay attention to many of the same signs. For babies, make sure they are hydrated (they have regular wet diapers), and monitor their breathing. Any signs of respiratory distress mean they aren't getting adequate oxygen.
Leonard says one of the most important things to remember if you're heading to the emergency department is that there is no magic pill that will make COVID-19 go away.

"Just like influenza, there really isn't a lot of medication that has been proven to be effective for treating coronavirus — especially omicron," says Leonard. The care you can expect is treatment for COVID-19 symptoms that may be life-threatening. He adds that the medicines shown to be of some help when it comes to omicron are in short supply and reserved for only the highest-at-risk patients.

Step 4: Come up with a game plan that works for your household

Making a COVID plan is something that is ideally done before anyone in your house gets the virus, says Pierre, but you can do it after you find out as well (and hopefully while you're still feeling OK).

First, identify the likelihood that you or someone in your house will have severe complications from COVID. According to the Centers for Disease Control and Prevention, that list includes anyone older than 65, immunocompromised or with certain underlying medical conditions. Then, in consultation with your care provider, consider what treatment options may be needed, she says.

"Where will you go if you need therapeutics? It's much better to know ahead of time than to be ill and sick and scared and scrambling to identify what treatment options are available," says Pierre.

Second, plan for child care disruptions. If someone in your house gets sick, who is going to care for the kids? If your child is school-age, know how many days they will need to miss school if they are sick or even just test positive, says Pierre.

Also, while it's important to make sure your housecleaning game is upped a little bit, says Smith, such as wiping down surfaces people often touch, the best defense when trying to protect household members who aren't sick is wearing a mask and frequent hand-washing.

Both Smith and Pierre say isolating sick family members is also a good idea, but they say that's only realistic in some situations. Anyone with limited living space won't be able to isolate easily, says Pierre. Smith adds that it is tough to make kids isolate and not necessarily the best thing for their mental health anyway.

Step 5: Set realistic expectations for your kids — especially the littles

When it comes to kids in a household with COVID-19, remember that kids are kids and make sure your expectations are age-appropriate, say both Smith and Pierre. Small children aren't going to isolate themselves in their rooms, says Smith, but teenagers may be OK doing that.

Pierre, who just went through her twin 4-year-olds having COVID-19, says she was able to separate them when they were sleeping, but she couldn't always keep them away from each other. "During the day, all bets were off. They wanted to play together and watch the iPad together. They were not 3 feet apart. I did the best I could."

And while it's good for everyone to wear masks to prevent other family members from catching COVID, don't stress so much about what masks the toddler and really young kids are wearing. "The best mask for a child is the mask they're going to wear. If your child can wear a surgical mask that's good. It comes down to what your child is comfortable with and what you can do to maximize the fit," says Smith.

Smith also says to make sure your message to kids doesn't get too negative. "You don't want to say, 'You're sick so we're going to stay away from you.' You can't do that for a younger child and that's even the wrong message to give to a teenager."

Wright agrees: "I think that kids can pick up on our moods pretty easily so it does become pretty important to self-regulate as much as we can," she says.

Also try to model to kids how you manage your stress, says Wright. "Come together and play board games. Show them that yes, life is stressful and here is how we're going to manage it the best we can."

Wright also says to get creative. Send notes, send funny pictures on your phone if you have a kid (or anyone) isolating in your house.

Smith says that even with all the advice, you can't make a blanket statement about how to handle kids when there's COVID in the house. "Each family has to weigh how much risk you have to take."

Step 6: Come up with some coping strategies and go easy on yourself

Figure out what will help you get through a stressful time. For Wright, her go-to is walking and listening to podcasts. Her advice is to start something that activates one of the senses to feel more grounded — like taking a walk — but to have a backup in case your go-to isn't possible.

Don't try to go it alone, says Wright, adding that this is a stressful time and you may need to ask for help. "It could be within your own household. Are you and your partner taking equal help to address the situation? Can you reach out to family and friends to bring you food, supplies?"

Pierre adds that it's also a good time to see what you can do online, like ordering groceries and other necessities.
But bottom line, if you're feeling more overwhelmed than you can handle, seek out professional help. Telehealth is very available these days, she adds.
"Professionals are trained to help you identify patterns of thinking or behavior that may not be as helpful as they could be," she says. "And one of the benefits of a professional is that it is a one-way relationship. In our friendships and family relationships we can get support but there is support expected back. With a therapist it is solely focused on you. That's the point."

Step 7: Make sure you're COVID-free and get back to normal

What does a safe return to regular life look like? The CDC says you are fine to go back out into the world, masked, after five days if your symptoms are improving — including being fever-free for 24 hours without the use of fever reducers. But continue to wear a mask at least another five days, the agency advises. While many people are no longer contagious after five days, a portion of people are and some experts say it would be best to get a negative result on a rapid test before you go out in public unmasked.
If you were seriously ill with COVID-19, or are immunocompromised, says the CDC, then wait at least 10 days and discuss your situation with your doctor.
Once her twins fully recovered from their bout with COVID-19, Pierre says she's been able to cautiously relax a bit. But she has to talk herself down from feeling like her family is now super-immune every day.
"I feel like I could go to the movies at this point. I could go out to dinner with a friend. I can relax when I send my kids to school. But I don't want to be flippant."
The antibodies people get from an infection wane over time, so you shouldn't think your protection is now foolproof. And, given that there are always unknowns with this virus, she encourages everyone to continue to abide by recommendations including wearing a mask, physical distancing and taking any new illness seriously even post-COVID.
Taking precautions includes getting vaccinated or boosted if you haven't already, says Leonard. He asks everyone to "embrace the free vaccine that prevents you from getting seriously ill and prevents you from transmitting the disease so we can all get back to our normal lives quicker."
So can you get the vaccine or booster right after having COVID? It won't hurt, say both Pierre and Smith, but wait until your symptoms have gone away.
There is, however, research that shows it might be smart to wait longer — about three months after a symptomatic case. This will allow the B cells, which help produce antibodies to fight future infections, to mature.
Melanie Ott, a virologist at the University of California, San Francisco, says you can think of an infection's effect on your immune system like getting one shot of the vaccine. Typically, vaccines are spaced to allow the immune system's response to broaden. And immunologist Ali Ellebedy at the Washington University School of Medicine says the longer the period between shots, "the more robust" your immune system's response will be.
If you had already gotten your first two shots before you got COVID, you now "have a very strong immunity," says Ott.

Interview: Can Dietary Habits Impact COVID-19 Outcomes?

February 03, 2022
Source: https://www.medscape.com/viewarticle/967767

JOHN WHYTE: Welcome, everyone. I'm **Dr. John Whyte, the chief medical officer at WebMD**. And you're watching Coronavirus in Context. What's the role of what we eat in terms of either getting COVID or protecting us when we do get COVID? What is the role of food and immunity?
To help provide guidance and give us some insights, I've asked my good friend, **Dr. Dean Ornish, the founder of the Preventive Medicine Research Institute in Sausalito, California**. Dean, it's great to see you.
DEAN ORNISH: Always good to see you, John.
JOHN WHYTE: Dean, you and I have talked about several times these two studies that recently came out that talk about the role of dietary habits in COVID. And I want to start off with the first one from BMJ Nutrition Prevention and Health, where they followed 3,000 frontline doctors and nurses across six countries. Can you tell us what they found?
DEAN ORNISH: Sure. And I think it's a particularly compelling study. With the Omicron variant, as you've talked about on your previous shows, even if you're triple vaccinated, there's still a number of people who break through because it's so infectious. And so I think people are really looking for, what else can I do besides getting vaccinated, of course,

wearing masks, social distancing, all the usual things, that might also help me to stay well, or if I do get sick to get a milder version of it?

And this was one of two, I thought, particularly compelling studies that just came out a few weeks ago. And as you said, they looked at almost 3,000 frontline health care workers who get exposed to COVID every day. And they found that those that were eating a healthy plant-based diet were 73% less likely to get moderate to severe COVID. Those following a pescatarian diet, a healthy plant-based diet with some fish, were 59% less likely.

And equally amazing, those following a high animal protein, high fat-- Atkins, paleo, Keto-type diets-- were 400% more likely to get moderate to severe COVID. So we already know that a healthy plant-based diet has so many beneficial effects beyond COVID. But I think this is just the latest example of things that we can do ourselves to help enhance our immunity.

JOHN WHYTE: A similar study you mentioned in Gut that followed 600,000 people in the US and London. And what did they find?

DEAN ORNISH: Yeah, these were scientists at Harvard School of Public Health, people like Dr. Walter Willett, and the King's College in London. And they looked at almost 600,000 people. And they found something similar, that those eating a healthy plant-based diet were 41% less likely to develop moderate to severe COVID.

There are other studies that have looked at and found that when you get vaccinated, those who are smokers, who are overweight, or who are hypertensive, they don't develop nearly as much of an immune response. So it's just seeing it from both perspectives.

And also, as you know, people who have chronic diseases, who are overweight, who are hypertensive are more likely to be hospitalized and more likely to die from COVID. Just being obese, for example, can raise your risk of mortality by 300%.

It's part of an overall thing that I've written about for years that, why is it that these simple, simple lifestyle changes can make such a powerful difference? And I think it's because they affect so many different parts of our underlying-- the biological mechanisms that affect our underlying health-- chronic inflammation, oxidative stress, changes in immune function, as we've been talking about, with the microbiome and telomeres and gene expression, angiogenesis, and so on.

And these mechanisms, in turn, are directly influenced by what we eat, how we respond to stress, how much exercise we get, and how much love and support we have. And I think this is just the latest version of that.

JOHN WHYTE: I do want to turn back to these two studies. A criticism has been, Dean, that those were done at a time when we didn't have the ability to do a lot of testing. So the presence of COVID was largely determined by symptomatology-- not completely, but that was a measure. Does that take away from what these studies seem to be showing?

DEAN ORNISH: Well, not at all. Because, again, we're talking about moderate to severe COVID. So even if you're not able to test for it as accurately as we can now, when people get to that degree of symptomatology, it's pretty clear what they have. So I don't think it really takes away.

Now, there's another point of view that maybe it's not such a bad thing if a lot of people get the Omicron because the symptoms seem to be less severe, and maybe that's part of how we'll get to herd immunity. And certainly you can make a case for that. What concerns me about that is the long COVID and that even the more mild versions of the Omicron variant still don't necessarily reduce the long COVID, which can cause brain fog and myocarditis and other things like that.

JOHN WHYTE: Let's break it down for folks. Because you and I are familiar with these terms. You've been an expert in this from the very beginning, when it wasn't popular to talk about these things. People forget that, the role of stress, the role of diet. But people are going to say, mm, OK, what do you mean, Dr. Ornish, by plant-based diet?

Break it down for them. What does that mean? That doesn't just mean they're eating lettuce and kale. Help them understand what that means.

DEAN ORNISH: A plant-based diet is the way that most people ate worldwide until they had the prosperity to be able to eat animal protein as often as we do, and processed foods, and concentrated sweeteners, and so on. So it's mainly fruits, vegetables, whole grains, legumes, soy products, as close as possible to how they come in nature.

And I think there's a growing consensus that this is really the optimal way for most people to eat. Not only is it low in the disease-causing substances, but there are literally hundreds of thousands of protective substances in fruits and vegetables that-- phytochemicals, bioflavonoids, carotenoids, retinols, isoflavones, genistein, lycopene, on and on and on that have anti-cancer, anti-heart disease, and anti-aging properties.

JOHN WHYTE: Well, let's talk about the barriers. And you've heard all of these before. I've been in many meetings with you. But let's just go over them for our audience. So people will say, it's too expensive. The food spoils if I don't eat it soon. Or they'll say, as you know, I don't like that. I don't like the taste of plant-based food.

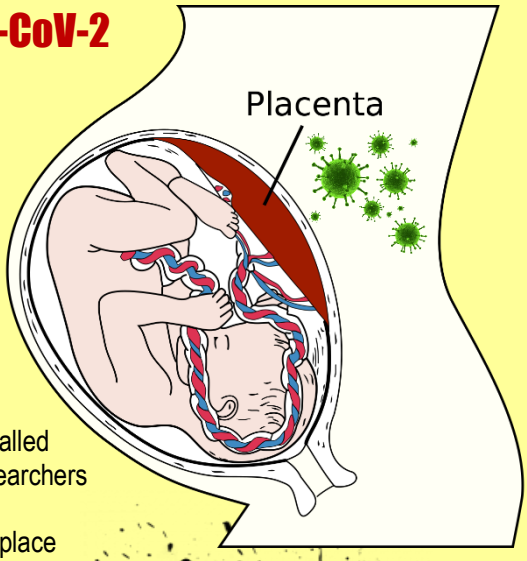
DEAN ORNISH: Am I going to live longer or is it just going to seem longer?

JOHN WHYTE: Right, exactly. Exactly. I need to-- I'm a steak and potatoes kind of person. What's your response to them when they're saying food is really something that's-- they view-- is designed to give them pleasure. And there's a role of food in that, and community. But

at the same time, we're trying to talk about food as medicine, the properties that it has to help our immune systems, particularly when we're talking about COVID. How do you reconcile that with patients?
DEAN ORNISH: Yeah, well, it's an important question. First of all, this is a third-world diet. This is the way people ate before they had the funding to eat animal protein as often as they do, or saturated fats, or concentrated sweeteners, or processed foods. This is the least expensive way to eat, number one. In fact, I-- one of my colleagues and I--
JOHN WHYTE: People push back on that, Dean. They'll say, you know what? The dollar meal at a fast food restaurant is much cheaper and keep my kids fuller longer.
DEAN ORNISH: Well, a colleague of mine and I trained the St. Vincent de Paul homeless shelter in our program 20 years ago. Over 30,000 homeless people went through it. So you can buy food at food co-ops. It's actually less-- obviously, you can spend more money if you want to eat truffles and really expensive things. But you can eat a very healthy plant-based diet for less than it costs you to get meat, especially now with inflation and the price of meat is soaring. Number two, you can eat food that's delicious and nutritious.
JOHN WHYTE: Now, in fairness, Dean, people are going to wonder, right? OK, I'll switch to a plant-based diet. Let's assume folks can do that. Am I going to reduce my risk of heart disease? Am I not going to have a heart attack now till I'm much older in life? Am I going to reduce my chances of COVID? Will I not get COVID? What do you say to them? They're willing to switch. What--
DEAN ORNISH: Yeah, you will reduce your risk. But reducing risk-- or fear is another way to put it-- is not a sustainable motivator. After someone's had a heart attack or a friends got COVID or something, they'll do pretty much anything their doctor tells them or their nurse tells them to do for maybe a month or two, and that's about it.
JOHN WHYTE: Max.
DEAN ORNISH: What is sustainable-- because we all know we're going to die. The mortality rate is still 100%. It's one per person. We don't think about it most of the time because it's too scary. So when the denial breaks down after someone's had an event, then there's a motivational moment. But even then, it doesn't last that long because the denial comes back. We don't want to think about the fact that we're mortal, so we don't.
But what I've found, actually, what is sustainable is not fear of dying but joy of living, that joy and pleasure and love and feeling good ultimately are much more sustainable.
JOHN WHYTE: Well, Dr. Ornish, as always, I want to thank you for giving us a fresh perspective and a renewed perspective on how what we eat, our dietary habits, impacts our health.
DEAN ORNISH: Thank you for having me. Our new paperback is Ornish.com. It's all in there. And I feel so passionate about doing this work because I've seen what a powerful difference it can make in people's lives. And to me, awareness is always the first step in healing, so thank you for helping to raise awareness today. I'm really grateful. And it's always great to see you.
JOHN WHYTE: Absolutely. If you have questions for me or Dr. Ornish, feel free to drop us a line. You can email me at drjohn@webmd.net. Thanks for watching.

Placenta May Shed ACE2 Receptors to Keep Out SARS-CoV-2

American Journal of Pathology, online January 26, 2022
Source: https://www.medscape.com/viewarticle/967802



Feb 03 – The placenta may have a way to protect itself and the fetus from infection with the coronavirus, a small study suggests.
Researchers studied 24 women who gave birth between July 2020 and April 2021. Eight had symptomatic COVID-19 in the second trimester, eight were sick from the virus in the third trimester, and eight were not infected during pregnancy. When COVID-19 occurred in pregnancy, particularly during the third trimester, placenta cells appeared to "shed" the ACE2 receptor proteins that the virus uses to break into cells and infect them, leaving fewer gateways for entry.
Women who had COVID-19 in the third trimester had high levels of an enzyme called ADAM17 that is known to help ACE2 release itself from the cell surface, the researchers reported in The American Journal of Pathology.
The placenta may be sensing the maternal COVID-19 infection "and possibly putting in place this mechanism to help shed off ACE2, prevent SARS-CoV-2 from invading the placenta and passing on to the fetus," said Elizabeth Taglauer of Boston Medical Center.

Earlier studies have shown that placental cells become infected in only about 7% to 20% of pregnancies where the mother has COVID-19, Taglauer said. When the virus does somehow get into the placenta, it rarely reaches the fetus, she added.
Her team plans further studies of "protection pathways" that may be keeping the virus out of placental cells and away from fetal blood vessels.

Primary Pandemic Prevention Costs 5% of Lives Lost Every Year from Emerging Infectious Diseases

Source: https://www.hsph.harvard.edu/c-change/news/primary-pandemic-prevention/

Feb 04 – A study led by our Director Dr. Aaron Bernstein in *Science Advances* shows the annual costs of "primary pandemic prevention" actions (~$20 billion) are less than 5% of the lowest estimated value of lives lost from emerging infectious diseases every year, less than 10% of the economic costs, and provide substantial co-benefits. The study looked at every new viral disease that spilled over from animals into humans since 1918 that killed at least 10 people, including HIV, the Spanish Flu, SARS, West Nile, COVID-19 and many more. The estimated value of lost lives is – at a minimum – $350 billion a year, with an additional $212 billion in direct economic losses. Researchers provide three cost-effective actions to prevent future pandemics by stopping "spillover" of diseases from animals into humans: better surveillance of pathogens, better management of wildlife trade and hunting, and reduced deforestation. These actions also help avoid carbon dioxide emissions, conserve water supplies, protect Indigenous Peoples' rights and conserve biodiversity. Primary prevention actions and recommendations include:

- **Better surveillance of pathogens that may spill from animals to people**
  - A global viral discovery project should be developed to target where prevention activities should be focused geographically. This library can help quickly identify pathogens when they emerge and accelerate our ability to develop tests and vaccines rapidly and deploy them widely.
  - More well-trained veterinarians are needed, especially in spillover hotspots, to monitor for emerging diseases and prevent spillover from wildlife or livestock into people.
- **Better management of wildlife trade and hunting**
  - Inadequate monitoring and surveillance of the wildlife trade enables zoonotic disease emergence. An increased budget and personnel for the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the World Organization for Animal Health, and national agencies charged with

monitoring animal importation to conduct research, monitoring, and enforcement is necessary to reduce risky trade.

- **Reduction of deforestation**
  - Deforestation, particularly in the tropics, brings people into contact with animals as they enter forests to clear them for agriculture or timber, build roads, or work in mines. It creates forest edges that facilitate contact between people and viral reservoir hosts.
  - Mitigating Amazonian deforestation is a cornerstone of primary pandemic prevention. Smaller forests are also important sources of emergent pathogens due to their proximity to densely populated settlements. Tying conservation measures to investments in healthcare system strengthening can support communities living in and around forests.
  - Agriculture must be reformed to minimize, or ideally reverse, land conversion, and demand for less sustainable food must also be curtailed.

In 2021, a task force led by Dr. Bernstein found that the spillover of pathogens with the potential to cause pandemics occurs from livestock operations; wildlife hunting and trade; land-use change and the destruction of tropical forests; expansion of agricultural lands, especially near human settlements; and rapid, unplanned urbanization. Previous research by Dr. Bernstein found that the cost of preventing the next pandemic is 2% of the cost we're paying for COVID-19.

Effectiveness of Face Mask or Respirator Use in Indoor Public Settings for Prevention of SARS-CoV-2 Infection

By Kristin L. Andrejko; Jake M. Pry, PhD; Jennifer F. Myers, MPH; et al.

Early Release / February 4, 2022 / 71

Source: https://www.cdc.gov/mmwr/volumes/71/wr/mm7106e1.htm

What is already known about this topic? Face masks or respirators (N95/KN95s) effectively filter virus-sized particles in laboratory settings. The real-world effectiveness of face coverings to prevent acquisition of SARS-CoV-2 infection has not been widely studied.

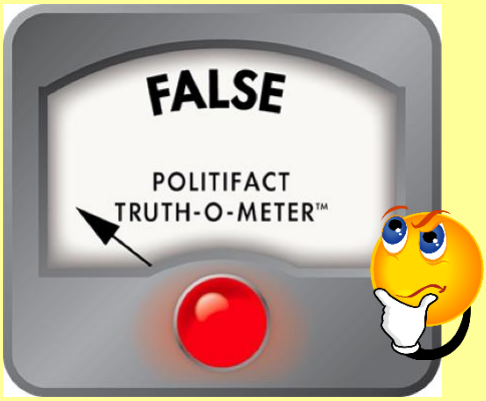
What is added by this report? Consistent use of a face mask or respirator in indoor public settings was associated with lower odds of a positive SARS-CoV-2 test result (adjusted odds ratio = 0.44). Use of respirators with higher filtration capacity was associated with the most protection, compared with no mask use.

What are the implications for public health practice? In addition to being up to date with recommended COVID-19 vaccinations, consistently wearing a comfortable, well-fitting face mask or respirator in indoor public settings protects against acquisition of SARS-CoV-2 infection; a respirator offers the best protection.

●▶ **Read the full paper here.**

Military data from 2021 show military members experienced spikes of 300% in miscarriages, almost 300% in cancer diagnoses and 1,000% in neurological issues.

Source: https://www.politifact.com/factchecks/2022/jan/31/instagram-posts/numbers-were-based-faulty-data-military-spokespers/



Jan 31 – U.S. military members experienced concerning spikes in miscarriages, cancer and other serious health issues in 2021, according to an Instagram post that grabbed attention with a big red "SOS" image attached. The Jan. 28 post referenced the Defense Medical Epidemiology Database, or DMED, saying, "there has been a 300% increase in DMED codes registered for miscarriages in the military in 2021 over the five-year average." The five-year average was 1,499 codes for miscarriages per year, the post said, and there were 4,182 such codes for the first 10 months of 2021. There was an almost 300% increase in cancer diagnoses and a 1,000% increase in neurological issues, the post says. But these figures are wrong. They resulted from a glitch in the database, a military spokesperson said. The post was flagged as part of Facebook's efforts to combat false news and misinformation on its News Feed. (Read more about our partnership with Facebook.)

The Defense Medical Epidemiology Database provides authorized users access to "epidemiologic data on active component service members" and is contained within the Defense Medical Surveillance System. The database was cited by Ohio attorney Thomas Renz on Jan. 24 during a COVID-19 panel discussion led by U.S. Rep. Ron Johnson of Wisconsin. During the five-hour hearing, titled "COVID-19: A second opinion," Renz said that three "whistleblowers" he represents provided him with these figures based on medical codes from the Defense Medical Epidemiology Database. Those figures were then shared in news articles in conservative media, such as The Blaze and Just the News. But Peter Graves, spokesperson for the Defense Health Agency's Armed Forces Surveillance Division, told PolitiFact by email that "in response to concerns mentioned in news reports" the division reviewed data in the DMED "and found that the data was incorrect for the years 2016-2020."

Officials compared numbers in the DMED with source data in the DMSS and found that the total number of medical diagnoses from those years "represented only a small fraction of actual medical diagnoses." The 2021 numbers, however, were up-to-date, giving the "appearance of significant increased occurrence of all medical diagnoses in 2021 because of the underreported data for 2016-2020," Graves said. The DMED system has been taken offline to "identify and correct the root-cause of the data corruption," Graves said.

Our ruling

An Instagram post said that miscarriages among military members were up 300% in 2021 over a five-year average, and that cancer diagnoses were up 300% and neurological disorders were up 1000%. However, the numbers used to compute the five-year average were greatly underreported, giving the false impression of a significant increase in 2021, a spokesperson for the Armed Forces Surveillance Division said. The database has been taken down to identify and correct the problem. **We rate this claim False.**

Novel CRISPR Tool Activates Instead of Editing Human Immune Cell Genes

A research team used a method called **CRISPRa** to activate each gene in the genome in different cells, enabling them to test almost 20,000 genes in parallel. This allowed them to quickly learn the rules about which genes provide the most powerful levers to reprogram cell functions in ways that could eventually lead to more powerful immunotherapies. + MORE

Mysterious Link Between Vitamin D And COVID-19 Reaffirmed in 'Striking' New Findings

Source: https://www.sciencealert.com/another-study-links-between-severe-covid-and-vitamin-d-deficiency

Feb 07 – Israeli scientists said they found "striking" differences in the chances of getting seriously ill from COVID-19 when they compared patients who had sufficient vitamin D levels prior to contracting the disease, with those who didn't.

A study published Thursday in research journal *PLOS One* found that about half of people who were vitamin D deficient before getting COVID-19 developed severe illness, compared to less than 10 percent of people who had sufficient levels of the vitamin in their blood.

We know vitamin D is vital for bone health, but its role in protecting against severe COVID-19 is less-well established.

The latest research was the first to examine vitamin D levels in individuals prior to them contracting COVID-19, the study authors said.

Dr. Amiel Dror, a study author and physician at the Galilee Medical Center, said of the findings: "We found it remarkable, and striking, to see the difference in the chances of becoming a severe patient when you are lacking in vitamin D compared to when you're not," per the *Times of Israel*.

The findings come from 253 people admitted to Galilee Medical Center in Nahariya, Israel between 7 April 2020 and 4 February 2021 – a period before the highly-infectious Omicron variant emerged.

Dror said the findings suggested vitamin D helped bolster the immune system to deal with viruses that attack the respiratory system. "This is equally relevant for Omicron as it was for previous variants," Dror said.

The research doesn't prove vitamin D protects against COVID-19 and isn't a green light to avoid vaccines and take vitamins instead. Vaccines cut the risk of Omicron hospitalization, particularly after a booster, by up to 90 percent, according to the UK Health Security Agency.

Most vitamin D comes from direct sunlight on the skin. It's also found in foods such as fatty fish, mushrooms, and egg yolks as well as supplements.

Vitamin D levels of more than 20 nanograms per milliliter are considered sufficient for most people, according to the Centers for Disease Control and Prevention – which is the benchmark used by the researchers from Bar-Ilan University and Galilee Medical Center.

Research compiled before the emergence of COVID-19 and published in *The Lancet*, found vitamin D cut the risk of other respiratory infections, compared with dummy drugs.

But for COVID-19, early findings have been inconsistent – some studies have found a link between low vitamin D levels and severe COVID-19, whilst others concluded the vitamin wasn't protective.

It wasn't clear – even from those studies with results showing a positive correlation between low vitamin D levels and severe COVID-19 – if depleted vitamin D came before or after people got sick, the Israeli researchers said.

Despite the new Israel data, we still don't know if low vitamin D levels cause people with COVID-19 to develop serious disease.

Underlying conditions that reduce vitamin D can also make people more vulnerable to severe COVID-19, for example.

The Israeli researchers cautioned vitamin D was "one piece of the complex puzzle" underlying severe COVID-19, in addition to comorbidities, genetic predisposition, dietary habits, and geographic factors.

"Our study warrants further studies investigating if and when vitamin D supplementation among vitamin D deficient individuals in the community impacts the outcome of an eventual COVID-19 episode," they said.

Official Data shows Children are up to 52 times more likely to die following Covid-19 Vaccination than Unvaccinated Children & the ONS is trying to hide it

Source: https://dailyexpose.uk/2022/01/29/ons-data-covid-vaccinated-children-52x-more-likely-to-die/

Jan 29 – The Office for National Statistics has revealed without realising it that children are up to 52 times more likely to die following Covid-19 vaccination than children who have not had the Covid-19 vaccine.

Back on 20th Dec 21, the Office for National Statistics (ONS) published a dataset containing details on 'deaths by vaccination status in England' between 1st Jan and 31st Oct 21.

The dataset contains various tables showing details such as, 'Monthly age-standardised mortality rates by vaccination status for deaths involving COVID-19', and 'Monthly age-standardised mortality rates by vaccination status for non-COVID-19 deaths'.

What the dataset also includes is 'age-standardised mortality rates by age-group and vaccination status for all deaths', however they have conveniently left out the data for children, and only included data on age groups over the age of 18.

What they also did in the data they included is bunch all young adults together meaning the rates of death are calculated for 18-39 year-olds, a total of 22 years. But for every other age group the rates of death are calculated for a total of 10 years, with 40-49, 50-59 etc.

Month	Age-group	Vaccination status	Number of deaths	Person-years	Age-standardised mortality rate per 100,000 person-years
May	18-39	Unvaccinated	153	651,561	25.6
May	18-39	Within 21 days of first dose	4	53,775	8.1 u
May	18-39	21 days or more after first dose	79	114,200	65.6
May	18-39	Within 21 days of second dose	26	50,840	47.0
May	18-39	21 days or more after second dose	44	79,515	55.2
May	40-49	Unvaccinated	213	109,872	221.0
May	40-49	Within 21 days of first dose	29	82,454	37.9
May	40-49	21 days or more after first dose	247	169,064	145.0
May	40-49	Within 21 days of second dose	55	46,398	114.4
May	40-49	21 days or more after second dose	100	60,846	164.0
May	50-59	Unvaccinated	350	49,609	717.2
May	50-59	Within 21 days of first dose	12	3,925	273.1 u
May	50-59	21 days or more after first dose	817	294,958	275.7
May	50-59	Within 21 days of second dose	205	104,827	190.7
May	50-59	21 days or more after second dose	378	92,554	399.9

However, on table 9 of the 'Deaths by Vaccination Status' dataset, the ONS have inadvertently provided enough details on deaths among children and teenagers by vaccination status for us to calculate the mortality rates ourselves, and to put it bluntly, they are horrifying, and make it obvious as to why the ONS chose to exclude children from the mortality rates dataset.

What the ONS have done, as can be seen in the above table, is provide an age standardised mortality rate per 100,000 person-years, rather than per 100,000 population.

The reason for this is that the size of each vaccination status population has been changing all the time, due to the unvaccinated moving into the one-dose category, and the one-dose vaccinated moving into the two-dose vaccinated category throughout the year. So by doing it this way it provides a much more accurate picture of the mortality rates because it accounts both the number of people and the amount of time a person has spent in each vaccination status.

And on table 9, the ONS have provided us with the number of deaths by vaccination status among children and teenagers, and have kindly also provided us with the person-years, meaning we can calculate the mortality rate per 100,000 person years for 10-14 year olds, and 15-19 year olds by vaccination status.

According to the ONS, between 2nd January and 31st October 2021 there were 96 deaths recorded among 10-14-year-olds who had not been vaccinated, and 160 deaths recorded among 15-19-year-olds who had not been vaccinated.

Vaccination status	Age group	Person-years	Deaths involving COVID-19	Non-COVID-19 deaths	All deaths
Unvaccinated	10-14	2,094,711	2	94	96
Unvaccinated	15-19	1,587,072	18	142	160

The ONS have calculated the person-years among unvaccinated 10-14 year-olds during this period to be 2,094,711, whilst they've calculated person-years among unvaccinated 15-19 year-olds during this period to be 1,587,072.
To work out the mortality-rate per 100,000 person years all we need to now do is divide the person-years by 100,000, and then divide the number of deaths by the answer to that equation.
So for 10-14 year-olds we perform the following calculation –
2,094,711 (person-years) / 100,000 = 20.94711
96 (deaths) / 20.94711 = 4.58
Therefore, the mortality rate per 100,000 person-years among unvaccinated 10-14-year-olds is 4.58 deaths per 100,000 person-years between 1st Jan and 31st Oct 21.
By using the same formula we find that the the mortality rate among unvaccinated 15-19-year-olds is 10.08 deaths per 100,000 person-years.
Now all we have to do is use the same formula to calculate the mortality rate among one-dose vaccinated and two dose vaccinated 10-14, and 15-19 year-olds, by using the person-years and number of deaths provided by the ONS in table 9 of their 'Deaths by Vaccination Status' report, which are as follows –

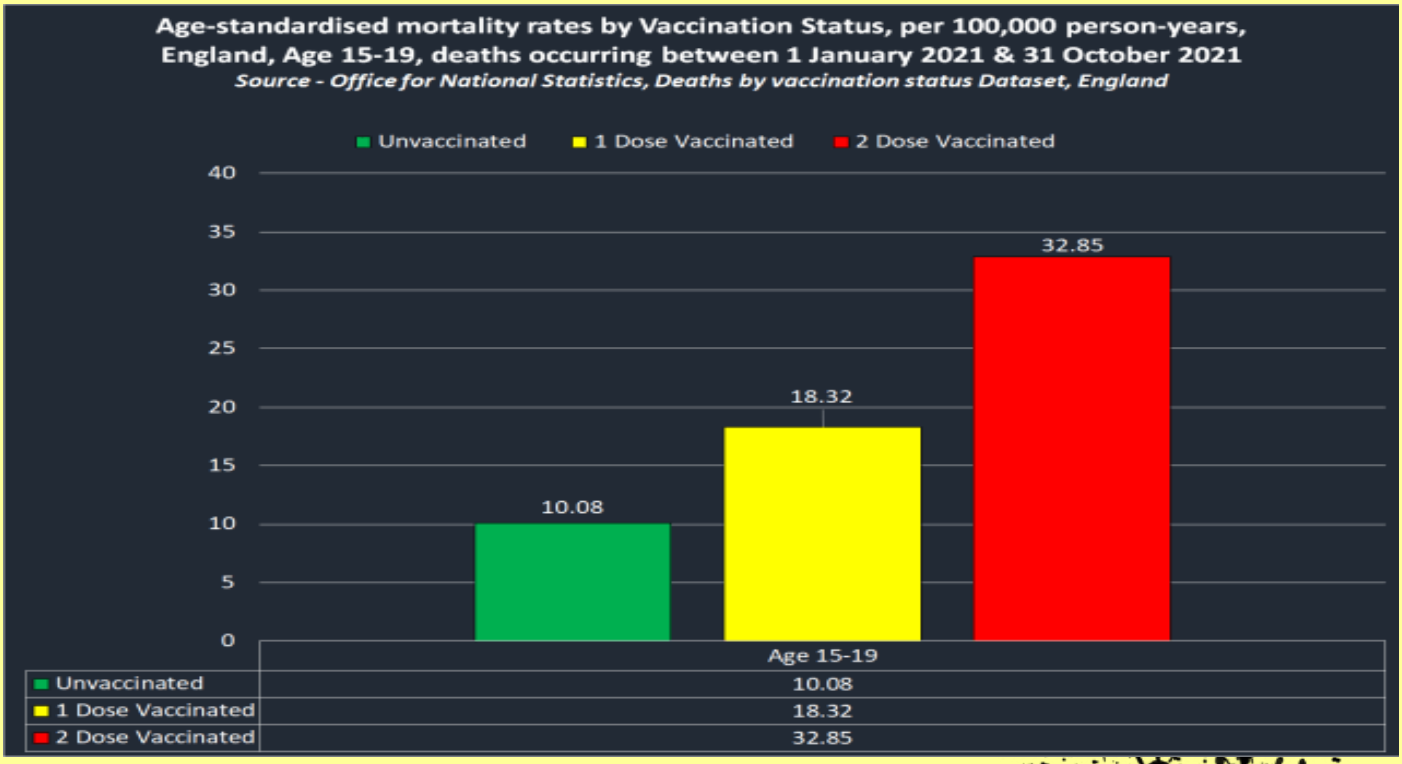
Vaccination status	Age group	Person-years	Deaths involving COVID-19	Non-COVID-19 deaths	All deaths
Received only the first dose, at least 21 days ago	10-14	6,648	0	3	3
Received only the first dose, at least 21 days ago	15-19	174,667	0	32	32

Source Data

Vaccination status	Age group	Person-years	Deaths involving COVID-19	Non-COVID-19 deaths	All deaths
Received the second dose, at least 21 days ago	10-14	1,678	0	4	4
Received the second dose, at least 21 days ago	15-19	127,842	1	41	42

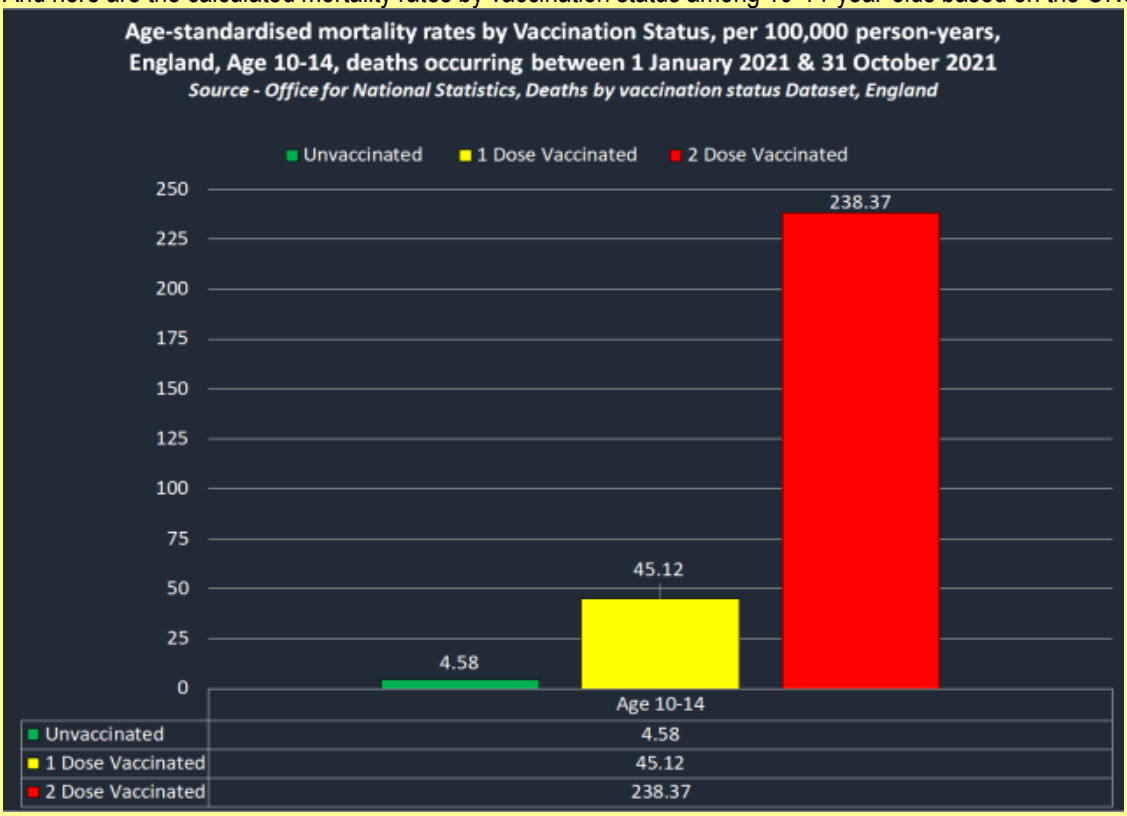
Source Data

Here are the calculated mortality rates by vaccination status among 15-19-year-olds based on the ONS calculated person-years –



Source Data

And here are the calculated mortality rates by vaccination status among 10-14-year-olds based on the ONS calculated person-years



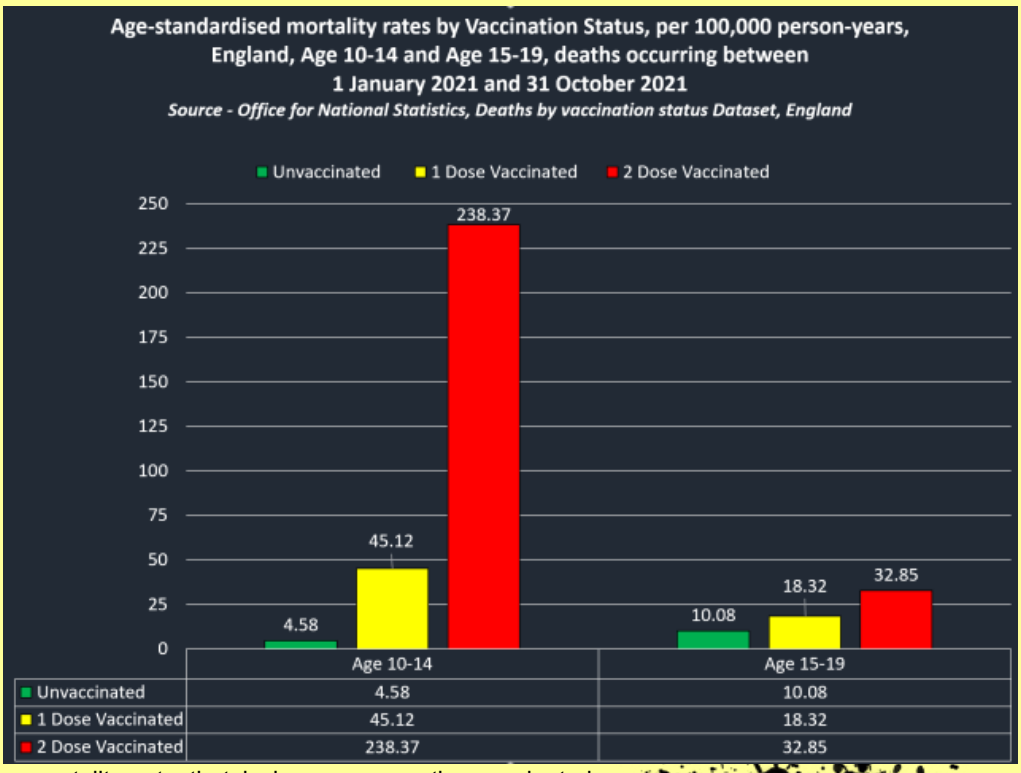
Source Data

These figures are horrifying. The ONS data shows that between 1st Jan and 31st Oct 21, children aged 10-14 were statistically 10 times more likely to die than unvaccinated children, and teenagers aged 15-19 were statistically 2 times more likely to die than unvaccinated teenagers.

But it's the double vaccinated figures that are truly frightening.

The ONS data shows that between 1st Jan and 31st Oct 21, teenagers aged 15-19 were statistically 3 times more likely to die than unvaccinated teenagers, but children aged 10-14 were statistically 52 times more likely to die than unvaccinated children, recording a death rate of 238.37 per 100,000 person years.

Source Data



But these figures are in fact even worse than they first appear, as if they weren't already bad enough. This is because the unvaccinated mortality rate among 10-14-year-olds includes children aged 10 and 11 who are not eligible for vaccination.

Whereas the vaccinated mortality rates do not include 10 and 11 year olds because they were not eligible for vaccination at the time, with the JCVI only recently recommending on 22nd Dec 21 that 5 to 11-year-old children deemed to be high risk should be offered a Covid-19 vaccination.

Therefore, if the Covid-19 injections were not causing the untimely deaths of children then we would actually expect to see a mortality rate that is lower among the vaccinated

population than the mortality rate among the unvaccinated population, not a mortality rate that is similar, and certainly not a mortality rate 52 times higher.
This jaw dropping and horrifying data should be national headline news, and we dread to think what the numbers will be in the next update from the ONS which will include data on millions of more children who received their 1st and 2nd dose of a Covid-19 vaccine after October 31st 2021.

COVID: Chinese researchers develop 4-minute PCR test

Source: https://www.dw.com/en/covid-chinese-researchers-develop-4-minute-pcr-test/a-60699247

PCR tests need to go to a lab, and can take days to process

Feb 08 – Chinese scientists say they have developed a COVID-19 test that can process results as accurately as PCR tests in less than four minutes.
PCR tests are the most accurate on the market, but must be processed in a lab, which so far takes a few hours at minimum. When labs are overwhelmed by local surges in infection, processing can last days.
Quicker, 15-minute rapid antigen tests are less reliable than the PCR alternative.
Researchers at Fudan University collected nasal samples from 33 PCR-positive COVID-19 patients, 23 PCR-negative patients, six influenza-positive patients and 25 healthy volunteers. The test accurately processed all cases without error in under four minutes, according to a peer-reviewed study published Mondayin the journal *Nature Biomedical Engineering*.
PCR tests are more precise than antigen tests because they are more sensitive. Antigen tests require a higher concentration of the virus than PCR tests to show a positive result. This means antigen tests are more likely to show a false negative.
Antigen tests seek pieces of virus-infected proteins, while PCR tests search for viral genetic material like nucleic acids and RNA.

Germany faces PCR test bottlenecks

Until now, no technology has been created to properly detect COVID-infected nucleic acids and RNA without using extraction and amplification methods, for which you need a lab environment. The Fudan University research was conducted on a small sample, said Andrew Ching, a professor of economics jointly appointed to the Johns Hopkins Department of Economics and the Bloomberg School of Public Health.

If the 100% accuracy rate were to hold up in a larger test sample, Ching said, "it could be a game changer."
However, he said, if the accuracy rate doesn't hold up at a larger scale and becomes similar to that of the antigen test, it won't make a difference.

May allow on-site testing at airports, clinics, at home

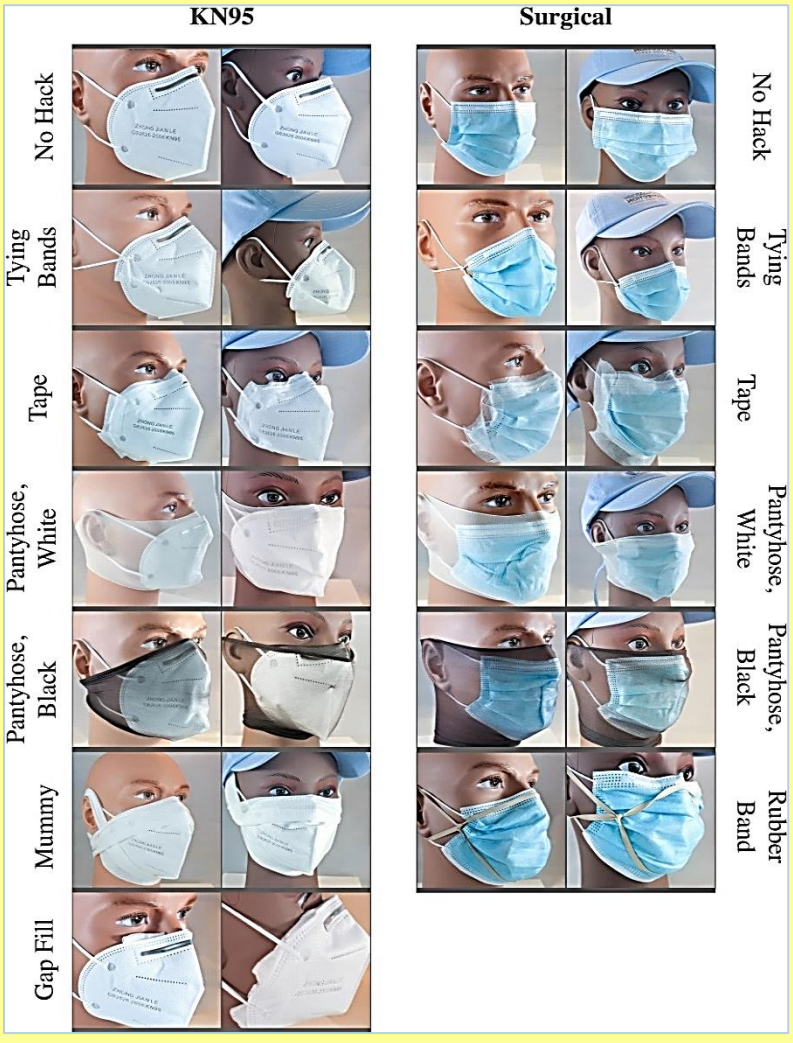
Ching said that because the structure of China's government places more authority toward the top, if the test is able to be produced at a large scale, he wouldn't be surprised to see manufacturers coming out with versions by the summer.
"China tends to be more open to experimental methods," he said, allowing approval processes to move more quickly than they would in Europe or the US.
The test developed at Fudan University uses a hypersensitive electromechanical biosensor to detect nucleic acids previously difficult to identify due to their low concentration in test samples.
Researchers said the development of portable tests featuring such technology could enable on-site testing at airports, clinics, emergency departments and at home. They added it could also be used for the quick diagnosis of other types of diseases.
There are countless brands of COVID-19 rapid at-home tests currently on the market, which vary in accuracy.

Face mask fit hacks: Improving the fit of KN95 masks and surgical masks with fit alteration techniques

By Eugenia O'Kelly, Anmol Arora, Sophia Pirog, Charlotte Pearson, James Ward, and P. John Clarkson

PLOS One | February 02, 2022

Source: https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0262830



Abstract

During the course of the COVID-19 pandemic, there have been suggestions that various techniques could be employed to improve the fit and, therefore, the effectiveness of face masks. It is well recognized that improving fit tends to improve mask effectiveness, but whether these fit modifiers are reliable remains unexplored. In this study, we assess a range of common "fit hacks" to determine their ability to improve mask performance.

Methods

Between July and September 2020, qualitative fit testing was performed in an indoor living space. We used quantitative fit testing to assess the fit of both surgical masks and KN95 masks, with and without 'fit hacks', on four participants. Seven fit hacks were evaluated to assess impact on fit. Additionally, one participant applied each fit hack multiple times to assess how reliable hacks were when reapplied. A convenience of four participants took part in the study, three females and one male with a head circumference range of 54 to 60 centimetres.

Results and discussion

The use of pantyhose, tape, and rubber bands were effective for most participants. A pantyhose overlayer was observed to be the most effective hack. High degrees of variation

were noted between participants. However, little variation was noted within participants, with hacks generally showing similar benefit each time they were applied on a single participant. An inspection of the fit hacks once applied showed that individual facial features may have a significant impact on fit, especially the nose bridge.

Conclusions

Fit hacks can be used to effectively improve the fit of surgical and KN95 masks, enhancing the protection provided to the wearer. However, many of the most effective hacks are very uncomfortable and unlikely to be tolerated for extended periods of time. The development of effective fit-improvement solutions remains a critical issue in need of further development.

Beating COVID-19 Means Tipping the Balance of an Age-Old Struggle (PART I)

By William A. Haseltine, PhD

Source: https://www.genengnews.com/topics/translational-medicine/beating-covid-19-means-tipping-the-balance-of-an-age-old-struggle/

Jan 05 – Why is SARS-CoV-2 so transmissible, infecting others before symptoms appear? Why do most people survive SARS-CoV-2 infection with little or no disease while some fall seriously ill and some die? The answers lie in the resolution of the age-old battle between invading microbes and our bodies' response.

We bring to this struggle potent immune defenses, one innate and one adaptive. Our innate immune system, which is preprogrammed to recognize a broad array of microbes, unleashes a torrent of destructive enzymes within minutes to hours of initial infection. Our adaptive immunity is slower to respond. The adaptive immunity develops over the first two weeks but persists, recognizing and neutralizing specific invaders as they reappear. Vaccines stimulate adaptive immunity to equip us with antibodies and T cells that recognize and inactivate invading microbes.

SARS-CoV-2 wins the first phase of the encounter with our immune system, replicating wildly for the first three to four days by effectively silencing the early innate immune response. In these early days, virus concentration in the throat and nasal secretions reach astronomical numbers, sometimes exceeding one billion particles per milliliter. During this period, most of us are entirely unaware that we are infected.

Awareness of disease comes not from growth of the virus but rather activation of our defenses, primarily from production of interferon and other cytokines that cause fever, malaise, and cold-like symptoms. As we shall see, SARS-CoV-2 delays the production of interferon for several days. The absence of symptoms coincides precisely with the peak virus production. A global pandemic driven by asymptotic carriers is the consequence.

Survival depends on eventual control of virus replication. Looking at the trajectory of disease caused by the Delta SARS-CoV-2 variant, as documented in a preprint study conducted in China, it becomes clear that the innate immune response, not the adaptive immune response, is primarily responsible for protecting us in the initial encounter with the virus.[1] On average, viral load peaks 3.7 days following infection and declines well before antibodies are produced as part of the adaptive immune response.

Fortunately, for most of us, our innate immune defenses are up to the job. The concentration of virus begins to drop precipitously about four days post infection. It is just before day six that symptoms appear as interferon and the full array of our innate immune defenses

become fully active. From the timing, it is clear that it is our innate immune system that controls virus replication. The hallmark of the adaptive immune response, antibody production of virus-specific T cells, is delayed by 10 to 14 days (*Figure 1*).

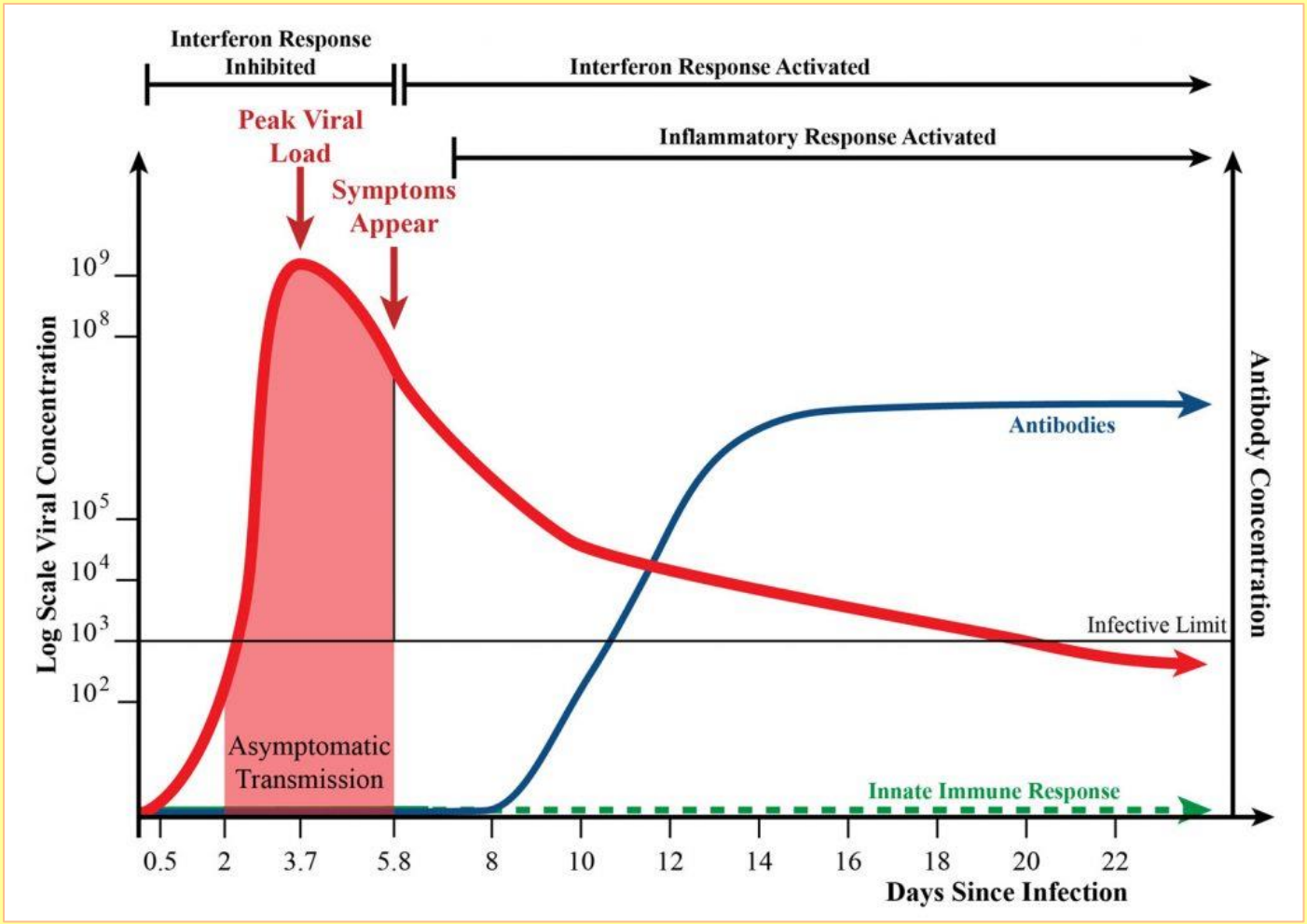


Figure 1. Model of disease course. On average, viral load peaks 3.7 days after infection, whereas symptoms appear 5.8 days after infection.

Innate immune virus suppression is the end of the story for most of us, but unfortunately not for all. Increasing evidence suggests that it is a failure to fully mobilize innate immunity early on that results in serious disease and death. The impact of COVID-19 on the elderly is far greater than on children and young adults. Recent studies show that the innate immune response is strongest in those least affected, children and young adults, and weakens with age.[2] Studies of genetic predisposition to serious COVID-19 disease all point to defects in interferon induction or function.[3]

Here I will focus on what occurs in those fateful few days. I will outline the powerful array of defenses our cells deploy to ward off the invading virus, describe the virus's elaborate countermeasures, and detail weaknesses in our defenses that result in serious disease and death. I will end on a note of hope.

We can tip the balance in our favor so that few if any succumb to COVID-19. We now have vaccines that protect most people. Soon, we will have potent antiviral drugs that will provide additional protection to those with immune deficiencies and those who are infected. Our experience with HIV tells us that if we are to avoid resistance and limit toxic effects, we will need combination antiviral drugs, each directed to unique viral proteins. We are fortunate that studies of the importance of innate immunity and SARS-CoV-2 countermeasures provide us the wealth of attractive targets that we need. Here I outline the key players in our innate immune response to SARS-CoV-2 and in the virus's countermeasures. Being familiar with these players will give us the edge that we need.

Interferon induction

Interferon is the key to our innate immune response to SARS-CoV-2. Virus entry and replication trigger the production of interferon, which in turn unleashes a torrent of hundreds of antiviral proteins. For clarity and simplicity, I will describe the pathways leading to the induction of one of the most critical and best understood of these antiviral proteins, 2'-5'-oligoadenylate synthetase 1 (OAS1). Those of us who have the inherited ability to produce the most active form of OAS1 rarely fall seriously ill.[4] Those that inherit a less active OAS1 have a higher-than-average incidence of severe disease.

One way to think of cellular innate immunity is as a series of tripwires that signal the cell to produce interferon, which then activates antiviral defenses in the infected cells and alerts nearby cells to impending danger. In the case of SARS-CoV-2, the tripwires are proteins that sense the presence of the virus genome.

SARS-CoV-2 is an RNA virus—the genome is a long single strand of RNA. To reproduce, the virus must make multiple RNA copies of the genome as well as viral messenger RNAs. An array of ready-made cellular sensors are cocked and loaded in the cytoplasm, ready to spring into action the moment foreign RNA appears.

RNA species not normally present in the cell serve as triggers of the innate immune response (*Figure 2A*). The triggers include both short and long segments of double-stranded RNA, as well as RNAs that lack the 5' cap structure and other modifications typical of cellular messenger RNAs. Replication of SARS-CoV-2 requires double-stranded RNA both of the full-length genome as well as shorter viral messenger RNAs.

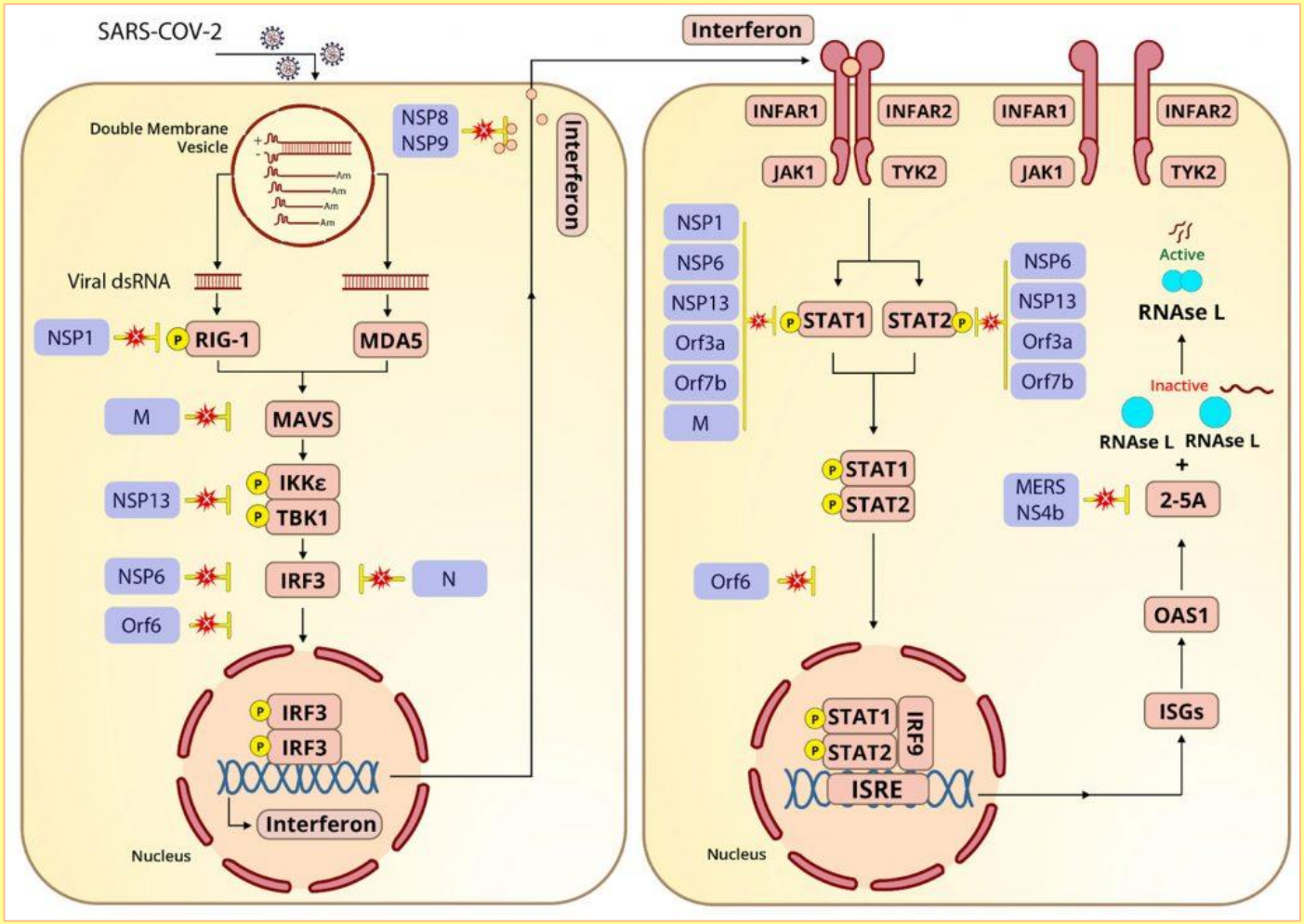


Figure 2. Role of interferon in the innate immune response to SARS-CoV-2. (A) Interferon induction. (B) Interferon-stimulated gene activation.

Double-stranded DNA is detected by two protein sensors, retinoid-inducible protein gene 1 (RIG-1) and melanoma differentiation–associated gene 5 (MDA5). RIG-1 detects shorter double-stranded RNAs, whereas MDA5 detects longer duplex RNAs. Binding of double-

stranded RNA triggers monomers of RIG-1 and MDA5 to self-aggregate into multiprotein complexes. The multimers then migrate to the surface of mitochondria where they encounter and activate the mitochondrial antiviral signaling protein (MAVS).
Once activated, MAVS initiates two separate antiviral pathways. One leads to the production of OAS1 via interferon induction. MAVS activates two cellular enzymes, TANK binding kinase 1 (TBK1) and inhibitor of nuclear factor kappa-B kinase subunit beta (IKK-β), to phosphorylate the transcription factor interferon regulatory factor 3 (IRF3). Phosphorylated IRF3 enters the nucleus and stimulates the production of both interferon alpha and beta (*Figure 2A*). Activated MAVS also induces suicide of the infected cell, a process called apoptosis. MAVS activates the cellular protein caspase 8, initiating cell death.[5] Programmed cell death is a protective response as it prevents further virus replication and destroys nascent virus particles.

Interferon-stimulated gene activation

Interferon alpha and interferon beta induce antiviral proteins within their infected neighbors (*Figure 2B*). The first step is binding of interferon to cell surface receptors. The interferon alpha-beta receptor (INFAR) consists of two proteins, INFAR1 and INFAR2. Interferon binds first to INFAR1. The complex then binds to INFAR2 to form a triplex comprised of interferon, INFAR1, and INFAR2. The juxtaposition of the two receptors brings their associated protein kinases, Janus kinase 1 (JAK1) and nonreceptor tyrosine kinase 2 (TYK2), into close proximity, resulting in the phosphorylation of both receptors. The phosphorylated receptors recruit the signal transducer and activator of transcription proteins (STAT1 and STAT2).
Once associated with the receptors, the STAT proteins are themselves phosphorylated. Phosphorylated STAT proteins dimerize and translocate to the nucleus where they associate with interferon regulator protein 9 (IRF9) and together bind the interferon response stimulator sequence to induce the transcription of interferon-stimulated genes (ISGs). The ISG proteins are the primary effectors of the innate immune antiviral response. OAS1 is one such ISG protein.

OAS1 a key player in COVID-19 defense

OAS1 is one of the very first proteins identified as central to our defense against viral infections. OAS1 is part of a three-gene cluster that includes OAS1, OAS2, and OAS3. All the OAS proteins recognize short double-stranded RNAs. Upon RNA binding, the OAS enzymes synthesize 2'-5'-oligoadenylate (2-5A). Ribonuclease L (RNAse L) is present as an inactive monomer in the cytoplasm, ready to spring into action upon viral infection. The signal is 2-5A. In the presence of 2-5A, two RNAse L monomers associate to form a dimer. The RNAse L dimer cleaves single-stranded RNA, preventing further virus replication by fragmenting both viral genomic messenger RNAs. Two recent papers, one in *Nature Medicine* and one in *bioRxiv*, highlighted the importance of RNAse L in our antiviral defense.[4,6] The paper in *Nature Medicine* asked the question, which of the many interferon-stimulated genes is most effective in inhibiting SARS CoV-2 replication? The experimental conditions allowed evaluation of each ISG gene individually. OAS1 was found to be the most potent inhibitor of SARS CoV-2 of all the genes tested.
Both studies note that the OAS1 gene comes in two major forms, a 42K (42 kilodaltons) and a longer 46K protein. The 46K OAS1 protein is many times more potent in SARS-CoCV-2 inhibition than is the 42K. The two OAS1 genes differ by a single nucleotide—a single G-to-A substitution that inactivates the splice acceptor site of the seventh exon of the 42K variant. The 46K protein contains a long-chain fatty acid at the carboxy terminus, thanks to the prenylation signal at the end of the seventh exon. The 42K version, although active as a 2-5A synthetase, lacks a terminal fatty acid.
These two studies solved an outstanding mystery. Previous investigators noted that the OAS region plays an important role in resistance to SARS-CoV-2 and certain other RNA viruses. Those who inherit one genetic variant in the OAS are far less likely to end up hospitalized, severely ill, or dead following SARS-CoV-2 infection than those who inherit another form of the gene. The difference in disease response to infection turns out to be the single nucleotide that distinguishes the short from the long form of the OAS1. In technical terms, this is the difference between the re10774671 (G) or (A) allele. One report finds a 100-fold enrichment in the A allele for those hospitalized for COVID-19 as compared to gene frequency in the population.

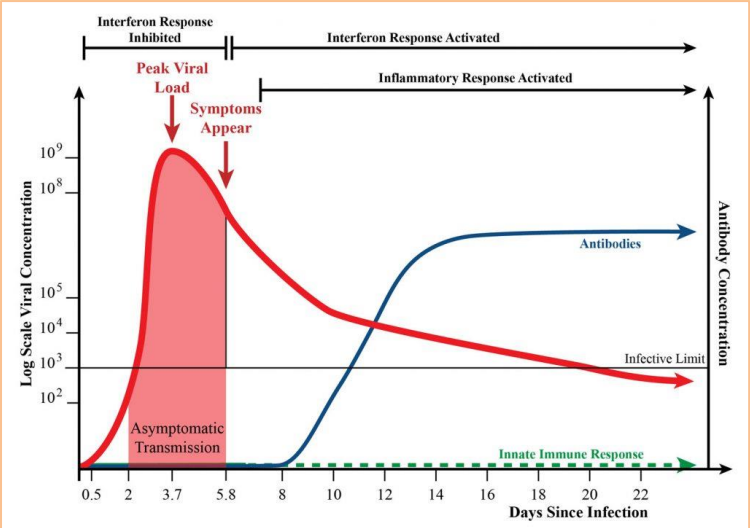
Beating COVID-19 Means Tipping the Balance of an Age-Old Struggle (Part II)

By William A. Haseltine, PhD

Source: https://www.genengnews.com/topics/translational-medicine/infectious-diseases/beating-covid-19-means-tipping-the-balance-of-an-age-old-struggle-part-ii/

Feb 05 – The extensive measures SARS-CoV-2 deploys to counter innate immunity are worth detailed study. They are attractive targets for antiviral drugs. Inhibit one or more of these proteins, and we tip the balance of innate immune suppression in our favor, limiting

prolific replication early on and thereby reducing transmission. Drugs that inhibit viral countermeasures may also help those with limited innate immune function, including the elderly, control infection early on.



These possibilities were introduced in the prequel to the current article. The prequel, or "Part I," appeared in the January 2022 issue of *GEN*, and it described phenomena such as the rise and fall in viral load and the start of antibody production in COVID-19 (*Figure 1*), and it detailed the role of interferon in the innate immune response to SARS-CoV-2 (*Figure 2*).

Figure 1. Model of disease course. On average, viral load peaks 3.7 days after infection, whereas symptoms appear 5.8 days after infection.

Viral countermeasures are explored further in this article, which serves as a sequel. Here, in "Part II," the viral proteins that account for SARS-CoV-2's countermeasures are discussed. More to the point, promising targets for antiviral drugs are indicated in *Figure 3* and *Table 1*.

Over the past year and a half, studies from scientists around the world have unveiled many of SARS-CoV-2's secrets. I am continually amazed as new discoveries appear almost monthly revealing an unprecedented variety of countermeasures that the virus deploys to ensure its survival. Some SARS countermeasures are well known from the study of other viruses. Many are new to science.

Concealment

One of the first steps in virus replication is the formation of a double-membrane vesicle that serves as a privileged replication compartment. Viral proteins made early after infection reprogram the endoplasmic reticulum to create vesicles that wall off the viral genome's replication and transcription machinery from the rest of the cell. The so-called replication-transcription double-membrane vesicle shields double-stranded RNA replication intermediates from retinoic acid-inducible gene-I (RIG-I) and melanoma differentiation-associated protein 5 (MDA5) (*Figure 2A*).

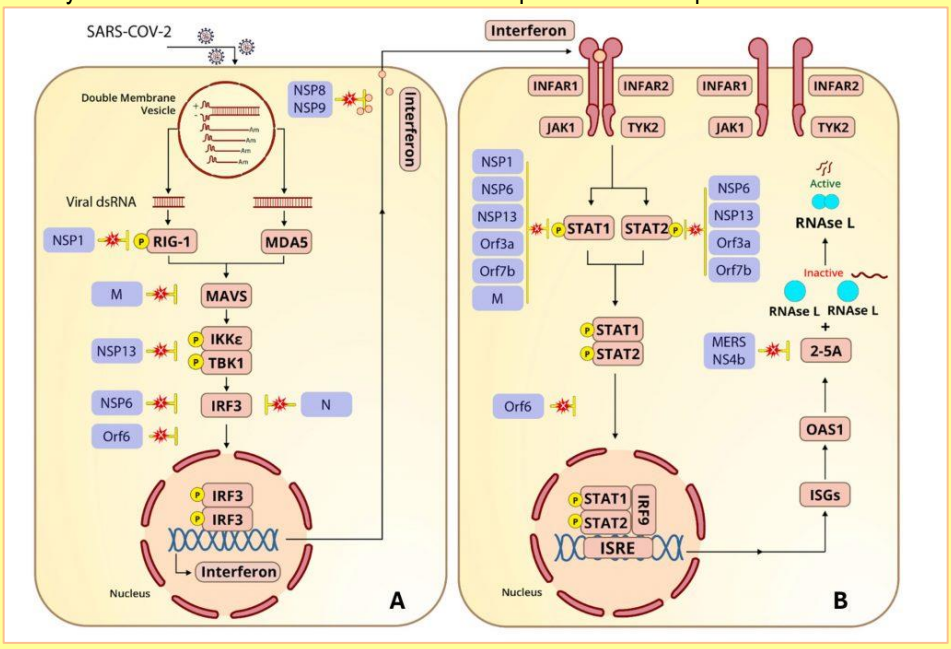


Figure 2. Role of interferon in the innate immune response to SARS-CoV-2. (A) Interferon induction. (B) Interferon-stimulated gene activation.

The ability to breach the protective wall is the key 2'-5'-oligoadenylate synthetase 1 (OAS1) 46K protection. OAS1 46K penetrates the SARS-CoV-2 protective shield, whereas the 42K version does not. Recent experiments find OAS1 is tightly bound to the replication complex, most likely within the double-membrane vesicle. The entry pass into the privileged space is the lipid covalently coupled to the carboxy terminus of OAS1 46K. The 46K protein has the lipid, and the 42K version does not. Disruption of replication is so extensive that the double-membrane vesicles themselves fragment. The 46K OAS1 inhibition by OAS1 46K is autocatalytic. The release of partially digested RNA from the disrupted replication compartment stimulates RIG-I and MDA5, leading to the production of additional interferon-stimulated genes, including OAS1 itself.

The formation of a double-membrane vesicle is a common property of many RNA viruses that replicate in the cytoplasm. These RNA viruses including all coronaviruses, flaviviruses (dengue and West Nile virus), and picornaviruses. The rs10774671 (G) allele that encodes the OAS1 46K inhibits replication of many of these viruses as well. Two exceptions are worth mentioning. Both SARS-CoV-1 and MERS are far more deadly than SARS-CoV-2. Of those infected with MERS, 30% die. SARS is 10% fatal. Both of these viruses are resistant to the OAS1-RNAse L. MERS encodes a protein that degrades 2'-5'-oligoadenylate, short-circuiting this pathway. How SARS-CoV-1 evades RNAse L remains a mystery. We can only hope that SARS-CoV-2 does not acquire similar resistance.

Camouflage

Viral messenger RNAs must leave the replication transcription compartment to encounter the protein synthesis machinery. They exit via a one-way pore in the double-membrane vesicle. Once in the cytoplasm, another series of innate immune alarms lie in wait to detect foreign RNAs. Upon synthesis in the nucleus, cellular messenger RNAs are modified by a set of enzymes that add a methylated and a 3' polyadenylated tail. These enzymes are not present in the cytoplasm. Not to be outdone, coronaviruses, including SARS-CoV-2, encode all the enzymes needed to produce a 5' methylated cap and equip the viral mRNAs with a suitable 3' polyadenylated tail.

Inhibiting interferon induction

Interferon and interferon-stimulated genes are the *bêtes noires* of SARS-CoV-2. So much so that deficiencies in interferon production and action are a major cause of serious disease and death following SARS-CoV-2 infection. Patients who have failed to make interferon or who have antibodies that neutralize interferon are overrepresented in hospitalized patients in need of intensive care, as are people who inherit deficiencies in many of the signaling proteins outlined in *Figure 2*. Therefore, it should come as no surprise that SARS-CoV-2 encodes numerous proteins that interfere with interferon synthesis.

Two viral proteins block the very first step in interferon induction, RIG-I and MDA5 activation. The viral nonstructural protein 1 (NSP-1) prevents phosphorylation of RIG-I. The viral nuclear protein (N) does double duty by blocking MDA5 activation, as does the viral membrane (M) protein as a direct inhibitor of mitochondrial antiviral-signaling protein (MAVS). The viral protein NSP3 inhibits the next step of interferon activation, MAVS-induced phosphorylation of IkB kinase ε (IKKε) and TANK-binding kinase 1 (TBK1).

Three viral proteins team up to prevent the viral final step in interferon induction, phosphorylation, and translocation of interferon regulatory factor 3 (IRF3). NSP6 inhibits phosphorylation of IFR3, Orf6 inhibits its translocation to the nucleus, and the NSP3 papain-like protease degrades IFR3.

In addition to inhibiting interferon induction via IRF3, Orf6 also represses expression of major histocompatibility complex class I (MHC-I), a class of molecules that plays a critical role in the production of type II interferons. Orf6 suppresses MHC-I by inhibiting nuclear localization of STAT1 (signal transducer and activator of transcription 1), which is required for interferon type I and III messenger RNA synthesis, and NLRC5 (NOD-like receptor family CARD domain containing five), a key transcription regulator for MHC-I.

As a final step, SARS CoV-2 inhibits the activity of any interferon that might slip through the induction blockade. The viral proteins NSP8 and NSP9 together bind the small SL7 RNA of the signal peptide export complex, preventing exit from the cell of any protein with a signal protein export sequence, including interferon. In doing so, SARS-CoV-2 compromises a key interferon function, alerting nearby cells to impending danger and initiating the adaptive immune response.

Inhibiting production of interferon-stimulated genes

SARS-CoV-2 encodes a suite of proteins to inhibit the induction of interferon-stimulated genes, including OAS1. We have seen how interferon binding to the interferon-α/β receptor (IFNAR) stimulates the JAK-STAT pathway. The viral proteins NSP1, NSP6, and NSP13; the viral membrane protein; and two of the viral accessory proteins, Orf3a and Orf7a, work in concert to inhibit the phosphorylation of STAT1 and STAT2. Orf6 does double duty, blocking STAT1/2 and the INFR3 complex from entering the nucleus.

Inhibition of synthesis of all cellular proteins

Upon infection, SARS-CoV-2 silences the production of any antiviral protein that may be made in reaction to viral infection including OAS1 and other interferon-stimulated genes.

The first viral protein made upon infection, NSP1, blocks translation of all cellular messenger RNAs while permitting synthesis of viral proteins. NSP1 has two activities that make it capable of this unique trick. The carboxy terminus of NSP1 binds to the 40S ribosomal RNA,

obstructing messenger RNA entry and translation. Simultaneously, NSP1 recognizes the stem-loop structure at the 5' terminus of viral genomic and messenger RNAs, allowing viral mRNA ribosomal entry and translation.
Three other viral proteins collaborate to prevent cellular messenger RNAs from reaching the cytoplasm. The viral protein NSP16 inhibits messenger RNA splicing by binding to both ends of the RNA in the spliceosome. Unspliced cellular messenger RNAs remain in the nucleus and decay rapidly. Another viral protein, NSP9, prevents the export of cellular messenger RNAs from the nucleus.

Ending COVID-19

Two anti-SARS-CoV-2 drugs recently made headlines due to their promise in treating COVID-19. Both are antiviral oral pills. The first, called molnupiravir, developed by the pharmaceutical company Merck & Co., was authorized for use in Britain on November 4, 2021, after a global clinical trial found that it reduced the rate of hospitalization and death in COVID-19 patients by nearly 59%. However, as I've pointed out earlier (in "Supercharging New Viral Variants: The Dangers of Molnupiravir," an article that appeared in *Forbes*), it appears, based on studies of other coronaviruses, that molnupiravir could have mutagenic effects on SARS-CoV-2 that might lead to the emergence of new and dangerous viral variants. This potential for supercharging viral variation currently remains overlooked by the regulatory agencies tasked with approving molnupiravir for widespread use.
The second pill was developed by Pfizer under the codename PF-07321332. On November 5, 2021, Pfizer announced that its pill reduced the risk of hospitalization and death in COVID-19 patients by nearly 90%. Although more data is needed, at this early stage, it doesn't appear that the concerning potential for mutagenesis seen in the Merck pill is present in the Pfizer pill.
Looking forward, I am aware of dozens of antiviral drugs that are in early stages of either preclinical or early clinical trials. I am certain that over the next two years, we will have a broad array of pharmacologically active drugs safe enough to be used in combination. My vision is they will be safe enough to be preventives for those exposed and treatments for those infected.
Other anti-SARS-CoV-2 drugs approved or in advanced clinical trials include monoclonal antibodies, and drugs that target either NSP5 protease or the NSP12 polymerase (*Figure 3, Table 1*).

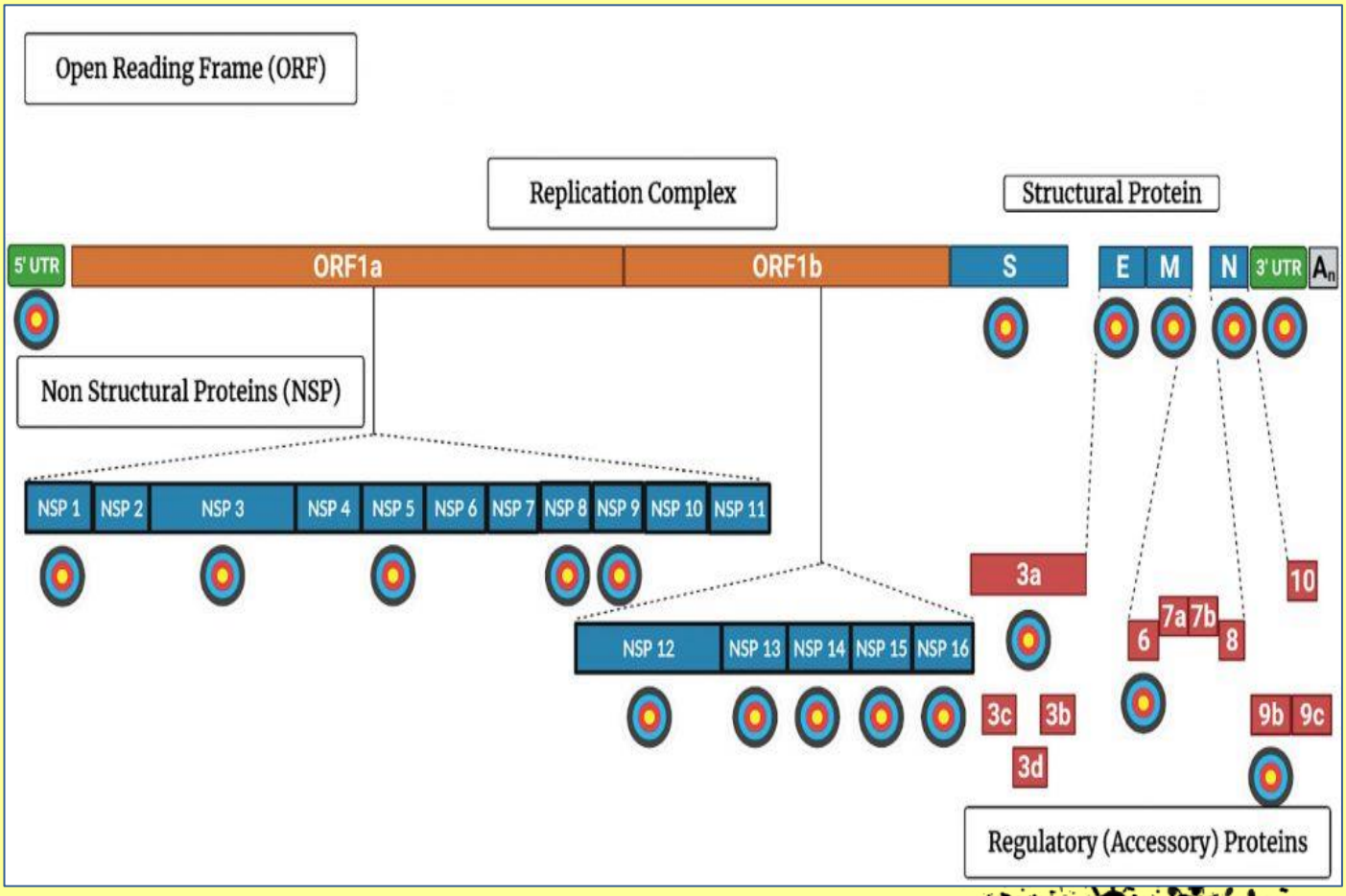


Figure 3. Potential SARS-CoV-2 drug targets.

Table 1. Antiviral Drug Targets

Protein	Virus Replication	Inhibition of Innate Immunity	Antiviral Drug Strategies
NSP1	Permits selective translation of viral mRNA.	Inhibits cellular mRNA translation. Blocks nuclear protein import. Suppresses type I interferon signaling. Suppresses STAT1 and STAT2 phosphorylation.	Inhibitor of binding of 40S ribosomal RNA. Inhibitor of binding of 5′ genome stem-loop. Inhibitor of binding of karyopherin.
NSP3	Proteolytic cleavage of nonstructural proteins NSP1 to NSP4.	Direct cleavage of IRF3. Deubiquitination. De-ADP-ribosylation.	Cystine protease inhibitors. Inhibitor of deubiquitination. Inhibitor of de-ADP-ribosylation.
NSP5	Proteolytic cleavage of Orf1ab nonstructural proteins NSP4 to NSP16.	Inhibits polyubiquitination of RIG-I.	Protease inhibitors. *Candidates in human clinical trials.*
NSP6		Inhibition of IRF3, STAT1/2 phosphorylation.	Small-molecule inhibitors
NSP7		Inhibition of type I interferon signaling.	Small-molecule inhibitors
NSP8	Control of replication and transcription. Binding to 3′ untranslated region.	Facilitates Orf6 immune suppression. Inhibits signal peptide export via SL7 RNA binding.	Inhibitor of binding to 3′ untranslated region. Inhibitor of binding to Orf6. Inhibitor of SL7 RNA binding.
NSP9	Replication and transcription control. Binds to 3′ untranslated region.	Inhibits signal peptide export via SL7 RNA binding.	Inhibitor of binding to 3′ untranslated region. Inhibitor of SL7 RNA binding.
NSP10		RIG-I-like receptor evasion. Enhancement of NSP14 inhibition.	Small-molecule inhibitors
NSP12	RNA-dependent RNA polymerase. Viral genome replication and transcription.	Inhibition of interferon regulatory transcription factor 3 nuclear translocation.	Polymerase inhibitors. *Remdesivir approved.* *Several inhibitors in clinical trials.*
NSP13	RNA helicase. Viral genome replication and transcription.	Inhibits entry of interferon regulatory transcription factor 3 into the nucleus. Inhibits interferon production by stimulating TANK-binding kinase 1 degradation.	Helicase inhibitors. *Preclinical candidates.*
NSP14	Error-correcting exoribonuclease. N7-guanine methyltransferase.	Inhibits entry of IRF3 into the nucleus. Contributes to mRNA cap formation. Degrades double-stranded RNA replication intermediates.	Inhibitor of exoribonuclease function. Inhibitor of methyltransferase function.
NSP15	Mn^{2+}-dependent endoribonuclease.	Inhibits entry of interferon regulatory transcription factor 3 into the nucleus. Cleavage of 5′-polyuridines during negative transcription.	Inhibitor of endoribonuclease function.
NSP16	2′-*O*-methyltransferase.	Viral mRNA cap formation. Inhibits splicing of cellular mRNAs.	Inhibitor of 2′-*O*-methyltransferase function. Inhibitor of binding to spliceosome RNA.
S	Receptor binding. Virus entry.		*Approved monoclonal antibody cocktails.* *Broadly neutralizing monoclonal antibodies in clinical development.* *Small molecule S-protein inhibitors in preclinical studies.*
E	Viral assembly and budding.		Anti-E monoclonal antibodies.
M	Viral assembly and budding. Viral RNA packaging.	Inhibits type I and III interferon production by targeting RIG-I/MDA5 signaling.	Anti-M monoclonal antibodies. Inhibitor of RIG-I/MDA5 binding.
N	Packaging and protection of the viral RNA.	Inhibits INF-β production by interacting with TRIM-25-mediated RIG-I.	Anti-N monoclonal antibodies. Inhibitor of TRIM-25-mediated RIG-I.
Orf3a	Modulates apoptosis.	Downregulates and degrades type 1 interferon receptor.	Inhibitor of apoptosis regulation.
Orf6		Suppression of innate immunity (INF-beta, KPNA2, INF-I, STAT1, MHC-I). Inhibits interferon via repressing nuclear localization of STAT1 and NLRC5.	Inhibitor of INF-beta, KPNA2, INF-I, and STAT1.
Orf7a, Orf7b		Inhibition of STAT2 phosphorylation.	Small-molecule inhibitors.
Orf9b		Suppression of innate immunity (MAVS, TRAF3, TRAF6).	Inhibitor of MAVS, TRAF3, and TRAF6.

treat vaccine breakthrough infections and infections of the unvaccinated. Although effective, they are expensive to manufacture, difficult to administer, and subject to escape mutants. The antipolymerase and antiprotease drugs are inexpensive to make and orally available.

Our experience with HIV teaches us that there are limits to the use of even these drugs. The first HIV drugs also inhibited the HIV polymerase and protease. The dose of these drugs is limited by toxicity; at high concentrations, they affect our own enzymes that carry out essential functions. Decades of experience taught us that a new generation of drugs was needed.

Today, the most successful anti-HIV drugs target viral proteins that have no human counterparts—the viral integrase and capsid. These drugs are many orders of magnitude less toxic. The hope is that one treatment every six months with such a drug combination is all that will be needed to prevent and treat HIV infections.

My own hope is that researchers, biotechnology companies, and pharmaceutical companies vigorously exploit the opportunities for drug development afforded by the wealth of viral targets discussed here, the very proteins SARS-CoV-2 requires to circumvent innate immunity. I foresee the day when a combination of vaccines and antivirals will ensure that no one becomes critically ill and dies of COVID-19.

William A. Haseltine, Ph.D., is the founder, chairman, and president of ACCESS Health International, a foundation dedicated to improving access to high-quality health services worldwide. He is known for his groundbreaking work on HIV/AIDS and the human genome, and he has founded more than a dozen biotechnology companies, including Human Genome Sciences.

Heart problems surge in COVID patients up to 12 months after infection

Source: https://newatlas.com/health-wellbeing/heart-cardiovascular-long-covid-disease/

Feb 08 – A massive analysis of health records has revealed recovered COVID-19 patients are at a significantly higher risk of cardiovascular complications in the year following an acute infection. The new findings, published in *Nature Medicine*, showed COVID-19 survivors were 55 percent more likely to experience a serious cardiovascular event after recovering.

"We wanted to build upon our past research on COVID's long-term effects by taking a closer look at what's happening in people's hearts," explained Ziyad Al-Aly, senior author on the new study from Washington University. "What we're seeing isn't good. COVID-19 can lead to serious cardiovascular complications and death. The heart does not regenerate or easily mend after heart damage. These are diseases that will affect people for a lifetime."

The researchers looked at medical records from the US Department of Veteran Affairs, analyzing around 150,000 positive COVID-19 cases. Cardiovascular outcomes in the 12 months after acute disease were compared to two large control groups of more than five million patients.

In a period starting 30 days after initial infection, and up to a year later, COVID patients were 72 percent more likely to experience coronary artery disease compared to those without SARS-CoV-2 infection. They were also 52 percent more likely to have a stroke and 63 percent more likely to suffer a heart attack.

Overall, the study found COVID-19 patients experienced a 55 percent higher rate of major adverse cardiovascular events in the year following their acute disease. These adverse events included cerebrovascular disorders such as stroke, ischemic and non-ischemic heart disease, pericarditis, myocarditis, and heart failure.

Al-Aly pointed out that risks of cardiovascular events were higher in those with pre-existing heart conditions and those suffering from more severe COVID-19. However, across all cohorts the study still found COVID-19 increased one's risk of heart problems.

"… most remarkably, people who have never had any heart problems and were considered low risk are also developing heart problems after COVID-19," said Al-Aly. "Our data showed an increased risk of heart damage for young people and old people; males and females; Blacks, whites and all races; people with obesity and people without; people with diabetes and those without; people with prior heart disease and no prior heart disease; people with

mild COVID infections and those with more severe COVID who needed to be hospitalized for it." Exactly why SARS-CoV-2 infection is increasing a person's risk of cardiovascular disease is still unclear. In the new study the researchers hypothesize a number of potential mechanisms, such as lingering damage in cells from the acute viral infection to a persistent hyperactive immune response following the disease.

"These mechanistic pathways might explain the range of post-acute COVID-19 cardiovascular sequelae investigated in this report," the researchers wrote in the study. "A deeper understanding of the biologic mechanisms will be needed to inform development of prevention and treatment strategies of the cardiovascular manifestations among people with COVID-19."

These results add to a growing body of data highlighting the long-term effects of COVID-19. Most recently, an Australian study tracked 20,000 COVID-19 cases for up to one year following acute infection. That study found COVID-19 significantly increased a person's risk of neurological, cardiac and vascular disease events compared to those not infected with SARS-CoV-2.

"Risk of myocarditis and pericarditis is particularly high, estimated between 18- and 21-fold higher following SARS-CoV-2 infection," the new Australian study noted. "Elevated risk have also been shown for acute myocardial infarction (AMI) between 3- and 6-fold, ischaemic stroke at 3- to 10-fold, and venous thromboembolism at up to 8-fold. Notably, these risk estimates are higher than those imposed by other viral respiratory infections and vaccination."

It is important to note both of these studies, and most long-term COVID-19 follow-up research, are tracking cases from 2020. These are cohorts that are primarily unvaccinated and experiencing infection from early strains of the virus.

Al-Aly does indicate it is likely vaccination will reduce the long-term cardiovascular risks associated with COVID-19. But, it will take more time to understand exactly how much protection vaccines confer in terms of these long COVID outcomes.

In the short-term, Al-Aly says it is vital governments prepare for increased pressure on health systems over the coming years due to these longer-term effects of COVID-19. He especially notes these findings underscore the importance of vaccine distribution in low-income countries as a way to try to mitigate the future impact of these post-COVID events.

"Governments and health systems around the world should be prepared to deal with the likely significant contribution of the COVID-19 pandemic to a rise in the burden of cardiovascular diseases," said Al-Aly. "Because of the chronic nature of these conditions, they will likely have long-lasting consequences for patients and health systems, and also have broad implications on economic productivity and life expectancy."

●▶ **The new study was published the journal** *Nature Medicine*.

Former Blackrock Executive Says Big Pharma's Liability Shields Could Be At Risk If Fraud Is Discovered

Source: https://thecovidworld.com/former-blackrock-executive-says-big-pharmas-liability-shields-could-be-at-risk-if-fraud-is-discovered/

Feb 05 – Former Blackrock executive and hedge fund guru Edward Dowd has said that if Pfizer and the U.S. Food and Drug Administration (FDA) refuse to release all data on the COVID-19 "vaccine" clinical trials, then he will assume that fraud occurred.

Big Pharma is supposed to be one of the most regulated industries in the country, especially with the FDA. However, the blanket declaration that COVID jabs are "**safe and effective**" combined with the full immunity that was granted to drug companies involved in the pandemic suggests that this "gold standard" is no longer trustworthy.

Because fraud eviscerates all contracts – this is case law – this would mean that Pfizer assumes all liability for injuries and deaths caused by its vaccine injections. The same goes for the other drug giants (i.e., Moderna and Johnson & Johnson) if it turns out they, too, committed fraud.

Dowd spoke with Steve Bannon the other day and explained more about this at length.

"I also have a thesis as to what is going on at Pfizer and Moderna, and how those companies are probably fraudulent. ***These vaccines were pushed through and I think the clinical trial data is fraud.***
I want to liken what's gone on here to what happened during the great financial crisis. We had rating agencies, third-party verification sources that were able to perpetuate the fraud because the money got too big. Their institutions became corrupted with the institutional imperative and they got ***AAA ratings*** *which we all know in hindsight those were* ***not AAA ratings.***
I believe that due to the institutional imperative that was in place at the time, and the speed with which they tried to approve these products with this unproven technology, fraud did occur. And what's my proof of that? ***The FDA together with Pfizer are trying to hide the clinical data.****"*
Pfizer received blanket immunity from liability through the EUA, however, it is looking like this product is deadly according to Dowd, yet it is others who are being financially burdened.

Is Big Pharma fraud propping up Wall Street?
It turns out that the insurance industry is seeing a major spike in deaths ever since the **COVID shots** were introduced by Donald Trump under Operation Warp Speed. One actuary reported a **40% increase in death claims**, adding that this figure applies across the industry.
In the case of **Pfizer**, the drug giant received approval for its COVID jab in individuals 16 years of age and older on Aug. 23, 2021. Four days later, a **Freedom of Information Act (FOIA)** request was submitted.
The FDA claimed at the time that the Pfizer product "meets the high standards for safety, effectiveness, and manufacturing quality". However, numerous public health officials, media outlets, journalists, scientists, politicians and public figures have raised questions as to the validity of these claims.
To make matters worse, the FDA tried to argue later that it needs until **2076** to fully release the Pfizer documents that were used to grant this approval. That outrageously long timeline is currently being challenged in court.
One wonders what, exactly, the FDA is trying to hide on behalf of **Pfizer** and its partner **BioNTech**, both of which claim that the data should not be released because it supposedly contains "confidential business and trade secret information," as well as the "personal privacy information of patients who participated in clinical trials."
Since they are reluctant to do so, Dowd can only assume that the whole thing is fraudulent, and with the already known adverse events and deaths resulting from their gene therapy jab, how can we not?
As this whole thing unravels and the dominoes fall, it could lead to the demise of companies that would appear to be "too big to fail". Will the central banks and their government patsies once again bail them out, or is that not possible this time around?

Biosecurity 'as important as conventional defence' to head off next pandemic

Source: https://www.telegraph.co.uk/authors/a/ak-ao/anne-gulland/

Feb 07 – Biosecurity is as important as conventional defence capabilities, a former UK defence secretary has said, amid calls for a beefed up international convention on biological weapons.
A report on pandemic prevention, co-authored by chemical weapons expert Hamish de Bretton-Gordon, highlights the threat posed by synthetic biology and warns of the possibility of "bad actors" developing and spreading genetically engineered pathogens that are far more virulent than Covid.
In the foreword to the report Sir Michael Fallon, defence secretary from 2014 to 2017, said Covid has highlighted how ill-prepared the world is to deal with pandemic threats – whatever their origins.
"Biosecurity is now as vital as conventional defence," wrote Sir Michael. "There is much that we can do now to improve global early warning systems and make countries follow stricter rules in their research laboratories. Strengthening our domestic resilience is equally urgent: because of our population density and our vulnerability as an international hub, Covid hit the UK hard."
The report warns that the "explosion in synthetic biology" and the 3,000-plus biosecure laboratories around the world where pathogens are being studied "creates a massive vulnerability in this area".
There has been much debate over the origins of Covid. While most experts do not believe the virus was deliberately planted, the possibility that it leaked from a laboratory is still under consideration by the World Health Organization.
The report said the coronavirus has shown that even a relatively non-virulent pathogen can have a huge impact. A pathogen specially modified to be as virulent as possible could create huge disruption.

"Covid has shown that even low-virulent pathogens can have strategic impact and create a massive terror effect. The area of biosecurity in the food production sector could also be a target area in future. Viruses and bacteria aimed at the food chain have the potential for massive disruption and destabilisation," it said.
The report also called for a fully funded and regulated international treaty on biological weapons – similar to the Chemical Weapons Convention, which is policed by the Organisation for the Prohibition of Chemical Weapons (OPCW) and has led to the removal of many of the most harmful weapons.
By contrast the Biological and Toxin Weapons Convention is poorly funded and supported at the United Nations and has no organisation to regulate it or police it.
The paper recommends that the remit of the OPCW be extended to include biological weapons.
In the report Mr de Bretton-Gordon, a former British army colonel, warns that because the UK is an international travel hub it is at particular risk and says a pandemic early warning system must include the capability to detect and track emerging viruses.
"In an age of increasingly democratised gene-editing capabilities alongside continued international turbulence, the world must be prepared for the next biological event, whether synthetic or natural, deliberate or accidental," he wrote.

Disulfiram Protects Against COVID-19 Lung Injury in Preclinical Study

Researchers report that disulfiram-an FDA-approved drug for alcohol use disorder-dramatically reduced neutrophil extracellular traps (NET), increased survival, improved blood oxygenation, and reduced lung edema in a transfusion-related acute lung injury (TRALI) mouse model. The team concluded that an existing FDA-approved drug can block NET formation and improve disease course in two rodent models of lung injury for which treatment options are limited. **+ MORE**

The Story of Omicron

Source (in German): https://www.welt.de/politik/ausland/plus236780035/Omikron-Entdeckerin-Man-wird-mich-nicht-zum-Schweigen-bringen.html

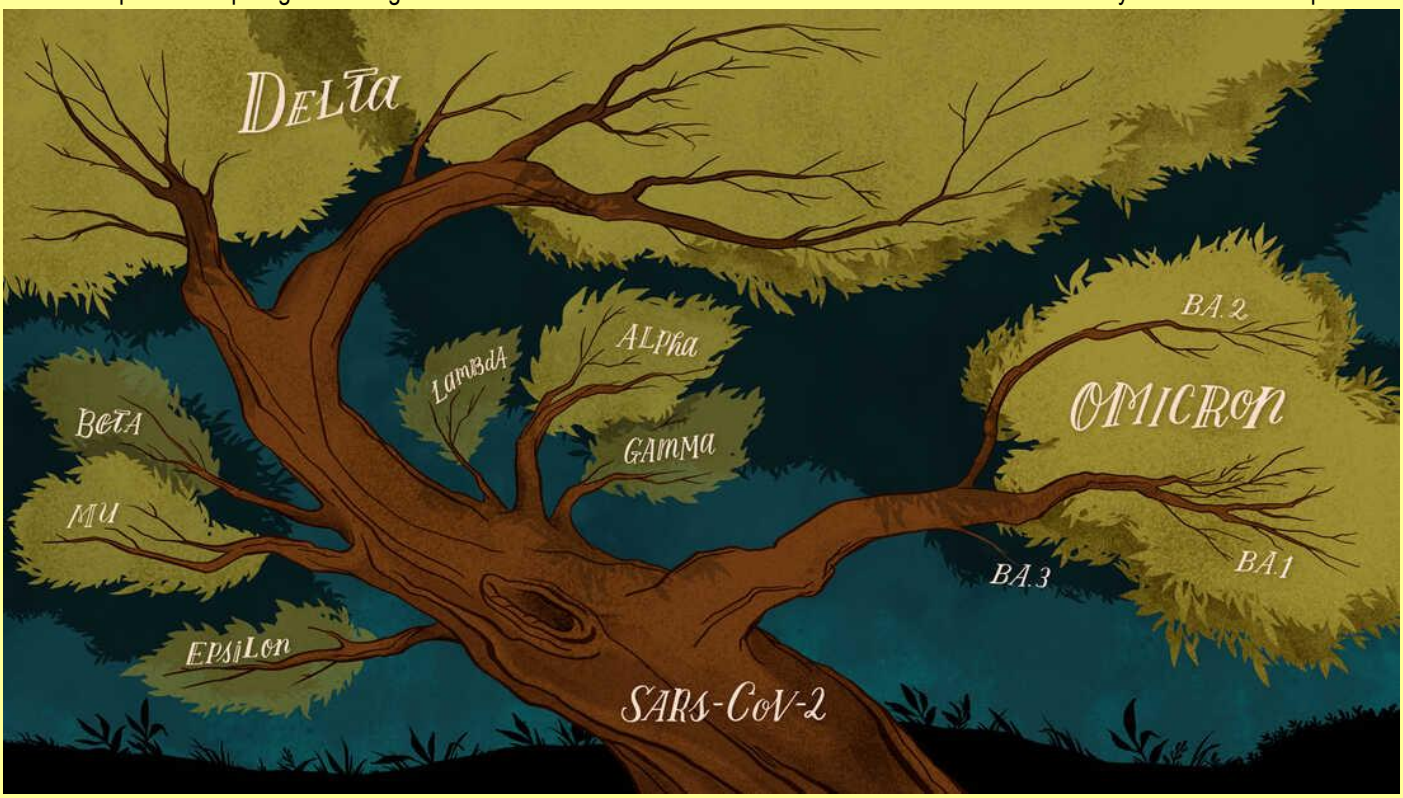
Angelique Coetzee war die Medizinerin, die auf die Omikron-Variante des Coronavirus stieß, erste Patienten behandelte – und Entwarnung gab. Aber in Europa habe das niemand hören wollen, sie sei von Regierungen unter Druck gesetzt worden. Im Exklusiv-Interview spricht sie über ihre Erfahrungen.

Angelique Coetzee was the doctor who came across the omicron variant of the coronavirus, treated the first patients - and gave the all-clear. But nobody in Europe wanted to hear that, she was put under pressure by governments. In an exclusive interview, she talks about her experiences.

Take a look at SARS-CoV-2's family tree. It's full of surprises

By Michaeleen Doucleff

Source: https://www.npr.org/sections/goatsandsoda/2022/02/09/1047616658/take-a-look-at-sars-cov-2s-family-tree-its-full-of-surprises



SARS-CoV-2, the coronavirus that causes the disease COVID-19, is a big viral family with many variants. Just like with a human family tree, the distance between two variants shows roughly how related they are. This illustration is inspired by the SARS-CoV-2 phylogenetic tree generated by Emma Hodcroft of Nextstrain.org and the University of Bern. Her tree is reproduced within the story below. (Kat Hubbs for NPR)

Feb 09 – In many ways, viruses are like families — giant, complicated, extended families with cousins, aunts, uncles, grannies and grandpas galore.

Just as with human families, scientists can generate family trees for viruses, showing how each member (or variant) is related to the others. Children are connected to parents by branches, and cousins are connected through their grandparents.

For viruses, these family trees give biologists insights into how a virus has evolved over time and what changes to expect in the future.

During the pandemic, the family tree of SARS-CoV-2, the coronavirus that causes the disease COVID-19, has produced more surprises than anyone expected.

It turns out the SARS-CoV-2 family had two black sheep that it kept hidden from the world. When those relatives appeared, seemingly out of the blue this autumn, they not only shocked the world, but they also made evolutionary biologists question their understanding of the pandemic's future.

Yes, I'm talking about omicron BA.1 and its sibling BA.2.

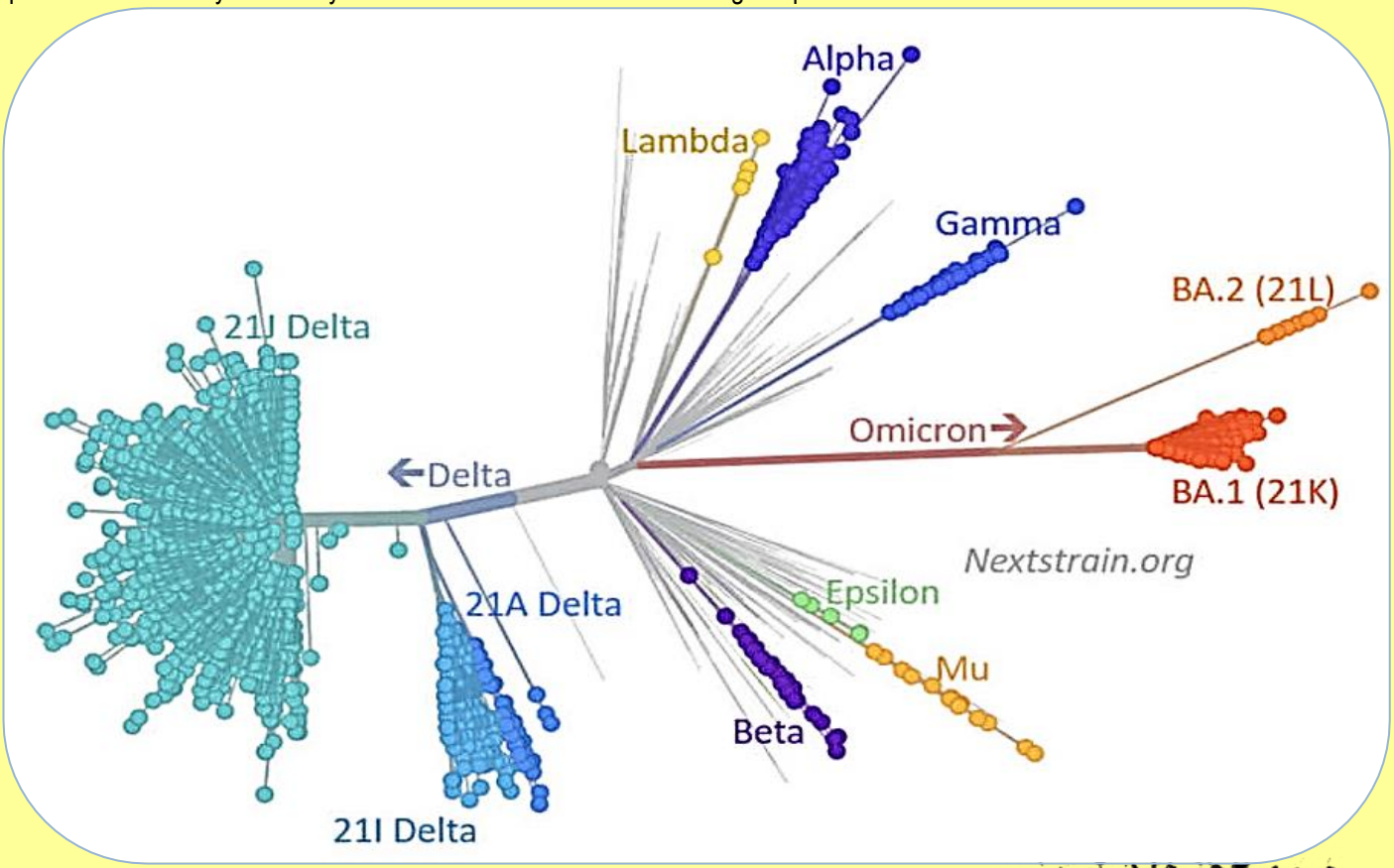
Early doubts that the coronavirus would change

When SARS-CoV-2 first emerged, many virologists thought they knew how it would evolve: slowly and minimally.

They were skeptical that the coronavirus would change much at all, says virologist Ravi Gupta at the University of Cambridge.

"Everyone had been telling us that SARS coronavirus doesn't mutate very much and therefore we're not going to see mutations that evade our immunity," he says. "But I just wanted to kind of see whether that was really true."
Virologist Jeremy Luban at the University of Massachusetts Chan Medical School heard the same skepticism. "In March 2020, I tried to write a grant application to study variants. And I have to say, I got a lot of flak from colleagues who were saying, 'You know, this virus isn't going to mutate anyway.' " At first, Luban's and Gupta's colleagues looked to be correct. During the first year of the coronavirus pandemic, the virus didn't change that much. SARS-CoV-2 picked up only about one or two mutations each month.
In fact, the SARS-CoV-2 family tree seemed a bit boring, like a young sapling tree with one main trunk rising up into the sky and a few tiny little branches. Then in December 2020, the course of the pandemic shifted. And Luban and Gupta proved prophetic.
Scientists in South Africa and the U.K. detected the first two variants of concern: alpha and beta. All of a sudden, the virus began to change rapidly. Instead of having only a few mutations as earlier variants did, these variants had around 20 mutations each.
At the same time, the SARS-CoV-2 family tree grew more complex and interesting. Branches for a bunch of variants sprouted off the main trunk. Gamma, lambda and mu appeared (although none of these variants ended up spreading across the globe). And up at the top of the tree, dozens of delta branches formed a broad overarching canopy. Aha! — scientists thought. We now understand how SARS-CoV-2 is evolving and how this family tree is going to grow. The future appeared clear again: The next variants of concern would emerge at the top of the tree, from the delta canopy. "At this point, focus of genomic surveillance should be to identify sub-lineages of Delta bearing mutations that contribute to further transmissibility ... expect such sub-lineages to emerge in the coming months," tweeted Trevor Bedford, who's a computational biologist at the Fred Hutchinson Cancer Research Center.
So in November 2021, scientists again were confident about their vision of the SARS-CoV-2 family tree and the future of the pandemic. But again, they were wrong. The tree was actually hiding a massive branch.

Holy cow! Where did that huge branch come from?
The day before Thanksgiving, scientists in Botswana and South Africa discovered a whole new variant of concern that was spreading extremely quickly. The World Health Organization named it omicron. Right away, scientists sequenced its genome so they could place it on the family tree. They wanted to know: Who are omicron's grandparents? Who are its cousins?



A SARS-CoV-2 genetic family tree diagram, generated from data and diagrams created by Nextstrain.org and modified by epidemiologist Emma Hodcroft.

"Normally when we get a new variant, we can see how the mutations pile up on each other over time, and we can estimate really well where it sits on the tree," says Emma Hodcroft, an epidemiologist at the University of Bern who has been tracking variants all around the world throughout the pandemic via the Nextstrain project.
For example, when the delta variant emerged in India back in December 2020, Hodcroft and her team could see quite clearly delta's ancestors — its parents and grandparents on the tree. So they could place it easily on the tree. "Of course we never know, like 100%. But in general, we have a good picture, for example, of how delta became delta," she says.
But omicron was almost like an orphan. It didn't have any close relatives on the tree. There are no parents, no grandparents, not even great-great-great-grandparents. Its genes just looked so different from the other genome sequences.
"This is the puzzle of omicron," Hodcroft says. "What was omicron before it was omicron? And that's what's causing a lot of the debate about omicron's origin. Where did it come from, and how did it happen? Because we just have no information essentially to help us build that picture. There's just no samples going back in time."
The "Omicron cluster is highly ... distinct from any known VOC [variant of concern] or variants of interest (VOI) and from any other lineages known to be circulating in southern Africa," bioinformatician Tulio de Oliveira and his colleagues, who discovered the variant, wrote in the journal *Nature* in January.
It's almost as if this massive branch on the SARS-CoV-2 family tree just appeared one day out of thin air, without any warning or signs that it was growing. And the initial highly transmissible omicron variant and its sibling BA.2 were at the end of the branch, ready to spread explosively around the world. Omicron BA.1 went on to sweep the world; BA.2 is now reported to be taking over in South Africa. (A third sibling also appeared, but so far it doesn't seem able to keep up with its globe-trotting siblings.)
Another possibility is that this omicron branch did grow slowly over time, but for some unknown reason, scientists couldn't see it. It was in effect invisible. Perhaps because the virus was evolving inside another animal, like a rodent, and then jumped back into people. Perhaps because the virus was evolving very rapidly inside a person who had a chronic infection. Or perhaps because the virus was spreading in parts of Africa that scientists weren't watching closely enough.
No one knows which hypothesis is correct, Hodcroft says. And this gap in our knowledge brings much uncertainty about the future of the pandemic. It means scientists are likely unaware of a pool of SARS-CoV-2 variants that are replicating, mutating and evolving over time, completely under the radar.
This prospect is "chilling," writes virologist William Gallaher on the site Virological.org. "The discomfort in discovering an entirely new and widely divergent VOC [variant of concern] ... is very real," writes Gallaher, who's at LSU Health New Orleans. "Beyond the medical impact of the Omicron variants, there is every reason to believe that this will happen yet again, as it did for Delta and now with Omicron."
Right now, there could be several other long — and invisible — branches growing on the SARS-CoV-2 tree, Hodcroft says. And in the coming months, one of those branches could sprout off another family of rapidly spreading variants, similar to omicron.
"This pandemic has always thrown the unexpected at us, right?" she says. "Every time we think we have SARS-CoV-2 figured out, we get something new to figure out."

What the future holds

On the surface, this uncertainty about the coronavirus seems a bit scary. It raises the possibility that a new variant could crop up that's more lethal than any previous variant.
That scenario is possible, says physician Roby Bhattacharyya, who's an infectious disease specialist at Massachusetts General Hospital and Harvard Medical School. "Variants that transmit better are going to be selected for, and it's kind of the luck of the draw whether that variant is also more severe or less severe."
Remarkably, however, our immune systems seem ready to handle whatever variant emerges. No matter what variant the coronavirus has thrown at us, including omicron, prior exposure to the virus (through either vaccination or a prior infection) has still offered good protection against hospitalization and severe disease.

Michaeleen Doucleff, PhD, is a correspondent for NPR's Science Desk. For nearly a decade, she has been reporting for the radio and the web for NPR's global health outlet, Goats and Soda. Doucleff focuses on disease outbreaks, cross-cultural parenting, and women and children's health. In 2014, Doucleff was part of the team that earned a George Foster Peabody award for its coverage of the Ebola outbreak in West Africa. In 2021, Doucleff published a book, called *Hunt, Gather, Parent*, stemming from her reporting at NPR. That book became a *New York Times* bestseller. Before coming to NPR in 2012, Doucleff was an editor at the journal *Cell*, where she wrote about the science behind pop culture. Doucleff has a bachelor degree in biology from Caltech, a doctorate in physical chemistry from the University of Berkeley, California, and a master's degree in viticulture and enology from the University of California, Davis.

The Black Death Plague Didn't Actually Kill Half of Europe, New Study Claims

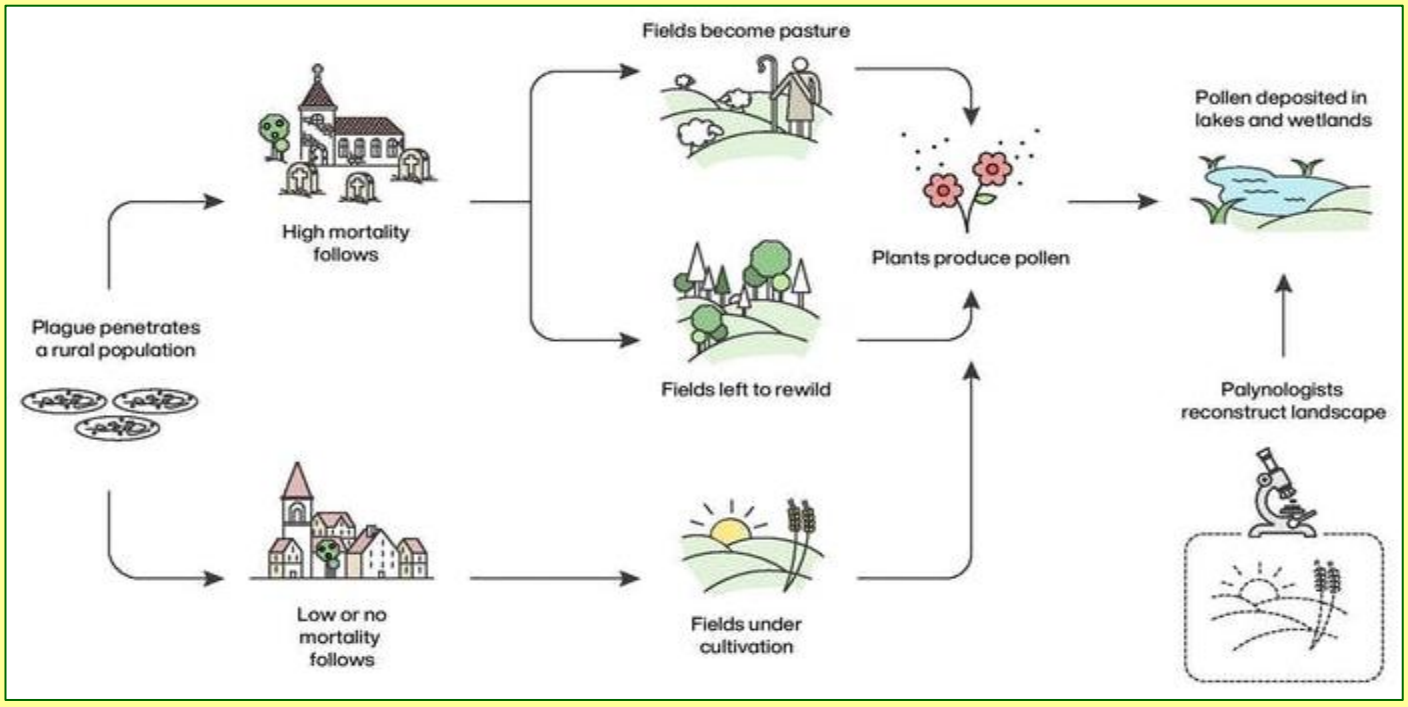
By Adam Izdebski et al.

Source: https://www.sciencealert.com/new-pollen-study-argues-the-black-death-was-not-as-catastrophic-as-we-thought

Feb 11 – In popular imagination, the Black Death is the most devastating pandemic to have ever hit Europe. Between 1346 and 1353, plague is believed to have reached nearly, if not every, corner of the continent, killing 30-50 percent of the population.
This account is based on texts and documents written by state or church officials and other literate witnesses.
But, as with all medieval sources, the geographical coverage of this documentation is uneven. While some countries, like Italy or England, can be studied in detail, only vague clues exist for others, like Poland.
Unsurprisingly, researchers have worked to correct this imbalance and uncover different ways for working out the extent of the Black Death's mortality.
In our new study, we used 1,634 samples of fossil pollen from 261 lakes and wetlands in 19 European countries. This vast amount of material enabled us to compare the Black Death's demographic impact across the continent.
The result? The pandemic's toll was not as universal as currently claimed, nor was it always catastrophic.

Natural archives

Lakes and wetlands are wonderful archives of nature. They continuously accumulate remains of living organisms, soil, rocks and dust. These (often "muddy") deposits can record hundreds or thousands of years of environmental change.
We can tap these archives by coring them and analyzing samples taken from the cores at regular intervals, from the top (present) to the bottom (past).



Palaeoecology approach to verifying Black Death mortality.

We relied on pollen analysis in our study. Because pollen grains are built of durable polymer and differ in shape between plants, they can be counted and identified in each sediment sample. These grains allow us to reconstruct the local landscape and changes over time. They shine a light on human land use and the history of agriculture.
For more than a century, paleoecologists – people who study past ecosystems – have been amassing data. In several world regions, the quantity of evidence available is overwhelming and certainly enough to ask questions about big historical events, like the Black Death. Did its mortality affect land use? Were arable fields turned into pasture or deserted and left to rewild?

If a third or half of Europe's population died within a few years, one might expect a near collapse of the medieval cultivated landscape. By applying advanced statistical techniques to available pollen data, we tested this scenario, region by region.

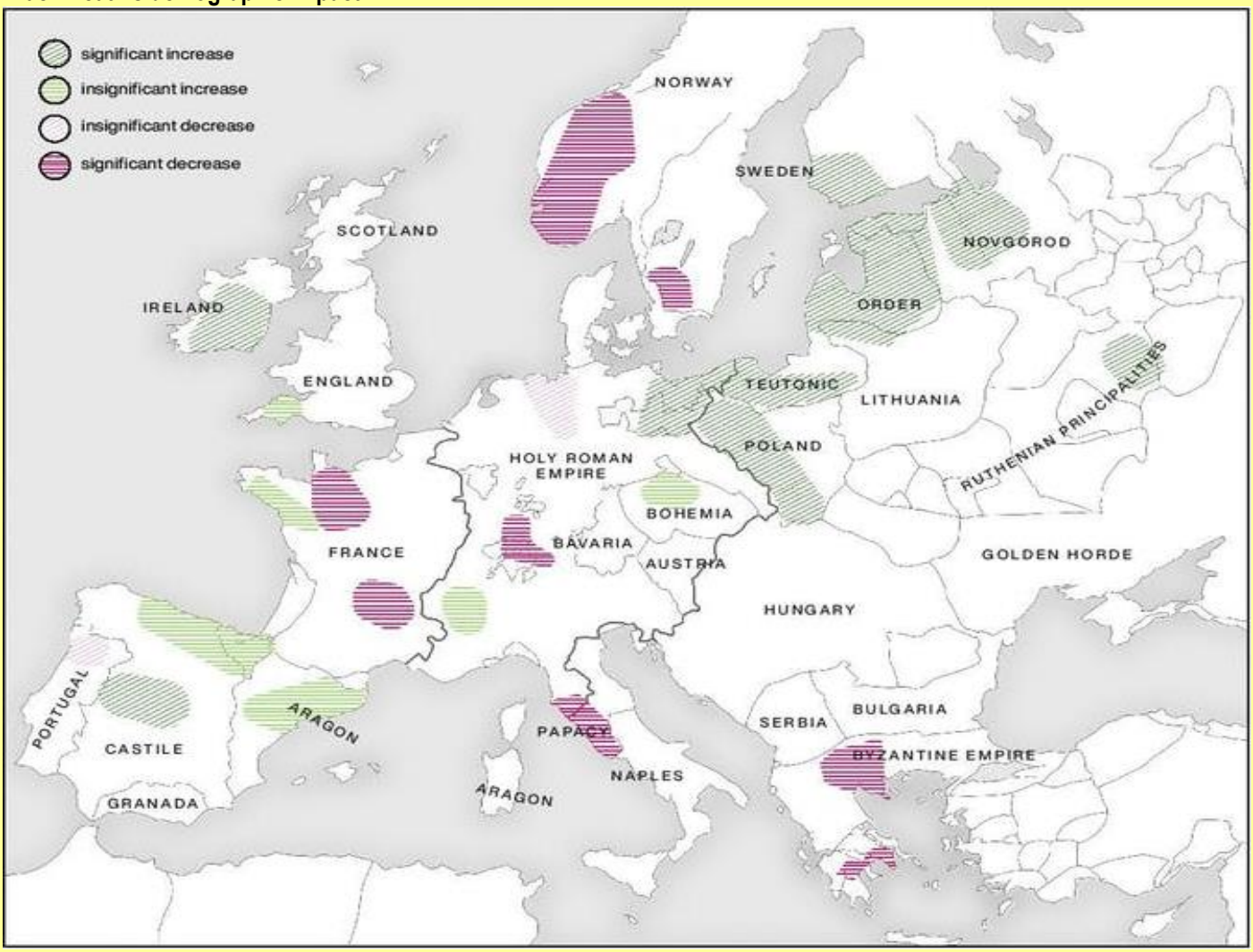
The ecology of the Black Death

We discovered that there were indeed parts of Europe where the human landscape contracted dramatically after the Black Death arrived. This was the case, for instance, in southern Sweden, central Italy and Greece.

In other regions, like Catalonia or Czechia, however, there was no discernible decrease in human pressure on the landscape. In others yet, such as Poland, the Baltic countries and central Spain, labor-intensive cultivation even increased, as colonization and agricultural expansion continued uninterrupted throughout the late Middle Ages.

This means the Black Death's mortality was neither universal nor universally catastrophic. Had it been, sediment records of Europe's landscape would say so.

Black Death's demographic impact



Scenarios of Black Death's demographic impact. (Izdebski et al., Nature Ecology & Evolution, 2022)

This new narrative of a regionally variable Black Death fits well with what we know about how plague can spread to and between people, and how it can circulate in urban and wild rodents and their fleas. That plague did not equally devastate every European region should not surprise us.

Not only will societies be affected and be able to respond differently, but we should not expect plague to always spread in the same way or for plague pandemics to be easily sustained.
Plague is a disease of wild rodents and their fleas. Humans are accidental hosts, who are generally thought to be incapable of long sustaining the disease. Although how plague outbreaks spill out of wild rodent reservoirs and spread to and within human populations is a subject of ongoing study, in human societies we know it can spread via several means.
People may most often contract it through flea bites, but once successful spillovers occur, multiple means of transmission can play a role, and so human behavior, as well as living conditions, lifestyle and the local environment, will affect plague's capacity to disseminate.
While plague transmission in the Black Death remains to be untangled, historians have tended to focus on rats and their fleas since the early 20th century, and to expect plague to have behaved in the Black Death in very similar ways in many places.
But as scholars have rethought the pandemic's map and timeline, we must also rethink how it spread. Local conditions would have influenced plague's diffusion through a region and thereby its mortality and effect on the landscape.
How people lived - 75 percent to 90 percent of Europeans lived in the countryside - or how much, how far and by what means they moved around, could have influenced the pandemic's course. Patterns of grain trade, which would have helped rats get around, could have been another important factor, as could have been weather and climate when the plague began.
Victims' health and regional disease burdens were yet other variables, two also partially shaped by weather, not to mention nutrition and diet, including the sheer availability of food and how it was distributed.

Pandemic lessons

Our discovery of stunning regional variability in the Black Death has consequences, potentially in and beyond the study of plague's past. It should prevent us from making quick generalizations about the spread and impact of history's most infamous pandemic.
It should also change how the Black Death is used as a model for other pandemics. It may still be the "mother of all pandemics", but what we think the Black Death was is changing. Our discovery might also prevent us from drawing easy conclusions about other pandemics, notably those less studied and with narratives based on fragmentary evidence.
Context matters. Economic activity can determine routes of dissemination, population density can influence how quickly and widely a disease spreads, and pathogen "behavior" can differ between climates and landscapes.
Medical and popular theories about disease causation will shape human behavior, as trust in authorities will affect their ability to manage disease spread, and social inequalities will ensure disparities in an outbreak's toll.
While no two pandemics are the same, the study of the past can help us discover where to look for our own vulnerabilities and how to best prepare for future outbreaks. To begin to do that, though, we need to reassess past epidemics with all the evidence we can.

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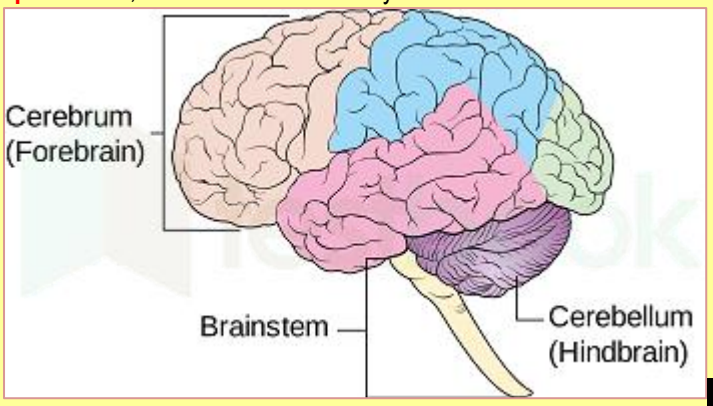
We May Finally Know Where Ebola Hides in The Brain to Emerge Years Later

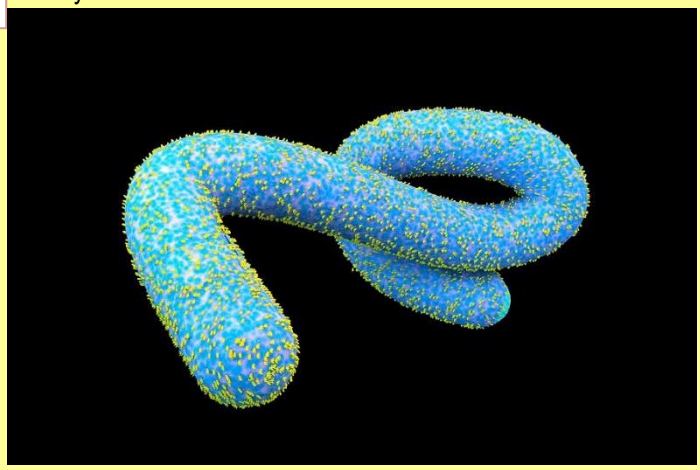
Source: https://www.sciencealert.com/ebola-can-avoid-the-immune-system-for-years-and-primate-brains-reveal-its-hideout

Feb 11 – Since 2013, medical experts in West Africa have been playing whack-a-mole with what looks like the same strain of Ebola virus, and we don't really know why it continues to pop back up.
Even though we keep hammering away at the virus with effective antibody treatments and vaccines, this incredibly fatal infection keeps re-emerging amongst a small subset of recovered patients, triggering new outbreaks wherever it does.
Several years after Guinea announced its first Ebola epidemic, for instance, a patient treated in the initial wave suddenly relapsed and began spreading the virus again.
Similarly, an Ebola patient in the Democratic Republic of Congo experienced a fatal relapse six months after they had already been treated with monoclonal antibodies. The patient was also vaccinated.
Even when our immune systems are on high alert, the virus seems to be getting away – but how?
Research on rhesus macaques has now found a potential hiding spot in the primate brain.

Past evidence suggests **Ebola can avoid the human immune system in places like the testicles, the eye, the brain and the spinal cord**, but this is the first study to show where the virus actually goes during antibody treatment and how it can re-emerge.



After analysing the brains of 36 macaques treated for Ebola who had survived for at least four weeks, scientists found a persistent viral reservoir in the fluid-filled cavities of the **forebrain and brainstem** in 7 of them. "We found that about 20 percent of monkeys that survived lethal Ebola virus exposure after treatment with monoclonal antibody therapeutics still had persistent Ebola virus infection – specifically in the brain ventricular system, in which cerebrospinal fluid is produced, circulated, and contained – even when Ebola virus was cleared from all other organs," says Xiankun (Kevin) Zeng from the US Army Medical Research Institute of Infectious Diseases. Two of the monkeys that had been successfully treated with monoclonal antibodies later died from a reinfection of the disease. Apart from their brains, no other part of their body showed signs of a reinfection. The two fatal relapses were accompanied by a fever and severe inflammation in the brain's ventricles, as well as a medical condition resembling meningitis.



Macaques are obviously not humans, but their physiological response to Ebola is similar enough to our own that research can sometimes translate. Past studies have detected the Ebola virus in the cerebrospinal fluid of a few human survivors. What's more, a British nurse who caught and recovered from Ebola while working in West Africa experienced a relapse in her brain in 2015, which caused meningitis-like symptoms similar to the two macaques detailed above. She has since made a full recovery. The authors of the current study thus conclude that monoclonal antibody treatments may indeed not clear the entire brain of the Ebola virus. The ventricular system could be hiding a silent reservoir, which is harder for the immune system to reach. Even though the authors found evidence of the Ebola virus in the primates' brain ventricles, they barely detected any signs of immunosuppressive cells. If given enough time, the immune system usually gets its fingers into the crevices of the brain as well, but this seems to be the last stage of the battle. Among a dozen of the rhesus macaques that survived with antibody treatment, none showed evidence of the infection in their brains 120 days later. But for those immune systems that didn't quite get to the brain's ventricles, the chance of reinfection was much higher. "Fortunately, with these approved vaccines and monoclonal antibody therapeutics, we are in a much better position to contain outbreaks," says Zeng.

"However, our study reinforces the need for long-term follow-up of Ebola virus disease survivors –even including survivors treated by therapeutic antibodies – in order to prevent [recurrence of the disease]. This will serve to reduce the risk of disease re-emergence, while also helping to prevent further stigmatization of patients."

●▶ **The study was published in** *Science Translational Medicine*.

A Common Over-The-Counter Drug Could Treat Long COVID, Case Study Reports

Source: https://www.sciencealert.com/there-s-evidence-antihistamines-may-help-treat-long-covid-symptoms

Feb 10 – **Two patients with long COVID in California have almost completely alleviated their symptoms by taking daily antihistamines, according to a newly published case report.**

While the evidence is anecdotal, the remarkable results aren't without precedent, and the authors hope the stories they have detailed can give patients hope and point researchers in the right direction for investigating future treatment.

There are currently no evidence-based treatments for long COVID – also known as post-acute sequelae of SARS-CoV-2 infection (PASC) – but antihistamines are a promising avenue, as they are generally safe to take on a daily basis, so long as they don't interfere with other medications.

"Most patients tell us that providers have not recommended anything that has helped," says nurse Melissa Pinto from the University of California, Irvine.

"If patients wish to try over-the-counter antihistamines, I urge them to do so under medical supervision. And because providers may not know about new potential treatments, I would encourage patients to be active in their care and consider taking research and case reports like ours to appointments with providers so they can help create a regimen that will work."

The first case detailed by researchers at UCI involves a healthcare worker in her 40s, who would have been one of the first COVID-19 patients in the United States. The patient was probably infected sometime in January of 2020, although testing at this time was scarce. Three days after falling ill, the patient says she was hit by a headache and a wall of severe fatigue. Days later, she broke out in a rash and began experiencing chest pain, fevers, and night sweats. The worst of the infection lasted 24 days, but many of the symptoms lingered on. In March of the same year, she started reporting a new symptom: brain fog. It was only when the patient took an antihistamine for a cheese allergy in June of 2020 that she suddenly felt better. She started taking 50 milligrams of **diphenhydramine** (a common over-the-counter antihistamine, often sold in the US as Benadryl) daily, but eventually took the news to her doctor, who prescribed a different medication to try and arrive at a dose that would get her symptoms under control. The patient has now been on a prescription of 50 mg **hydroxyzine** pamoate for more than nine months and her symptoms of fatigue, brain fog, exercise intolerance, and chest pain are nearly gone. Back at full-time work, she says she's achieved 90 percent of her pre-illness functioning.

The second patient, a middle-aged teacher, has a similar story. A month after contracting SARS-CoV-2, she was still suffering from joint pain, insomnia, a rapid heart rate, and difficulty concentrating. A year later, the symptoms remained debilitating. One day, the patient randomly switched her antihistamine medication from **fexofenadine** to 25 milligrams of **diphenhydramine**, as the latter was more convenient to find. The next morning, she noticed her brain fog and fatigue had improved, so she kept it up. The patient now takes 25 mg of diphenhydramine at night and 180 mg fexofenadine in the morning, and says she feels 95 percent better. The near-complete recoveries of both patients are remarkable, but they are not the first stories of their kind.

The symptoms of long COVID are very similar to Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS), which is an understudied and underfunded medical condition impacting up to 24 million people worldwide. Now that long COVID or PASC cases are surging in synchrony with the current coronavirus pandemic, researchers are finally giving the similar symptoms of both illnesses the attention they deserve. Antihistamines are commonly taken by patients with ME/CFS, although a small trial in 1996 found this medicine showed no benefits among all 30 participants. More recently, however, physicians have begun calling for renewed research on antihistamines as a possible treatment for ME/CFS. A subset of patients with ME/CFS had shown signs of overactive immune cells, which could possibly be quieted with an antihistamine.

When the global pandemic took hold in 2020, researchers used the evidence to draw similar connections to long COVID. In 2021, a small study of 49 long COVID patients found an immune system on high alert. What's more, over 70 percent of those in the trial who took antihistamines reported clinical improvement in their lingering symptoms. Further long COVID research will be needed to truly put antihistamines to the test, but the two promising case reports from California could help kickstart the process.

"The possibility that an easy-to-access, over-the-counter medication could ease some of the [long COVID] symptoms should offer hope to the estimated 54 million people worldwide who have been in distress for months or even years," says Pinto.

●▶ **The study was published in** *The Journal for Nurse Practitioners*.

EU investigates reports of menstrual disorders after mRNA COVID shots

Source: https://www.reuters.com/business/healthcare-pharmaceuticals/eu-regulator-reviewing-menstrual-disorder-cases-after-mrna-covid-shots-2022-02-11/

Feb 11 – The European Medicines Agency's safety committee said on Friday it was reviewing reports of heavy menstrual bleeding and absence of menstruation from women who had received COVID vaccines from Pfizer (PFE.N)/BioNTech (22UAy.DE)and Moderna (MRNA.O).

The assessment was in view of reports of menstrual disorders after receiving either of the two vaccines, both based on messenger RNA technology, and it was not yet clear whether there was a causal link, the agency said.

It was not yet clear whether there was a causal link between the vaccines and the reports, the agency said.
Menstrual disorders can occur due to a range of underlying medical conditions as well as from stress and tiredness, the EMA said, adding that cases of such disorders had also been reported following COVID-19 infection.
Vaccination against COVID-19 was linked with a small, temporary change in menstrual cycle length, according to a recent study funded by the National Institutes of Health, which collected data from nearly 4,000 users of a smartphone app that tracks menstrual cycles.
But the EMA said in December it had not established a link between changes in menstrual cycles and COVID-19 vaccines, after a study in Norway suggested some women had heavier periods after being inoculated. read more
After reviewing the available evidence, the EMA's Pharmacovigilance Risk Assessment Committee (PRAC) said it decided to request an evaluation of all available data, including reports from patients and healthcare professionals, clinical trials and the published literature. The agency on Friday added that there was also no evidence to suggest that COVID-19 vaccines affected fertility.

Luc Montagnier, Nobel-Winning Co-Discoverer of H.I.V., Dies at 89

Source: https://www.nytimes.com/2022/02/10/science/luc-montagnier-dead.html

Feb 10 – Luc Montagnier, a French virologist who shared a Nobel Prize in 2008 for discovering the virus that causes AIDS, died on Tuesday in the Paris suburb of Neuilly-sur-Seine. He was 89.
The town hall in Neuilly confirmed that a death certificate for Dr. Montagnier had been filed there.
For all the glory that Dr. Montagnier earned in helping to discover the virus, today known as H.I.V., in later years he distanced himself from colleagues by dabbling in maverick experiments that challenged the basic tenets of science. Most recently he was an outspoken opponent of coronavirus vaccines.
The discovery of H.I.V. began in Paris on Jan. 3, 1983. That was the day that Dr. Montagnier (pronounced mon-tan-YAY), who directed the Viral Oncology Unit at the Pasteur Institute, received a piece of lymph node that had been removed from a 33-year-old man with AIDS.
Dr. Willy Rozenbaum, the patient's doctor, wanted the specimen to be examined by Dr. Montagnier, an expert in retroviruses. At that point, AIDS, or acquired immune deficiency syndrome, had no known cause, no diagnostic tests and no effective treatments. Many doctors, though, suspected that the disease was triggered by a retrovirus, a kind of germ that slips into the host cell's DNA and takes control, in a reversal of the way viruses typically work; hence the name retro.
From this sample Dr. Montagnier's team spotted the culprit, a retrovirus that had never been seen before. They named it L.A.V., for lymphadenopathy associated virus.
The Pasteur scientists, including Dr. Françoise Barré-Sinoussi, who later shared the Nobel with Dr. Montagnier, reported their landmark finding in the May 20, 1983, issue of the journal Science, concluding that further studies were necessary to prove L.A.V. caused AIDS.
The following year, the laboratory run by the American researcher Dr. Robert Gallo at the National Institutes of Health, published four articles in one issue of Science confirming the link between a retrovirus and AIDS. Dr. Gallo called his virus H.T.L.V.-III. There was some initial confusion as to whether the Montagnier team and the Gallo team had found the same virus or two different ones.
When the two samples were found to have come from the same patient, scientists questioned whether Dr. Gallo had accidentally or deliberately got the virus from the Pasteur Institute.
And what had once been camaraderie between those two leading scientists exploded into a global public feud, spilling out of scientific circles into the mainstream

press. Arguments over the true discoverer and patent rights stunned a public that, for the most part, had been shielded from the fierce rivalries, petty jealousies and colossal egos in the research community that can disrupt scientific progress.
Dr. Montagnier sued Dr. Gallo for using his discovery for a U.S. patent. The suit was settled out of court, mediated by Jonas Salk, who had years earlier been involved in a similar battle with Albert Sabin over the polio vaccine.
In 1986, the virus that causes AIDS, known by Americans as H.T.L.V.-III and the French as L.A.V., was officially given one name, H.I.V., for human immunodeficiency virus.
The following year, with the dispute between the doctors still raging, President Ronald Reagan and Prime Minister Jacques Chirac of France stepped into the fray by signing an agreement to share patent royalties and proclaiming both scientists discoverers of the virus.
Dr. Montagnier and Dr. Gallo shared many prestigious awards, among them the 1986 Albert Lasker Medical Research Award, which honored Dr. Montagnier for discovering the virus and Dr. Gallo for linking it to AIDS. And in 2002 they appeared to have resolved their rivalry when they announced that they would work together to develop an AIDS vaccine.
Then came the announcement of the 2008 Nobel Prize for Medicine or Physiology.
Dr. Gallo had long been credited with linking H.I.V. to AIDS, but the Nobel Committee for Physiology or Medicine singled out its discoverers, not him, in awarding half the prize jointly to Dr. Montagnier and Dr. Barré-Sinoussi. (The other half was awarded to Dr. Harald zur Hausen of Germany "for his discovery of human papilloma viruses causing cervical cancer.")
The Nobel committee said it had no doubt "as to who had made the fundamental discoveries" concerning H.I.V. Introducing the winners at the award ceremony in Sweden, Professor Björn Bennström, a committee member, said, "Never before had science advanced so quickly from finding the disease-causing agent to anti-viral agents."
In his acceptance speech, contrary to the views of other AIDS experts, Dr. Montagnier said he believed that H.I.V. relied on other factors to spark full-blown disease. "H.I.V. ," he said, "is the main cause, but could also be helped by accomplices." He was referring to other infections, perhaps from bacteria, and a weakened immune system.
By then, AIDS-related illnesses had killed more than 25 million people and an estimated 33 million were living with H.I.V.
After his work with H.I.V., Dr. Montagnier veered into nontraditional experiments, shocking and infuriating many colleagues. One experiment, published in 2009 in a journal he founded, claimed that DNA emitted electromagnetic radiation. He suggested that some bacterial DNA continued to emit signals long after an infection had been cleared.
"He was always controversial, but I had the greatest respect for the team he assembled," said Donald P. Francis, who directed the AIDS laboratory at the U.S. Centers for Disease Control and Prevention in the early days of the AIDS epidemic and who was one of the first scientists to suggest that AIDS may be caused by an infectious agent.
In a 2010 interview with Science, Dr. Montagnier defended his theories about DNA, saying: "It's not quackery. These are real phenomena which deserve further study." That same year, he accepted a professorship at Jiao Tong University in Shanghai to investigate DNA emissions. He stayed there for about two years before returning to Paris.
Dr. Montagnier set off another uproar among scientists when, speaking at a conference on autism in 2012, he suggested that long-term antibiotics could be successful in treating that illness.
Last May, he added fuel to the spread of false information about Covid-19 vaccines by claiming, in a French video, that vaccine programs were an "unacceptable mistake" because, he said, vaccines could cause viral variants.
And in January, in an opinion article in The Wall Street Journal written with the Yale law professor Jed Rubenfeld, he criticized President Biden's vaccine mandates. The authors said it was "irrational, legally indefensible and contrary to the public interest for the government to mandate vaccines absent any evidence that the vaccines are effective in stopping the spread of the pathogen."
Mark Wainberg, who was president of the International AIDS Society, professor of medicine and microbiology at McGill University in Montreal and director of AIDS research at the Jewish General Hospital in that city, said in a 2014 interview for this obituary that "Montagnier was in the right place at the right time," referring to his Nobel-Prize winning research. (Dr. Wainberg died in 2017.)
But in speaking of Dr. Montagnier's later work, he said, "The fact is that his scientific ideas have not been considered credible by his peers nor have they stood the test of time."

Luc Montagnier was born on Aug. 18, 1932, in Chabris, France, the only child of Antoine and Marianne (Rousselet) Montagnier. His father was an accountant, and his mother was a homemaker. He once told The International Herald Tribune that his father, who had a makeshift chemical laboratory in the family's garage, had inspired him to become a doctor so that he could "explain the world through science."

Dr. Montagnier earned degrees from the University of Poitiers and Paris as well as from the Sorbonne, where he taught physiology. He worked at the Virus Unit of the Medical Research Council in London from 1960 to 1963, and for a year at the Institute of Virology in Glasgow. He and a colleague there discovered the first double-stranded RNA virus and a new way to culture cancer cells.

Dr. Montagnier returned to Paris to direct a laboratory at the Curie Institute and, in 1972, founded and directed the Viral Oncology Unit at the Pasteur Institute, where he led the team that discovered the virus that causes AIDS.

He married Dorothea Ackerman in 1961. They had two daughters, Anne-Marie and Francine, and a son, Jean-Luc. Information about his survivors was not immediately available.

Read also: The Omicron variant breaks the evolutionary lineage of SARS-CoV-2 variants (last paper of Luc Montagnier)

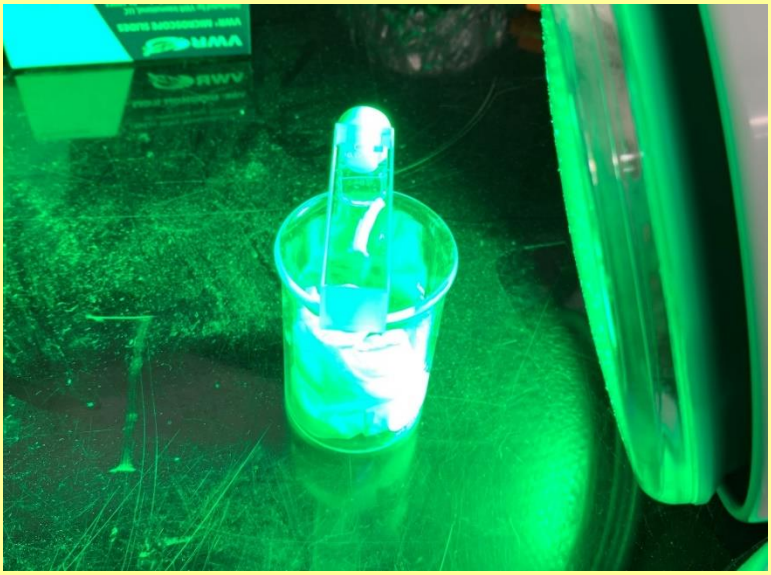
Futuristic coating for hospital fabrics and activewear kills COVID and E. coli

Source: https://news.ubc.ca/2022/02/10/futuristic-coating-for-hospital-fabrics-and-activewear-kills-covid-and-e-coli/

Feb 10 – UBC researchers have developed an inexpensive, non-toxic coating for almost any fabric that decreases the infectivity of the virus that causes COVID-19 by up to 90 per cent.

And in the future, you might be able to spray it on fabric yourself.

"When you're walking into a hospital, you want to know that pillow you're putting your head onto is clean," says lead author Taylor Wright, a doctoral student in the department of chemistry. "This coating could take a little bit of the worry off frontline workers to have Personal Protection Equipment with antimicrobial properties."



Researchers soaked fabric in a solution of a bacteria-killing polymer which contains a molecule that releases sterilizing forms of oxygen when light shines on it. They then used an ultraviolet (UV) light to turn this solution to a solid, fixing the coating to the fabric. "This coating has both passive and active antimicrobial properties, killing microbes immediately upon contact, which is then amped up when sunlight hits the cloth," says senior author Dr. Michael Wolf (*he/him*), a professor of chemistry.

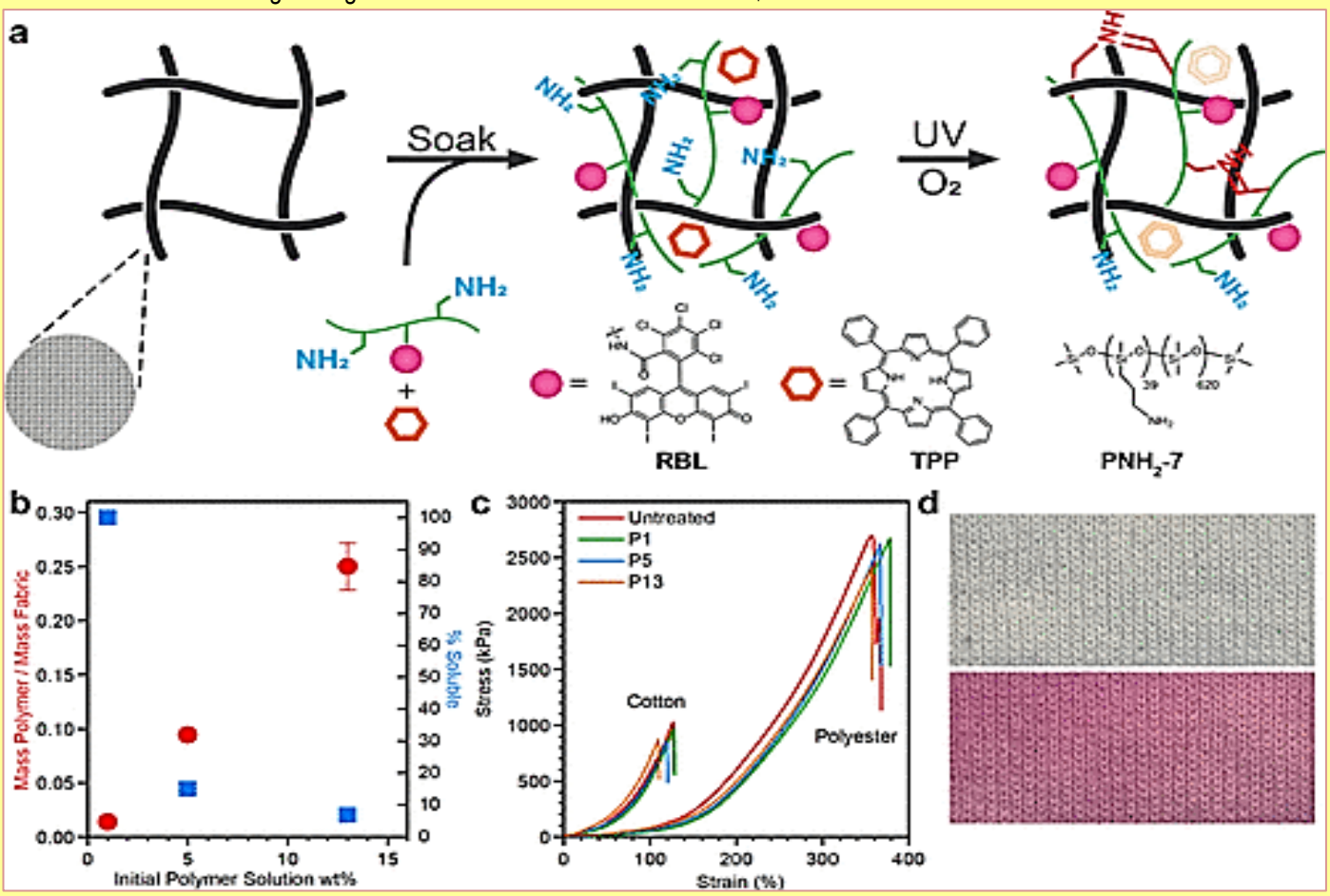
Both components are safe for human use, and the entire process takes about one hour at room temperature, says Wright. It also makes the fabric hydrophobic, meaning microbes are less likely to stick to the cloth, and doesn't seem to affect the strength of the fabric.

In addition, the coating can be used on almost any fabric, including cotton, polyester, denim, and silk, with applications in hospital fabrics, masks, and activewear. Whereas other such technologies can involve chemical waste, high energy use, or expensive equipment, the UBC method is relatively easy and affordable, says Wright. "All we need is a beaker and a light bulb. I'm fairly certain I could do the whole process on a stove."

To test the coating's bug-killing properties, the researchers bathed treated fabric in bacterial soups of *Escherichia coli (E. coli)* and Methicillin-resistant Staphylococcus aureus (MRSA), both major sources of hospital-acquired infections. They found there were 85 per cent of viable *E. coli* bacteria remaining after 30 minutes, which fell to three per cent when the

treated cloth was exposed to green light for the same amount of time. Similarly, 95 per cent of viable MRSA bacteria remained, dropping to 35 per cent under green light. No bacteria remained after four hours.

Given that sunlight or fluorescent lights have a lesser percentage of green, the team expects similar but less intense results for fabric exposed to those light sources, says Wright. "Particularly in the Pacific Northwest, it's not always a sunny day. So, at all times you're going to have that layer of passive protection and when you need that extra layer of protection, you can step into a lit room, or place the fabric in a room with a green light bulb – which can be found for about $35 online."



(a) Scheme of textile treatment using a solution soak, followed by UV irradiation resulting in imine cross-links from TPP-derived $^1O_2$. (b) Polymer mass loading and unloading for cotton treated with different wt % polymer solutions. (c) Representative stress–strain curves determined from Instron mechanical testing of cotton and polyester strips treated using **P1**, **P5**, and **P13** solutions. (d) Cotton fabric before (top) and after (bottom) treatment with **P13** to afford **C/P13**.

The researchers also looked into whether the coating reduced the infectivity of SARS-CoV-2, the virus causing COVID-19 by bathing treated fabric in a solution of the virus particles and then adding that solution to living cells to see if they could infect them. They found the passive properties weren't effective against the virus, but when treated fabric was exposed to green light for two hours, there was up to 90 per cent decrease in the infectivity of SARS-CoV-2. "In other words, only one tenth of the amount of virus signal was detected on cells infected with the UV-fabric and light treated virus", says co-author Dr. François Jean (*he/him*), professor of virology at UBC. The efficacy of the new fabric against SARS-CoV-2 was demonstrated by Dr. Jean's team at UBC FINDER, the state-of-the-art level three biocontainment facility founded by Dr. Jean in 2010.

The team found they needed an 18 square centimetre piece of fabric to kill microbes with material containing seven per cent weight of the active ingredient, but that increasing this to 23 per cent weight increased the effectiveness of the fabric at four times less material, says Wright.

Researchers also found that keeping the fabric under green light for more than 24 hours failed to produce the sterilizing forms of oxygen, highlighting an area for further study. This is a similar effect to the colour fading on clothing after being exposed to sunlight for too long.

"Biomanufacturing face masks based on this new UBC technology would represent an important addition to our arsenal in the fight against COVID-19, in particular for highly transmissible SARS-CoV-2 variants of concern such as Omicron", says Dr. Jean. The coating can also be used for activewear, with an 'anti-stink' coating applied to areas where people tend to sweat, killing off the bacteria that makes us smell. Indeed, hospital fabric and activewear companies are already interested in applying the technology, and the university has applied for a patent in the United States, says Dr. Wolf.

●▶ **The study was published in** *American Chemical Society Applied Materials & Interfaces.*

New Omicron-targeting antibody therapy for COVID authorized by FDA

Source: https://newatlas.com/health-wellbeing/fda-omicron-bebtelovimab-antibody-monoclonal-authorized/

Feb 13 – The U.S. Food and Drug Administration (FDA) has issued an emergency use authorization for **bebtelovimab**, a new monoclonal antibody designed to reduce risk of hospitalization and death from COVID-19. The approval comes weeks after the FDA halted use of previously authorized antibody treatments following research that revealed them to be ineffective against the Omicron variant of SARS-CoV-2. Bebtelovimab is a novel monoclonal antibody developed by biotech company AbCellera in collaboration with pharma giant Eli Lilly and Company (Lilly). The research team behind the innovation was previously responsible for one of the first monoclonal antibody treatments for COVID-19, called bamlanivimab, which was authorized for use in late 2020. Carl Hansen, CEO of AbCellera, said development of the newer monoclonal treatment began back in early 2021 before any serious SARS-CoV-2 variant had emerged. In an attempt to get ahead of future variants, the researchers focused on developing an antibody that binds to particular regions of the SARS-CoV-2 spike protein thought to only very rarely mutate. "We shifted our efforts to discovering a next-generation antibody therapeutic, this time prioritizing maximum potency and breadth of neutralization," explained Hansen. "This resulted in the discovery of bebtelovimab, which neutralizes all known variants of concern, and is the most potent antibody in development against the Omicron variant, including BA.2."

The FDA's emergency use authorization (EUA) of bebtelovimab comes with a number of significant limitations. It can only be given to those over the age of 12 experiencing mild to moderate symptoms in the early stages of COVID-19. Bebtelovimab is not authorized for use in patients already hospitalized with COVID-19, and it is only recommended in patients, "for whom alternative COVID-19 treatment options approved or authorized by the FDA are not accessible or clinically appropriate." The EUA comes just weeks after the US government halted its use of two other monoclonal antibody treatments. Lilly's prior treatment (bamlanivimab and etesevimab) and Regeneron's infamous antibody cocktail were both found to be ineffective at treating COVID-19 cases with the Omicron variant. This recently left healthcare providers with few options to treat high-risk COVID-19 patients. Antivirals such as Pfizer's Paxlovid and **Merck's molnupiravir are still expected to work against the Omicron variant but only one monoclonal antibody treatment is thought to remain effective – sotrovimab.** While sotrovimab may still work against BA.1, the primary iteration of Omicron currently spreading around the world, recent research indicates it may not be effective against BA.2, another form of Omicron that is growing in prevalence. It is still unclear how well sotrovimab holds up against BA.2 but if it does prove to be ineffective then doctors will be increasingly limited in their tools to fight COVID-19.

AbCellera and Lilly both claim preliminary lab studies show bebtelovimab is effective against all current SARS-CoV-2 variants, including Omicron iterations BA.1 and BA.2. The US government has entered into a purchase agreement with Lilly for 600,000 doses of bebtelovimab, to be delivered over the next two months. "Should the BA.2 subvariant grow in proportion in the U.S., this potential treatment may help ensure that we can continue to offer monoclonal antibody treatment that works against that strain of the virus," the U.S. Department of Health and Human Services said in a recent statement.

Exercising right after vaccination can boost immune response

Source: https://newatlas.com/health-wellbeing/exercise-after-vaccine-boost-immune-response-covid-influenza/

Feb 13 – New research from Iowa State University has found a long bout of moderately intense exercise following COVID-19 or influenza vaccination can amplify the body's immune response. **The study showed 90 minutes of exercise immediately after vaccination increased antibody responses four weeks later**. The relationship between exercise and general health is so obvious that it is barely worth mentioning. But, investigations into exactly how exercise improves our health have yielded some fascinating studies over the past few years, from the way exercise helps the

body kill cancer cells to the anti-inflammatory proteins released during physical activity that can prevent cognitive decline.
More specifically, the association between physical activity and the immune system has been of particular interest to researchers in recent times. A massive meta-analysis last year looked at data from several studies encompassing more than half a million people and found regular exercise significantly reduced a person's risk of contracting an infectious disease.
This new study set out to very specifically home in on whether single bouts of exercise can influence the efficacy of vaccination. To investigate this question the researchers recruited a number of healthy subjects who were about to be immunized with one of three different vaccines (2009 pandemic influenza H1N1, seasonal influenza, or COVID-19).

Each subject was randomly assigned to one of three groups: a no exercise control, or either 45 minutes or 90 minutes of moderate exercise commenced within a half hour of receiving the vaccine. All participants had blood samples taken before the vaccine, then two and four weeks later, to track the effects of exercise on antibody levels.

The subjects that performed 90 minutes of exercise following vaccination showed statistically significant increases in antibody levels several weeks later compared to the no exercise group. Interestingly, the researchers did not detect differences in antibody levels between the control and 45-minute exercise groups.
An experiment in mice showed similar differences in post-vaccine antibody boosts between 45-minute and 90-minute exercise sessions. The researchers hypothesize the differences in immune responses between 45- and 90-minute exercise sessions offers clues to how physical activity could be boosting vaccine-induced antibody responses.
Prior studies have shown longer durations of exercise generate different kinds of immune effects. In particular the researchers point to specific immune proteins called interferon alpha (IFN-α), which have previously been found to increase relative to the duration of exercise. Exercise-induced increases in IFN-α are hypothesized as one of the possible mechanisms that could explain how antibody responses can be boosted by physical activity. However, Marian Kohut, lead author on the new study, says it is likely a number of different mechanisms are playing a role in the new findings. "… a lot more research is needed to answer the why and how," said Kohut. "There are so many changes that take place when we exercise – metabolic, biochemical, neuroendocrine, circulatory. So, there's probably a combination of factors that contribute to the antibody response we found in our study."
The researchers note further work will be needed to ascertain the optimal type of exercise and duration necessary to enhance vaccine response. So, while 45 minutes of activity may not have been enough here, maybe 60 minutes could be effective.
A number of different exercise interventions were used the participants in the study, from vigorous walking to riding an exercise bike. The main focus was on intensity of exercise, with all participants required to maintain a heart rate of around 120 to 140 bpm. This rate of exertion is feasible at a variety of different fitness levels, the researchers say, and there is no evidence post-vaccination exercise increases adverse side effects from the vaccine.
"The exercise intervention is feasible for people who exercise regularly at light intensities such as walking, and persons with a range of health characteristics were able to complete the exercise," the team wrote in the study. "For example, nearly half of the participants in the COVID-19 vaccination trial had a BMI in the overweight or obese category, and the distance covered in 90 min ranged from approximately four miles (6.4 km) to over 10 miles (16 km), representing a variety of fitness levels as heart rate and relative perceived exertion level were maintained within a constant range."

●▶ **The new study was published in the journal** *Brain, Behavior and Immunity*.

EDITOR'S COMMENT: I am not very enthusiastic about the after-vaccination exercise. Performing injectable allergen immunotherapy for more than 25yrs I recall the directive of doing absolutely nothing the day of injection to avoid large local reaction or other adverse reactions.

Why Covid-19 vaccines are a freaking miracle

By Helen Branswell
Source: https://www.statnews.com/2022/02/14/why-covid-19-vaccines-are-a-freaking-miracle/

Feb 14 – Two years into the Covid-19 pandemic, it's easy to lament all that has come to pass. The devastating losses. The upending of what we regarded as normal ways of life. The sheer relentlessness of it all.
But let's stop for a moment and consider something else that may have escaped you: You have witnessed — and you are a beneficiary of — a freaking miracle.
That miracle is the development, testing, manufacturing, and global distribution of Covid vaccines.

If you're reading this article, it's a safe bet that you've been vaccinated. You may even have had three doses. Many of your family members, friends, colleagues, neighbors, even strangers you pass on the street are probably in the same boat. At this point if they aren't vaccinated and boosted, it's by choice.

Yes, the global rollout has been shamefully inequitable, with low-income countries having to wait far too long to be able to protect their citizens. Sub-Saharan African countries, in particular, still struggle to access and distribute vaccine.

Mike Reddy for STAT

But at least 55% of the people inhabiting this planet have been fully vaccinated against Covid-19. In affluent parts of the world, anybody who believes in the protective powers of vaccines has had the opportunity to be vaccinated for months now. (The sole exception: children under the age of 5, for whom the vaccines are not yet authorized.) And it isn't just wealthy countries. Colombia, Morocco, Sri Lanka, El Salvador, Mongolia, and Tonga have fully vaccinated about the same proportion of their populations — roughly 64% — as has the United States.

What has been accomplished in the 25 months since Chinese scientists first shared the genetic sequence of the newly discovered SARS-CoV-2 virus has defied the predictions of the most optimistic prognosticators.

"In one year, half the species vaccinated — wow!" said Eric Topol, the founder and director of the Scripps Research Translational Institute, referring to the period after which vaccines started to become available. He has been marveling on his well-followed Twitter feed about how lucky the world got with Covid vaccines; he calls them "an extraordinary human achievement."

Topol was among the skeptics in early March of 2020 when Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, told a Senate committee that it would take at least 12 to 18 months to develop a Covid vaccine. "I thought it was a fantasy. Total fantasy," he told STAT in a recent interview.

Eight months after Fauci made that prediction, the United States started vaccinating with Pfizer and BioNTech's messenger RNA vaccine, and a week later, with Moderna's mRNA vaccine. At 18 months, the outside edge of Fauci's estimate, the U.S. had already administered nearly 400 million doses of vaccine. Roughly 56% of the population was fully vaccinated by that point and administration of third doses had already begun.

True, the mRNA vaccines haven't lived up to their initial billing, when they were shown to block roughly 95% of all infections. Over time, that level of protection against all infections declines. Still, they have fundamentally altered the threat SARS-2 poses. Most people who have received three doses are shielded from serious disease and death, even in the face of Omicron, which is so different from the vaccine strain some experts are puzzled at why protection against severe disease remains so strong.

Consider for a moment what might have happened without these vaccines.

According to modeling conducted by the Commonwealth Fund, 1.1 million additional Americans would have died from Covid — and that estimate was made based on data from *before* the massive Omicron wave that has swept across the country in past two months. "We would have been broken," said Topol. "Right now, we have a death toll of around 2,500 people a day. … Imagine what we would have with no vaccination."

The miracle was based on a solid foundation

The scientists and public policy folk among you are probably bristling at the use of the "M" word. This isn't a miracle, you're likely grumbling, but the fruit of years of planning and research and major investments in science. The National Institutes of Health, the U.S. Biomedical Advanced Research and Development Authority, the Coalition for Epidemic

Preparedness Innovations (CEPI), and other national and international funders have strived for years to get the world ready to respond to a pandemic.
It is true that we are reaping the benefits of all that, as well as of the $18 billion that Operation Warp Speed, the Trump administration's program to kick-start the development of Covid vaccines and drugs, poured into the effort. That infusion of cash at a critical time helped companies embark on risky projects that could well — and in some cases did — fail.
"Trump has lots of warts," said Michael Diamond, a viral immunologist at Washington University in St. Louis. "But he did support a rapid acceleration of the program and should get some credit for it. Without that rapid acceleration in investment, we wouldn't have had this in time and a lot more people would have died."
But even with all of that, there was no guarantee the world would be where it is today — and many reasons to believe it wouldn't be. Up until Covid, after all, the fastest vaccine ever to be developed — the one for mumps — took four years.
At the beginning of this pandemic, Richard Hatchett, who heads CEPI and who has worked on pandemic response planning since 2005, dug as deeply as he could into what was recorded about how the legendary vaccinologist Maurice Hilleman managed to develop the mumps vaccine. He learned it took two years for Hilleman to even start conducting clinical trials.
If Covid vaccines had taken as long as the mumps vaccine to develop, the world would have had to face the Delta and Omicron waves with the vast majority of people on the planet armor-less against the virus that causes Covid.
Instead, it took just 66 days after the SARS-2 sequence was published for scientists at the NIH to begin enrolling people in a Phase 1 clinical trial of Moderna's Covid vaccine. The first injection occurred on March 16, 2020.
"The previous fastest vaccine ever developed … would just be entering into the clinic now. And we've delivered 11 billion doses," Hatchett noted. "That's how much we've moved the needle."
Some of it was luck. Scientists had been toiling for over a decade trying to figure out the right construct for coronavirus vaccines, work that was spurred by the 2003 SARS-1 epidemic and outbreaks from 2012 onward caused by a cousin virus, MERS, that jumps sporadically from camels to people on the Arabian Peninsula. It was clear coronaviruses, which originate in bats, were promiscuous enough that the world needed to be ready for more such incursions.
"For whatever reason, we had just the right information and had just the right partnerships and all the right things in place to do something for a coronavirus," said Barney Graham, who with his team at the NIAID's Vaccine Research Center designed the spike protein target that a number of vaccine manufacturers used to make their Covid vaccines.
The coronavirus vaccine research gave the world a head start when SARS-2 reared its head. "When the sequence was published, we knew how to modify it immediately because of what we've done a dozen times on other coronaviruses," he said. Had the pandemic been triggered by a virus belonging to a less well-studied family, the world might still be waiting for vaccines.
"For some of the other virus families the design of the antigen is not as generalizable as we have found it for coronavirus," said Graham, who retired from the Vaccine Research Center last August.
A lot of the pandemic preparedness funding went into developing different ways to make vaccines, methods that are less cumbersome or time-consuming, say, than the approach used to make influenza vaccines, which involves growing viruses in eggs. For Rick Bright, it came down to a simple mantra: "More, better, faster."
Bright was the head of BARDA at the outset of the pandemic. At the time, the agency was providing funding to Cambridge, Mass.-based Moderna, whose messenger RNA approach was promising but had never been used in a licensed vaccine. In early 2020, Bright thought a Covid mRNA vaccine was a long shot, and that a more established platform — the viral-vectored vaccine being developed by Johnson & Johnson — was a more likely bet.
"I thought that would be our first vaccine. And the mRNA, if it worked, would be great, but I had my doubts because it had never scaled," he said, referring to the fact that it's one thing to design a vaccine and another entirely to learn, on the fly, how to produce it at commercial scale. "It was truly a Hail Mary pass with mRNA."
"I would have to say at the outset I would not have thought we'd be here by now, given the technology," admitted Bright, who left the federal government early in the pandemic in a dispute with the Trump administration. He now heads the Pandemic Prevention Institute at the Rockefeller Foundation.

It could have been different. It would have been, if it had been flu

The scope of what has been achieved comes into clearer focus when it is compared to what happened in 2009, during the last pandemic, caused by an influenza virus called H1N1.
Multiple vaccine manufacturers produce somewhere in the order of 1.5 billion doses of flu vaccine every year. When the new virus emerged, there were plans in place for making vaccine that wouldn't require the large-scale clinical trials Covid vaccines had to undergo.

The new virus would replace old flu vaccine viruses, small studies would be conducted, and the world would start to vaccinate.
But, as is often the case with flu vaccine, there was a glitch. The viruses for the vaccine, produced in hen's eggs, didn't grow well initially. "Even if you yell at them, they don't grow faster," Tom Frieden, then-director of the Centers for Disease Control and Prevention, famously said in October of 2009, when cases in the U.S. were surging but vaccine doses were scarce. By the time vaccine was ready, the fall wave was already receding.
Countries with domestic production or pre-existing pandemic flu vaccine contracts pledged to donate 10% of their doses, from the point when they started to take delivery, to a pool from which the World Health Organization would redistribute it to countries without access to vaccine.
Hatchett, who worked in the Obama White House during the H1N1 pandemic and was overseeing the donations work, said by the time the vaccine redistribution effort wound down in the autumn of 2010, 78 million donated doses of vaccine had been distributed to 77 countries.
In the same time frame during this pandemic, the COVAX facility — an entity for vaccine sharing set up by the WHO, CEPI, and Gavi, the Vaccine Alliance — had sent 1 billion doses of vaccine to 144 countries. Not as much as it had planned, not as much as the world needed. And yet: Countries that needed help accessing Covid vaccine got 1 billion doses before the second anniversary of the WHO's declaration of the pandemic.
Had the second pandemic of the 21st century been triggered by a virulent flu virus, scaling up of vaccine production likely wouldn't have happened anywhere near as fast as it has with Covid vaccines. The fact that there were no coronavirus vaccines in production forced manufacturers to innovate, to move to new platforms. There wouldn't have been the same innovation pressure with a new flu virus.
"We would have pressed hard on egg-based production. And it's not extensible and it doesn't scale," Hatchett said.
Kathleen Neuzil, director of the Center for Vaccine Development at the University of Maryland Medical School and a co-lead of the clinical trials arm of Operation Warp Speed, worked for years on flu pandemic planning.
The best-case scenario, she thought, was that the world would be able to produce between 4 billion and 8 billion doses of flu vaccine in a year, with the stars having to align perfectly to get to 8 billion. The stars never align perfectly with flu vaccine production.
"People [believe] COVAX has been a terrible failure because it didn't hit the 2 billion dose target. And it didn't, and we're disappointed," Hatchett said. "But delivering a billion doses in 13 months relative to any historic example or any comparable experience with trying to move new medical products to create global equity — that's clearly unprecedented."
Amanda Glassman agrees. Last week she and colleagues from the Center for Global Development published a report on the Covid vaccine effort that compares it to previous global health endeavors, including the smallpox eradication campaign and the rollout of childhood vaccination programs worldwide. The report does not gloss over the Covid effort's shortcomings for low-income countries. But it does shine a light on its successes in middle-income nations.
"Look at the curves on the delivery of doses and it's so close in time to what was happening in high-income countries," Glassman said in an interview. "There's still an income gradient but that income gradient is over a period of weeks and months, not years and decades."
"There's been just an enormous amount of negative coverage on the global vaccine rollout effort. Much of the criticism is entirely merited but it lost the big-picture perspective," she said. "This is actually the most important public health program or effort in history."

This happened despite the fact that the giants stumbled

The enormity of these achievements becomes even more impressive when you consider this: Three of the four largest Western vaccine manufacturers — Merck, Sanofi, and GSK — have not contributed a vaccine to these efforts. (Sanofi is still trying.)
Before the pandemic, those three companies and Pfizer were the world's largest vaccine producers, measured by sales; they controlled 90% of global vaccine value. GSK, with vaccine sales in 2019 that were more than double those of its fellow giants, didn't even attempt to produce a Covid vaccine. Instead, it offered to let others use its AS03 adjuvant, which boosts the potency of a vaccine dose. Merck tried two approaches and, after both failed, folded. Sanofi had an early setback and is still testing its vaccine, which uses GSK's adjuvant. The company hopes to get its product authorized later this spring. Anyone plotting out pandemic responses has to factor in the inevitability that some of the vaccine efforts will fail. No one planning pandemic responses would have anticipated the world could be where it is now with three of the four biggest vaccine manufacturers effectively standing on the sidelines. (All three have made batches of vaccines for competitors as a contribution to the effort.)
GSK, Sanofi, and Merck have since scrambled to buy into the messenger RNA business, the production platform Pfizer rode to such great success. "They aren't reaping the rewards of those who set the level of their ambition higher and who took risks and who innovated in their process for vaccine development," Hatchett said bluntly.

We mustn't take this for granted

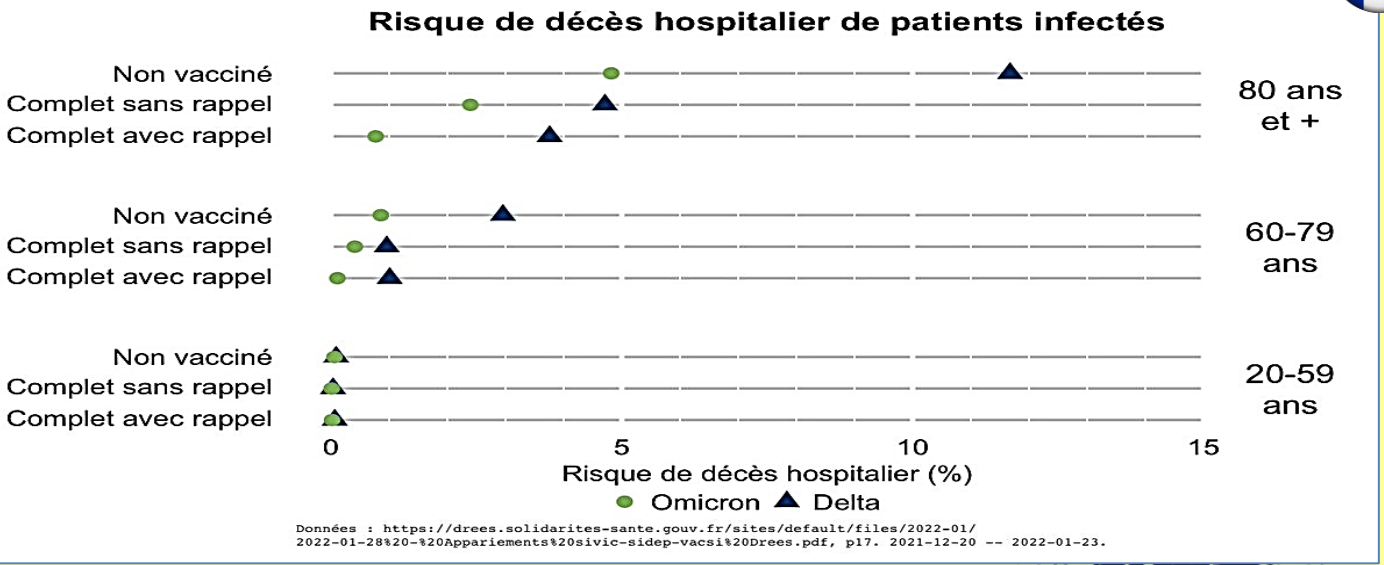
Despite the amazing progress that has been made in vaccinating the world against Covid, it's hard to get people to crow about it. The failure to hit targets for distribution of vaccine to low-income countries and the inadequate levels of vaccine uptake in some countries — including the United States — have people focusing on what hasn't been achieved, not what has. "It's really hard to celebrate when we're still in such a mess," said Graham, who is a proponent of developing vaccine production capacity in all regions of the world, so that places like Africa don't have to wait for vaccine donations from wealthy countries next time. There is also a fear that people will assume the next time will be easier or even more successful, that what happened with Covid will lead to complacency. "I think the danger is that the world interprets what has been done as just something that we're positioned to do, whatever the future threat is," said Hatchett. "And the fact of the matter is … we're not." He noted that all the Western vaccines that have succeeded were made using platforms that scientists had been working on for some time, things like AstraZeneca's and J&J's viral-vectored vaccines, Pfizer's and Moderna's mRNA vaccines, and Novavax's protein vaccine. We cannot assume, Hatchett said, that just because these platforms work well for coronavirus vaccines, they will work as well for all future threats. Likewise, we should not suppose that scientists will succeed as quickly as Graham and colleagues did at devising a vaccine target for the cause of a future outbreak. "If we want to be able to respond even as well as we did to Covid, then we have to make those investments in R&D going forward," Hatchett said. "But people don't understand that. That nuance is completely lost." We need to worry about next time. But we also need to recognize what happened this time. And that is a miracle. Said Anna Durbin, director of the Center for Immunization Research at Johns Hopkins Bloomberg School of Public Health: "We've demonstrated that, given the resources, you can develop, evaluate, produce, and distribute a totally novel vaccine to hundreds of millions, if not billions of people, given a huge effort and extensive financial resources."

Helen Branswell is a senior writer at STAT covering infectious diseases and global health; she joined STAT at its founding in 2015. Helen was introduced to epidemic reporting during the 2003 SARS outbreak; in the years since she has written about bird flu, the H1N1 flu pandemic, Ebola, Zika, polio, and measles, and now leads STAT's coverage of the coronavirus pandemic. Helen spent the summer of 2004 embedded at the Centers for Disease Control and Prevention as a CDC Knight Fellow and was a 2011 Nieman Global Health Fellow at Harvard. In 2018, she won the AHCJ award for beat reporting. She was the recipient of the 2020 George Polk Award for Public Service for coverage of the Covid-19 pandemic and was awarded the 2021 Victor Cohn Prize for Excellence in Medical Science Reporting.

Covid: le risque de mourir du virus, qu'il s'agisse de Delta ou Omicron, est quasi nul chez les 20-59 ans, vaccinés ou pas

(Covid: the risk of dying from the virus, whether it is Delta or Omicron, is almost zero among 20-59 year old, vaccinated or not)

Source: https://www.lindependant.fr/2022/02/10/covid-le-risque-de-mourir-du-virus-est-quasi-nul-chez-20-59-ans-vaccines-ou-pas-10101283.php?fbclid=IwAR08bWaJH5Hho5qTZBTfDjjyuGFHUVfe2mVe7ZHfbiaaQQt8zUfCKU7lE4U



The Next Pandemic Could Start with a Terrorist Attack

By Amy Webb

Source: https://www.theatlantic.com/science/archive/2022/02/pandemic-terrorist-attack-biowarfare/622067/

Feb 14 – In 1770, the German chemist Carl Wilhelm Scheele performed an experiment and noticed that he'd created a noxious gas. He named it "dephlogisticated muriatic acid." We know it today as chlorine.

Two centuries later, another German chemist, Fritz Haber, invented a process to synthesize and mass-produce ammonia, which revolutionized agriculture by generating the modern fertilizer industry. He won the Nobel Prize in Chemistry in 1918. But that same research, combined with Scheele's earlier discovery, helped create the chemical-weapons program that Germany used in World War I. This is an example of what's known as the "dual-use dilemma," in which scientific and technological research is intended for good, but can also, either intentionally or accidentally, be used for harm.

In both chemistry and physics, the dual-use dilemma has long been a concern, and it has led to international treaties limiting the most worrisome applications of problematic research. Because of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (otherwise known as the Chemical Weapons Convention, or CWC), a treaty signed by 130 countries, many dangerous chemicals that are sometimes used in scientific or medical research have to be monitored and inspected.

One example is ricin, which is produced naturally in castor seeds and is lethal to humans in the tiniest amounts. A brief exposure in a mist or a few grains of powder can be fatal, so it is on the CWC list. Triethanolamine, which is used to treat ear infections and impacted earwax, and is an ingredient to thicken face creams and balance the pH of shaving foams, is listed as well because it can also be used to manufacture hydrazoic acid, otherwise known as mustard gas.

Similar international treaties, enforcement protocols, and agencies exist to monitor dual uses in chemistry, physics, and artificial intelligence. But synthetic biology—which seeks to design or redesign organisms on a molecular level for new purposes, making them adaptable to different environments or giving them different abilities—is so new that such treaties don't yet exist for it, even though discussions about how to prevent harm have been happening for decades within the scientific community.

In 2000, a team of researchers at the State University of New York at Stony Brook kicked off a two-year experiment to determine whether they could synthesize a live virus from scratch using only publicly available genetic information, off-the-shelf chemicals, and mail-order DNA. (The project was financed with $300,000 from the Defense Advanced Research Projects Agency, as part of a program to develop biowarfare countermeasures.) The researchers purchased short stretches of DNA and painstakingly pieced them together, using 19 additional markers to distinguish their synthetic virus from the natural strain they were attempting to reproduce.

They succeeded. On July 12, 2002—just after Americans had celebrated the first Fourth of July following the 9/11 terrorist attacks, when jittery millions were relieved that another horrific event hadn't happened on that holiday—those scientists announced that they had re-created the poliovirus in their lab using code, material, and equipment that anyone, even al-Qaeda, could get their hands on. They'd made the virus to send a warning that terrorists might be making biological weapons and that bad actors no longer needed a live virus to weaponize a dangerous pathogen such as smallpox or Ebola.

Poliovirus is perhaps the most studied virus of all time, and at the time of the experiment samples of the virus were stored in labs around the world. The goal of this team's work wasn't to reintroduce poliovirus into the wild, but to learn how to synthesize viruses. It was the first time anyone had created this type of virus from scratch, and the Department of Defense hailed the team's research as a massive technical achievement.

Knowing how to synthesize viral DNA helped the United States gain new insights into how viruses mutate, how they become immune to vaccines, and how they could be developed as weapons. And although creating a virus to study how it might be used as a bioweapon may sound legally questionable, the project didn't violate any existing dual-use treaties, not even a 1972 treaty explicitly banning germ weapons, which outlaws manufacturing disease-producing agents—such as bacteria, viruses, and biological toxins—that could be used to harm people, animals, or plants.

Nonetheless, the scientific community was incensed. Intentionally making a "synthetic human pathogen" was "irresponsible," J. Craig Venter, a geneticist and synthetic biology's progenitor, said at the time. But this was no isolated incident. Consider what happened with smallpox.

The World Health Organization declared smallpox eradicated in 1979. This marked a major human achievement, because smallpox is a truly diabolical disease—extremely contagious, and with no known cure. It causes high fever, vomiting, severe stomachache, a red rash, and painful, yellowish, pus-filled domes all over the body, which start inside the throat, then spread to the mouth, cheeks, eyes, and forehead. As the virus tightens its grip, the rash

spreads: to the soles of the feet, the palms of the hands, the crease in the buttocks, and all around the victim's backside. Any movement pressures those lesions until they burst through nerves and skin, leaving behind a trail of thick fluid made of flaky, dead tissue and virus.

Only two known samples of natural smallpox exist: One is housed at the CDC, the other at the State Research Center of Virology and Biotechnology, in Russia. For years, security experts and scientists have debated whether to destroy those samples, because no one wants another global smallpox pandemic. That debate was made moot in 2018, when a research team at the University of Alberta, in Canada, synthesized horsepox, a previously extinct cousin of smallpox, in just six months, with DNA it had ordered online. The protocol for making horsepox would also work for smallpox.

The team published an in-depth explanation of how it synthesized the virus in *PLOS One*, a peer-reviewed, open-access scientific journal that anyone can read online. The paper included the methodology the scientists used to resurrect horsepox along with best practices for those who wanted to repeat the experiment in their own lab. To the team's credit, before publishing its research, its lead investigator followed scientific protocol and alerted the Canadian government. The team also disclosed its competing interests: One of the investigators was also the CEO and chairman of a company called Tonix Pharmaceuticals, a biotech company investigating novel approaches to neurological disorders; the company and the university had filed a U.S.-patent application for "synthetic chimeric poxviruses" a year earlier. No one—not the Canadian government, nor the journal's editors—sent back a request for them to rescind the paper.

The poliovirus and horsepox experiments dealt with synthesizing viruses using technology designed for well-intentioned purposes. What scientists and security experts fear is different: terrorists not only synthesizing a deadly pathogen, but intentionally mutating it so that it gains strength, resilience, and speed. Scientists conduct such research in high-security containment labs, attempting to anticipate worst-case-scenario pathogens by creating and studying them. Ron Fouchier, a virologist at the Erasmus Medical Center, in Rotterdam, announced in 2011 that he'd successfully augmented the H5N1 bird-flu virus so that it could be transmitted from birds to humans, and then between people, as a new strain of deadly flu.

Before COVID-19, the H5N1 virus was the worst to hit our planet since the 1918 Spanish flu. At the time that Fouchier conducted his experiment, only 565 people were known to have been infected with H5N1, but it had a high mortality rate: 59 percent of those who'd been infected died. Fouchier had taken one of the most dangerous naturally occurring flu viruses we had ever encountered and made it even more lethal. He told fellow scientists that he'd "mutated the hell" out of H5N1 to make it airborne and therefore significantly more contagious. There was no H5N1 vaccine. The existing virus was already resistant to the antivirals approved for treatment. Fouchier's discovery, which was funded in part by the U.S. government, scared scientists and security experts so much that, in an unprecedented move, the National Science Advisory Board for Biosecurity, within the National Institutes of Health, asked the journals *Science* and *Nature* to redact parts of his paper ahead of publication. They feared that some of the details and mutation data could enable a rogue scientist, hostile government, or group of terrorists to make their own hyper-contagious version of H5N1.

We've just lived through a global pandemic that no one wants to see replicated. We may have COVID-19 vaccines, but the path to endemicity is bumpy and will entail incalculable death and morbidity. Before we can even hope to eradicate SARS-CoV-2, as we eventually did with smallpox, there will be more mutations and many new strains. Some could affect the body in ways we've not yet seen or even imagined. We will continue to live with tremendous uncertainty over how and when the virus will further mutate.

Obviously, one would hope that virus research would be undertaken in a lab where fanatical adherence to safety and rigorous oversight policies were strictly enforced. Just before the WHO declared smallpox eradicated, a photographer named Janet Parker was working at a medical school in Birmingham, England. She developed a fever and body aches, and, a few days later, a red rash. At the time, she thought it was chicken pox. (That vaccine had not yet been developed.) The tiny, pimple-like dots she'd been expecting, however, developed into much bigger lesions, and they were full of a yellowish, milky fluid. As her condition worsened, doctors determined that she'd contracted smallpox, almost certainly from a sloppily managed high-security research lab inside the same building where she worked.

Parker, sadly, is now remembered as the last person known to have died from smallpox. Does the benefit of being able to accurately predict virus mutations outweigh the public risks of gain-of-function research (that is, research that involves intentionally mutating viruses to make them stronger, more transmissible, and more dangerous)? It depends on whom you ask.

Or, rather, which agency you ask. The NIH issued a series of biosafety guidelines for research on H5N1 and other flu viruses in 2013, but the guidelines were narrow and didn't cover other kinds of viruses. The White House Office of Science and Technology Policy announced a new process to assess the risks and benefits of gain-of-function experiments in 2014. It included influenza along with the MERS and SARS viruses. But that new policy also halted existing studies intended to develop flu vaccines. So, the government reversed course in 2017, when the National Science Advisory Board for Biosecurity determined that such research wouldn't pose a risk to public safety. In 2019, the U.S.

government said that it had resumed funding for—wait for it—a new round of gain-of-function experiments intended to make the H5N1 bird flu more transmissible again.

Meanwhile, this back-and-forth doesn't stop bad actors from gaining access to open-source research papers and mail-order genetic material. When it comes to synthetic biology, security experts are particularly concerned about future dual-use issues. Traditional force protection—the security strategies to keep populations safe—won't work against an adversary that has adapted gene products or designer molecules to use as bioweapons.

In an August 2020 paper published in the academic journal *CTC Sentinel*, which focuses on contemporary terrorism threats, Ken Wickiser, a biochemist and the associate dean of research at West Point, wrote: "As molecular engineering techniques of the synthetic biologists become more robust and widespread, the probability of encountering one or more of these threats is approaching certainty … The change to the threat landscape created by these techniques is rivaled only by the development of the atomic bomb."

In December 2017, the Trump administration released new guidelines clearing the way for government-funded gain-of-function projects intended not just to monitor for new potential pathogens, but to encourage the study of intentional gain-of-function mutations.

To other nations, this broadcasts a clear message: The United States is working on viral bioweapons. The last thing we need right now is a biological arms race. It's worth noting that the companies that make vaccines haven't publicly called for gain-of-function research or indicated that the research would assist them in ramping up supply chains for future vaccines.

Banning gain-of-function research isn't tantamount to stopping work on synthetic viruses, vaccines, antivirals, or virus tests altogether. We are surrounded by viruses. They're important and integral to our ecosystems. They can be harnessed for beneficial functions, which include precision antibiotics for hard-to-kill microbes, cancer treatments, and delivery vehicles for gene therapies. But we should monitor this type of work as closely as we monitor the development of nuclear technologies.

Countries typically come together during a crisis, not before one. It's easy to agree on danger. It's far harder to agree on a shared vision and a grand transformation. But countries could be encouraged to collaborate for public good because they have an overwhelming interest in, say, developing their bioeconomies instead of spending resources to create new tools for biowarfare.

One model is the Bretton Woods Agreement, a 1944 pact between the Allied nations of World War II that laid the foundation for a new global monetary system. Among the agreement's provisions were plans to create two new organizations tasked with monitoring the new system and promoting economic growth: the World Bank and the International Monetary Fund. The Bretton Woods nations agreed to collaborate. If one country's currency became too weak, the other countries would step in to help; if it was devalued beyond a certain point, the IMF would bail that country out.

They also agreed to avoid trade wars. But the IMF wouldn't function like a global central bank. Instead it would operate as a sort of free library, from which its members could borrow when needed, while also being required to contribute to a pool of gold and currency to keep the system running. Eventually, the Bretton Woods system included 44 countries that came to consensus on regulating and promoting international trade.

The collaborative approach worked well because all members stood to gain or lose if they violated the compact. The Bretton Woods system was dissolved in the 1970s, but the IMF and the World Bank still provide a strong foundation for international currency exchange.

Instead of monitoring and regulating a global pool of money, the system I propose would govern the global pool of genetic data. Member nations would agree to use an immutable blockchain-based tracking system to record genetic sequences as well as standardized parts, orders, and products.

This kind of global system would require companies to screen synthetic gene orders against various DNA databases housing sequences of regulated pathogens and known toxins, and then authenticate buyers and record transactions in a public database.

The global pool of genetic data includes DNA, which reveals our most sensitive and personal secrets. Insurance companies, the police, and adversaries would be intensely interested in that information. At least 70 countries now maintain national DNA registries, some of which include data that were collected without gaining informed consent.

The current approach to national registries positions DNA as a policing tool while missing the opportunity to pool genetic data for globally scaled research projects that could benefit us all. A tiny country of just 1.3 million people demonstrates a better way forward.

From a fragile perch in Northern Europe, uncomfortably close to a hostile Russia, Estonia has built what has long been considered one of the world's most advanced digital ecosystems. Its state-issued digital identity allows residents to safely handle online transactions with government authorities, tax and registration offices, and many other public and private services. Citizens have voted electronically since 2005, using their digital ID for authentication. That same digital ID serves as a backbone for Estonia's health system, which connects citizens and their centrally stored personal health and medical records to doctors and health-care providers.

Estonia's digital ecosystem also makes it easier to do data-intensive genetic research. The country's Biobank includes genetic and health information for 20 percent of its adults, who

consented to opt in to genetic-research programs. Estonia's system offers them free genotyping and related education classes, which—bless the Estonian ethos—people actually attend. That digital-ID system also guarantees participants security and anonymity. In a biotech Bretton Woods system, member countries could build a similar blockchain-based digital-ID system to create an unchangeable ledger of personal genomic data for research programs. Estonia's model for informed consent is a good model for member nations of this proposed system.

Member nations would then contribute a percentage of their population's genetic data into a global pool. Such a system would encourage responsible use and development of genetic data and encourage accountability. A standard system for genetic-sequence storage and retrieval would make audits easier and more scalable.

The stakes are unimaginably high because biology is unpredictable and tends to self-sustain, even when we don't want it to. Already, new life-forms that never existed before in nature are in development. Some have been booted up from computer code to living cells and tissue. Evolution is evolving, and if we don't get this next phase right, today's harmless experimentation could result in tomorrow's planetary-scale catastrophe.

Amy Webb is the founder of the Future Today Institute and a professor of strategic foresight at New York University's Stern School of Business.

SARS-CoV-2 Infections Under the Nose of New Organoid Model

A human nose organoid has been developed to study how the first events of a viral infection take place and the complex interactions between the host and virus. Using the model, researchers showed differences between infections caused by SARS-CoV-2 and RSV. The study provides an advance in the development of a novel nose organoid model and in the understanding of the host cellular response to respiratory infections. **+ MORE**

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SPECIAL ISSUE INTRODUCTION

Pandemic Nationalism

Harris Mylonas[1] and Ned Whalley

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"Because of our inability to solve the problem of international organization, it has actually contributed to the dangers which threaten peace and the very existence of mankind."
- Albert Einstein, *Open Letter to the General Assembly of the United Nations* (October 1947)

Harris Mylonas is Associate Professor of Political Science and International Affairs and editor-in-chief of Nationalities Papers. His first book The Politics of Nation-Building: Making Co-Nationals, Refugees, and Minorities, won the 2014 European Studies Book Award by the Council for European Studies. He is also co-authoring a book tentatively entitled "Nationalism Reawakened: The Good, the Bad and the Ugly" (under contract with Cambridge University Press, with Maya Tudor from the University of Oxford); and co-editing a volume entitled "Enemies Within: Fifth Column Politics in Comparative Perspective" (under review, with Scott Radnitz from the University of Washington, Seattle). Mylonas received his Ph.D. in political science from Yale University, his MA in Political Science from the University of Chicago, and completed his undergraduate degree at the Department of Political Science and Public Administration at the University of Athens, Greece. In 2008-09 and 2011-12 academic years he was an Academy Scholar in residence at the Harvard Academy for International and Area Studies. He has served as Associate Dean for Research at the Elliott School of International Affairs (2017-18).

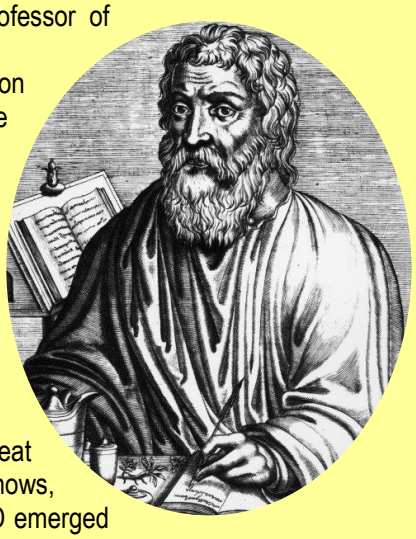
It Costs Far Less to Prevent Pandemics than Control Them

Source: https://www.homelandsecuritynewswire.com/dr20220215-it-costs-far-less-to-prevent-pandemics-than-control-them

Feb 15 – We can pay now or pay far more later. That's the takeaway of a new study, published Feb. 4 in the journal *Science Advances*, that compares the costs of preventing a pandemic to those incurred trying to control one.

"It turns out prevention really is the best medicine. We estimate we could greatly reduce the likelihood of another pandemic by investing as little as 1/20th of losses incurred so far from COVID into conservation measures designed to help stop the spread of these viruses from wildlife to humans in the first place," said Stuart Pimm, Doris Duke Professor of Conservation Ecology at Duke University, who was co-lead author of the study.

A smart place to start, the study shows, would be investing in programs to end tropical deforestation and international wildlife trafficking, stop the wild meat trade in China, and improve disease surveillance and control in wild and domestic animals worldwide.



Greek Hippocrates of Kos (c. 460 – c. 370 BC): "Prevention is better than cure!"

COVID, SARS, HIV, Ebola and many other viruses that have emerged in the last century originated in wild places and wild animals before spreading to humans, the study's authors note. Tropical forest edges where humans have cleared more than 25% of the trees for farming or other purposes are hotbeds for these animal-to-human virus transmissions, as are markets where wild animals, dead or alive, are sold.

"The bottom line is, if we don't stop destroying the environment and selling wild species as pets, meat or medicine, these diseases are just going to keep coming. And as this current pandemic shows, controlling them is inordinately costly and difficult," Pimm said. "It's been two years since COVID emerged and the cure still isn't working. Not enough people are vaccinated in the U.S, where shots are available and we can afford them, and not enough vaccines are going to other countries that can't afford them." The new study, by epidemiologists, economists, ecologists, and conservation biologists at 21 institutions, calculates that by investing an amount equal to just 5% of the estimated annual economic losses associated with human deaths from COVID into environmental protection and early-stage disease surveillance, the risks of future zoonotic pandemics could be reduced by as much as half. That could help save around 1.6 million lives a year and reduce mortality costs by around $10 trillion annually. "We're talking about an investment of tens of billions of dollars a year. Government have that kind of money," Pimm said. One key recommendation of the new study is to use some of this money to train more veterinarians and wildlife disease biologists. Another key recommendation is to create a global database of virus genomics that could be used to pinpoint the source of newly emerging pathogens early enough to slow or stop their spread, and, ultimately, speed the development of vaccines and diagnostic tests.

Aaron Bernstein of Boston Children's Hospital and the Center for Climate, Health and the Global Environment at Harvard T.H. Chan School of Public Health, and Andrew Dobson of Princeton University were co-lead authors of the study with Pimm. The need to put preventive measures in place as soon as possible is increasingly urgent, said Dobson. "Epidemics are occurring more frequently, they are getting larger, and spreading to more continents." "Prevention is much cheaper than cures," noted Bernstein. Compared to the costs and social and economic disruptions associated with trying to control pathogens after they have already spread to humans, "preventing epidemics before they break out is the ultimate economic bargain."

Mysterious 'Russian Flu' 130 Years Ago May Have Been a Coronavirus, Scientists Say

Source: https://www.sciencealert.com/scientists-are-wondering-if-the-1889-russian-flu-was-actually-caused-by-coronavirus

Feb 16 – In 1889, a mysterious respiratory illness emerged in Russia and then spread across the globe, triggering at least three waves of infection over the course of several years. Now, some scientists suspect that this illness, dubbed the "Russian flu," actually may have been caused by a pandemic coronavirus similar to SARS-CoV-2, the virus that causes COVID-19, *The New York Times* reported. There are some easily drawn parallels between the two pandemics. For instance, during the Russian

flu pandemic, schools and workplaces closed due to the sheer number of people infected. Those infected often lost their senses of taste and smell, and some endured long-lasting symptoms that lingered for months.
In general, the Russian flu seemed to kill far more elderly people than children, unlike influenza viruses, which tend to be similarly fatal to both age groups, according to the available historical records, which include government health records, newspapers, and journal articles.
While these features of the Russian flu pandemic eerily resemble those of the current pandemic, the idea that the Russian flu might have been caused by a coronavirus remains speculative, Peter Palese, a flu researcher and professor of medicine at the Icahn School of Medicine at Mount Sinai in New York, told *The New York Times*.
Some experts echoed this sentiment, but others said they suspect that although there may be hard evidence to support the idea, it just hasn't been found yet.
Dr. Jeffery Taubenberger, chief of the viral pathogenesis and evolution section at the National Institute of Allergy and Infectious Diseases, and John Oxford, emeritus professor of virology at Queen Mary, University of London, are on the hunt for such evidence. They've been digging through preserved lung tissue samples that predate the 1918 flu pandemic, looking for remnants of influenza viruses and coronaviruses. Among these tissues, they hope to spot the elusive Russian flu virus.
Dr. Scott Podolsky, a professor of global health and social medicine at Harvard Medical School, and Dominic W. Hall, the curator of the Warren Anatomical Museum at Harvard, are also looking for preserved lung tissue from the same time period, the *Times* reported.
If genetic material from the Russian flu virus turns up in these lungs, it may offer hints as to how the pandemic ended, as news coverage from the time offers little insight.
And if the late-19th-century pandemic was caused by a coronavirus, some scientists think that the bug may still be circulating as one of the four coronaviruses that cause the common cold, rather than severe disease.

Does Drinking Red Wine Really Protect Against COVID? Let's Look at The Data

By Hassan Vally
Source: https://www.sciencealert.com/does-drinking-red-wine-really-protect-against-covid-19-let-s-look-at-the-evidence

Feb 17 – A study published last month in the journal *Frontiers in Nutrition* made headlines around the world. Among a number of findings concerning alcoholic drinks and COVID, it reported drinking red wine was associated with a reduction in the risk of contracting COVID.
Before you start inviting people over to celebrate, it's important to be aware there are a number of reasons to be cautious about these findings.
This paper is a great example of why many studies addressing diet and health are unreliable and need to be interpreted carefully.
Limitations in the way many of these studies are conducted is the reason we're often told a food is good for us one day, only for this to be contradicted in another study.
This whiplash in study findings is a source of continued frustration in the field of nutritional science.
Let's explore some of the the reasons why these studies can be misleading.

What were some of the findings?

There were a number of findings reported in this study.
Probably the most captivating from a media perspective was that drinking between one to four glasses of red wine a week was associated with an approximate 10 percent reduction in the risk of getting COVID.
Drinking five or more glasses of red wine a week was associated with a reduction in risk of 17 percent.
Although drinking white wine and champagne also appeared protective, the effect was smaller than with red wine.
In contrast, drinking beer was associated with a 7-28 percent increased risk of getting COVID.
It was hard to identify clear patterns with some of the other findings. For example, while drinking spirits was associated with an increased risk of contracting COVID, drinking fortified wine, in small doses only, appeared protective.
Similarly, while drinking alcohol more frequently was associated with a lower risk of getting COVID, drinking more than the UK guidelines for alcohol consumption was associated with an increased risk of contracting COVID.

Let's delve deeper into the findings concerning red wine to explore some of the reasons why one should be skeptical about the results of these sorts of studies.

Correlation doesn't equal causation

The first and most obvious reason to be cautious when interpreting this study is correlation doesn't equal causation.
You hear this phrase all the time, but that's because it's *so* important to make the distinction between two variables being simply linked with each other, and one causing the other.
This analysis was completed from data collected from a large longitudinal study, which is a study in which you recruit participants and track them over time to collect information about their behaviors and health.
Although this study, the UK Biobank cohort, had an impressive number of participants, the analysis simply involved looking for associations between alcohol consumption patterns and the diagnosis of COVID.
As this was an observational study where data was collected and analyzed from people living their lives normally, all one can say with confidence is drinking red wine was associated with a lower likelihood of having been diagnosed with COVID.
One can't say drinking red wine was actually the reason the risk of contracting disease in this group was lower.
It's entirely possible this association reflected other differences between red wine drinkers and those who developed COVID. This phenomenon is called "confounding", and it's very hard to completely remove the effect of confounding in observational studies to tease out what's really going on.
Although the researchers made attempts to statistically adjust the results to account for some obvious confounders in this study – such as age, sex, and education level – this type of adjustment isn't perfect.
There's also no guarantee there weren't other sources of confounding in the study that weren't considered.

Data on alcohol drinking is unreliable

There are two major limitations in the data collected relating to alcohol drinking patterns in this study.
The first is collecting information on what people eat and drink is notoriously unreliable.
And even more of a problem is the extent of this misreporting tends to vary considerably between people, making it very difficult to correct for.
The second major limitation was the researchers collected data on alcohol drinking patterns at the beginning of this longitudinal study and extrapolated forward many years to complete the analysis. That is, researchers looked at drinking patterns at the start of the study and assumed people had the same drinking patterns for the whole study.
Clearly a person's drinking patterns could change considerably over the years, so this also introduces a great deal of potential error.

The public health significance is questionable

Another reason to temper your response to these findings is even if we assume red wine reduces the risk of COVID infection, the key question we need to ask is whether a 10-17 percent reduction in this risk compared with non-drinkers is of any real-world significance.
That is, how does this finding impact on our response to COVID?
Considering the huge benefit one can gain from other measures such as wearing masks, social distancing, improved hand hygiene, and getting vaccinated, this reduction in risk (if real) is marginal, and doesn't translate to any significant protection from COVID.
The reality is drinking red wine solely to reduce your risk of contracting COVID isn't something that can be recommended on the basis of this study – especially considering the other potentially detrimental effects of drinking alcohol.

Putting it together

Observational studies addressing aspects of our diet and health come with numerous and significant challenges. They're highly susceptible to the presence of confounders and biases, which limit their reliability and make the interpretation of their findings fraught. So it's really important the results from these types of studies are interpreted with a great deal of caution.
Therefore, the message when it comes to drinking alcohol remains you shouldn't drink because of any perceived health benefits relating to COVID or any other illness. You should drink moderately if it brings you pleasure, and be clear this is why you are drinking.
While this isn't the news any of us wanted to hear, this shouldn't be a surprise, because if something sounds too good to be true, it usually is.

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Coronaviruses Similar to SARS-CoV-2 Found in Laos Cave Bats

Novel coronaviruses, that are genetically similar to SARS-CoV-2, have been found in bats in the caves of North Laos. A new study suggests that these coronaviruses may have a potential for infecting humans similar to that of early strains of SARS-CoV-2. This finding is a key component to understanding the origin of the COVID-19 pandemic and supports the hypothesis that SARS-CoV-2 could have originated from bats. **+ MORE**

The effectiveness of vaccination against Long Covid: A rapid evidence briefing (February 2022)

Source: https://ukhsa.koha-ptfs.co.uk/cgi-bin/koha/opac-retrieve-file.pl?id=fe4f10cd3cd509fe045ad4f72ae0dfff

UK Health Security Agency

The UK Health Security Agency (UKHSA) has undertaken a rapid evidence review looking at the effects of vaccination against Long COVID or post-COVID symptoms. The review includes 15 UK and international studies that were undertaken up until January 2022.

An estimated 2% of the UK population have reported symptoms of long COVID or post-COVID syndrome, which can last for more than 4 weeks after their initial infection. The three most common symptoms are fatigue, shortness of breath and muscle or joint pain.

Eight of the studies in the review looked at the effect of vaccinations administered before infection. Most of these studies suggest that vaccinated people (1 or 2 doses) were less likely to develop symptoms of long COVID following infection compared with unvaccinated people – in the short term and long term (4 weeks up until 6 months after infection).

Content

The data from some of the studies included in the review suggests that:

- people with COVID-19 who received 2 doses of the Pfizer, AstraZeneca, or Moderna vaccines or one dose of the Janssen vaccine, were about half as likely as people who received one dose or were unvaccinated to develop long COVID symptoms lasting more than 28 days.
- vaccine effectiveness against most post-COVID symptoms in adults was highest in people aged 60 years and over, and lowest for younger participants (19 to 35 years).

The remaining studies looked at the effects of vaccination among people who already had long COVID symptoms.

Four studies specifically compared long COVID symptoms before and after vaccination. Three of these studies suggested that more people with COVID-19 reported an improvement than a worsening in symptoms after vaccination, either immediately or over several weeks.

Another 3 studies of unvaccinated people with long COVID compared ongoing symptoms in those who either went on to receive a vaccination or remained unvaccinated. These studies suggested that those who were vaccinated were less likely to report long COVID symptoms after vaccination than people who remained unvaccinated over the same period.

One study looked specifically at the timing of vaccination after COVID-19 infection and suggested that people with COVID-19 who were vaccinated sooner after diagnosis were much less likely to report long COVID symptoms than people who were vaccinated later after diagnosis. All studies were observational, so results may be from differences other than vaccination.

In one study, of those participants who reported having long COVID, a greater proportion of vaccinated participants said their symptoms improved compared to unvaccinated participants (23.2% compared to 15.4% respectively).

Famotidine clinical trial shows reduction in Covid-19 symptoms

Source: https://www.northwell.edu/news/the-latest/famotidine-clinical-trial-shows-reduction-covid-19-symptoms

Feb 09 – A high dose of famotidine, commonly known as Pepcid, was found to have beneficial effects in adult patients with Covid-19, according to results of an outpatient clinical trial. Patients who took famotidine for Covid in this trial experienced a decrease of inflammation within the body and reported earlier alleviation of symptoms. Findings from the trial, led by The Feinstein Institutes for Medical Research at Northwell Health and Cold Spring Harbor Laboratory (CSHL) were published today in the journal *Gut*.

What is famotidine?

Famotidine is a safe, low-cost, over-the-counter drug usually used to treat heartburn. People with Covid-19 often get sick because the body's inflammatory response to the virus gets overactivated. Previous studies have shown famotidine turns inflammation down by blocking a specific molecular pathway. This trial confirms that famotidine leads to earlier resolution of inflammation in patients with Covid-19 and also alleviates symptoms of the disease while the acquisition of immunity against the virus that causes Covid-19 is maintained. Because famotidine does not target the virus directly like vaccines or antiviral medications, it may be a promising potential treatment for patients with Covid-19 and emergent viral variants.

"We found that famotidine is safe at the higher doses used and see molecular and clinical evidence that it improves the recovery of symptomatic patients of diverse ancestries diagnosed with Covid-19," said Tobias Janowitz, MD, PhD, principal investigator of the trial, assistant professor at CSHL and adjunct professor at the Feinstein Institutes. "We closely monitored patients in this fully remote clinical trial while protecting their safety and that of health care providers in pandemic conditions. We hope that the data we are sharing with this study guide future trials that are necessary to confirm famotidine as a treatment for patients with COVID-19."

Studying famotidine for Covid

The trial, which was launched in January 2021, was an entirely remote, randomized, double-blind, placebo-controlled clinical trial to evaluate the safety and efficacy of famotidine in diverse patient populations. It was designed to keep trial participants out of the hospital throughout their treatment by enabling participation from home. Additionally, in collaboration with New York City Health + Hospitals, eligible patients residing in Covid-19 quarantine hotels were approached to participate, which helped diversify enrollment.

"Our institutions worked extremely well together to face challenges the pandemic posed, like offering digital solutions and reaching populations who struggled for access to care," said Christina Brennan, MD, vice president of clinical research at the Feinstein Institutes and co-investigator of the trial. "From screening patients to organizing home delivery of the equipment and medication, this sets a new model for future trials and convenience for participants."

Adult Covid-19 positive patients with mild to moderate symptoms were sent a cellular-activated Apple iPad, along with a Bluetooth-enabled scale, thermometer, fitness tracker, spirometer (to study air flow in and out of the lungs), and pulse oximeter (to measure blood oxygen levels). Nearly two-thirds of patients enrolled were from Black, mixed-race, or Hispanic communities.

"Accessible, safe, and low-cost outpatient treatment options are a priority in our global efforts to combat Covid-19. Northwell Health and New York City Health + Hospitals provided care for the communities most in need of support in NYC," said Nicole Jordan-Martin, the executive director for NYC Health + Hospitals/Community Care, which operates the NYC Test & Trace Corps Take Care Hotel Program whose team helped connect guests to the clinical trial coordinators at the Feinstein Institutes. "Many of our nursing staff and guests at Take Care hotel sites made an important contribution to the trial."

Famotidine dosage for Covid treatment

Either placebo or famotidine at 80 mg three times per day was taken orally for a maximum of 14 days by 55 non-vaccinated participants – 28 received placebo and 27 received famotidine. Northwell's Home Lab program was used for required blood draws and Covid-19 diagnostic nasal swabs tests. Participants who took famotidine experienced quicker resolution of inflammation in the body, according to blood work results, and the patients tolerated the higher dosage of medication very well. In addition, patients who took famotidine experienced more rapid resolution of symptoms and better resolution of 14 out of 16 assessed symptoms, including improvement in breathing, chest congestion, cough and abdominal pain. The prespecified primary endpoint, an earlier resolution of the sum of all symptom scores, was not reached at statistical significance.

"In today's virtual world, our clinical trial strategy has significant implications for how to study new drugs in patients at home," said Kevin J. Tracey, MD, president and CEO of the Feinstein Institutes and member of the study team. "Because SARS-CoV2 continues to infect millions, the data from this trial of an effective, safe, cheap, generic drug should be valuable to global efforts to find safe and affordable therapies to treat Covid-19."
The trial was supported by statisticians from Stony Brook University and funded in part by the Pershing Square Foundation and by a FastGrant from Emergent Ventures.

China has released another bioweapon during the Olympic games…

Source: https://greenpass.news/china-has-released-another-bioweapon-during-the-olympic-games-a-hemorrhagic-fever-virus-heres-nutritional-info-on-what-may-block-it-in-your-blood-naturalnews-com/

Feb 14 – In a bombshell interview with JD Rucker (see below), former Hong Kong virologist and CCP whistleblower Dr. Li-Meng Yan — who was right all along about the gain-of-function origins of SARS-CoV-2 — has publicly alleged that the CCP and PLA are releasing a new, engineered bioweapon onto athletes and participants at the Beijing Olympic games. This deliberate release, says Dr. Yan, is timed to infect participants from dozens of countries around the world who will then unknowingly transport hemorrhagic fever to their home countries, unleashing another wave of a global pandemic. Go to the 42:00 mark in the following video from JD Rucker, which has been hosted on both Rumble and Brighteon, to hear Dr. Yan explaining this in detail. JD Rucker is found on Substack.com. Dr. Yan has also explained this in a public tweet as follows ▶:

According to Creative Destruction Media, "Well-placed sources have informed CDMedia that the armed forces of the Chinese Communist Party, the People's Liberation Army, have launched another virus on its own people during the Olympics in Beijing, in order for athletes and diplomats to return home and infect the rest of the world, particularly the West."

CDM also explains how the virus has been engineered to extend its incubation time for maximum global impact:
The virus has been altered inside a laboratory to make the incubation period longer than usual, now suspected at 3-4 weeks, in order to allow visitors to Beijing to return home with no symptoms during transit… The virus is said to be highly transmissible, and causes bleeding through multiple orifices of the body, even the skin.

A prescription drug that's approved to treat multiple myeloma is known by China to function as an "antidote" to their engineered bioweapon

What's fascinating here is that, according to Dr. Yan, the CCP is already aware of an antidote to their new hemorrhagic fever bioweapon, and they are actively hoarding the Johnson & Johnson drug that serves this function.
According to Dr. Yan's sources, the drug is known as **Darzalex (daratumumab),** and it is very expensive and somewhat uncommon. It has nowhere near the wide availability of ivermectin.

The drug works by targeting the CD38 glycoprotein **which is over-expressed in multiple myeloma patients. It is believed that the engineered hemorrhagic fever bioweapon causes a tidal wave of CD38 production in the body, interfering with immune function and causing sudden cell death (among other problems).**
From the Science Direct page on CD38:
CD38 is type II membrane glycoprotein that plays a role in cell adhesion, migration, and signal transduction. Additionally, CD38 is an ectoenzyme involved in generation of nucleotide metabolites, such as ADP-Ribose (Lee, 2006). CD38 expression is highly upregulated on human plasma cells and especially on MM cells.
From the NIH / PubMed site, here's a study describing how the J&J drug targets the CD38 glycoprotein and treats multiple myeloma cancer:
Daratumumab is a human monoclonal antibody that targets CD38, a cell surface protein that is overexpressed on multiple myeloma (MM) cells. Preclinical studies have shown that daratumumab induces MM cell death through several mechanisms, including complement-dependent cytotoxicity (CDC), antibody-dependent cell-mediated cytotoxicity (ADCC), antibody-dependent cellular phagocytosis (ADCP), and apoptosis.

The relationship between CD38 and NAD+
Although this is a simplification, there is a relationship in every human body between CD38 — the "bad" protein" — and NAD+ — the "good" molecule. NAD+ stands for nicotinamide adenine dinucleotide.
To put it simply, when NAD+ levels are too low, it causes an over-expression of CD38. Higher levels of CD38 lead to inflammation and cell malfunctions while also suppressing NAD+, leading to a self-reinforcing spiral into inflammation, aging, lack of cellular energy and other health problems.
Dr. J.E. Williams, a complementary medicine and anti-aging doctor, has an excellent article explaining the dynamics of all this. It's called, "How to reach the 100 year life with NAD+".
I cover his article and recommendations in detail in today's Situation Update podcast (below).

The amazing lifesaving secret of anthocyanins – which you can grow yourself
One of the key strategies Dr. Williams reveals is **how to suppress CD38 production using anthocyanins, which are pigmentation molecules found in foods and herbs.** When looking at fresh produce and plants, almost any plant with a dark red, dark blue or blackish-looking color is filled with anthocyanins, which are in a class of functional plant molecules known as *flavonoids*.
Black current, blackberries, raspberries, blueberries, red cabbage, purple corn and other similar plants with strong color pigmentation are all functional, *medicinal* plants. As I point out in my podcast below — which really is one of the most important I've ever published — you can also **grow your own anthocyanins** using off-grid, non-electric hydroponic grow systems that use no electricity or moving parts. By simply planting red cabbage, red oak leaf lettuce, eggplant or other types of fruits or vegetables, you will benefit from Mother Nature's manufacturing of anthocyanins, which you can eat as natural medicine (let thy food be thy medicine).
In theory — although this is not yet proven in clinical trials — a high intake of natural plant-based anthocyanins could halt the over-expression of CD38 upon exposure to a hemorrhagic

fever virus or nanoparticle attack, thereby preventing death. This is a working theory, but it is a plausible theory rooted in nutritional science. Notably, **there is no down side to consuming more anthocyanins**, as they are widely documented to help prevent inflammation, cancer, neurodegenerative disorders and many other diseases or health conditions. Therefore, there is no downside to the strategy of deliberately consuming more POC (Plants of Color) as a prophylactic (prevention) strategy against the possibility of exposure to China's new biological weapon.

In addition to anthocyanins sourced from common foods, Dr. Williams suggests some other plant-based molecules that may be useful at suppressing CD38 levels in the body:

- ✓ **Taxifolin** is the flavonoid antioxidant **dihydroquercetin**. It inhibits cancer cells, lowers inflammation, and is useful in the treatment of cardiovascular and chronic liver disease.
- ✓ **Apigenin** is also a flavonoid antioxidant. Apigenin crosses the blood-brain barrier to lower inflammation, improve cell function, enhance brain health, and has anticancer effects.
- ✓ **Luteolin** is another flavonoid found in plants and medicinal herbs. It lowers inflammation, has anticancer properties, and regulates estrogen metabolism.
- ✓ **Callistephin** is the anthocyanin, a type of flavonoid that makes foods dark blue, like blueberries and wine grapes. And, pomegranates are good sources of callistephin.
- ✓ **Kuromanin** is an anthocyanin found in mulberry leaves, chrysanthemum, hibiscus, black currants, red raspberries, lychees, and Peruvian purple corn.

As I note in my podcast below, all of these can be acquired by **juicing fresh fruits and vegetables** and consuming those raw, living juices. Remember that cooking anthocyanins can degrade / destroy those delicate molecules, so these must typically be consumed in their raw forms. This is one of the key advantages of a raw food lifestyle (i.e. David Wolfe, an expert in raw foods, has spent decades teaching people about these benefits, and he's correct).

Note that anthocyanins are also present in acai berries and many different berry varieties. Related molecules known as *phycocyanins* are found in huge quantities in some species of microalgae such as spirulina. The Hawaii-based company known as "Cyanotech" — which supplies astaxanthin and spirulina to the dietary supplements industry — is based on the very high presence of phycocyanins in spirulina. (I toured the Cyanotech facility many years ago and saw their lab where they extracted the phycocyanins to make medical dyes used in medical imaging applications.)

The word root "cyan" refers to the bluish color. So the word "anthocyanins" is based on the idea of blue color molecules. The color indicates many things about its functional use in human health.

If you want to read up on all this, here's a scientific article published in 2017 and carried by the National Library of Medicine: Anthocyanidins and anthocyanins: colored pigments as food, pharmaceutical ingredients, and the potential health benefits.

From that study abstract:

Anthocyanins are colored water-soluble pigments belonging to the phenolic group. The pigments are in glycosylated forms. Anthocyanins responsible for the colors, red, purple, and blue, are in fruits and vegetables. Berries, currants, grapes, and some tropical fruits have high anthocyanins content. Red to purplish blue-colored leafy vegetables, grains, roots, and tubers are the edible vegetables that contain a high level of anthocyanins. Among the anthocyanin pigments, cyanidin-3-glucoside is the major anthocyanin found in most of the plants.

Besides the use of anthocyanidins and anthocyanins as natural dyes, these colored pigments are potential pharmaceutical ingredients that give various beneficial health effects. Scientific studies, such as cell culture studies, animal models, and human clinical trials, show that anthocyanidins and anthocyanins possess antioxidative and antimicrobial activities, improve visual and neurological health, and protect against various non-communicable diseases. These studies confer the health effects of anthocyanidins and anthocyanins, which are due to their potent antioxidant properties. Different mechanisms and pathways are involved in the protective effects, including free-radical scavenging pathway, cyclooxygenase pathway, mitogen-activated protein kinase pathway, and inflammatory cytokines signaling.

Note that all these molecules are **water soluble**, meaning if you're dehydrated or don't have good cellular hydration metabolism in place, your body won't be able to distribute these molecules to where they're needed. Proper hydration is critical to the distribution of these functional molecules throughout your body. I recently interviewed Energized Health founders John and Chelsea Jubilee who are experts in cellular hydration and have a health coaching program that teaches people how to dramatically improve intracellular hydration. You can see that video interview at this link. (Disclaimer: Energized Health is a sponsor of Brighteon.TV)

That science article above also lists anthocyanin content in common foods, mostly fruits:

Types of anthocyanin and anthocyanidin in fruit:
Acai berry (Euterpe oleracea Martius) – whole fruit [43]
cya-3-glu, cyan-3-rut, del-3-gal, del-3-glu, del-3-rut, peo-3-glu
Berry (Berberis lycium Royle) – whole fruit [44]
cya-3,5-dihex, cya-3-gal, cya-3-glu, cya-3-lat, cya-3-rut, del-3-glu, mal-3,5-dihex, pel-3,5-diglu, pel-3-pentoxilhex, pel-3-rut, pel-hex, peo-3-rut
Bilberry (Vaccinium myrtillus L.) – whole fruit [45]
cy-3-ara, cya-3-gal, cya-3-glu, del-3-ara, del-3-glu, del-3-gal, mal-3-ara, mal-3-gal, mal-3-glu, peo-3-ara, peo-3-gal, peo-3-glu, pet-3-ara, pet-3-gal, pet-3-glu
Blackberry (Rubus fruticosus L.) – whole fruit [46,47]
cya-3-glu, cya-3-rutl del, mal, pel, pel-3-glu, peo
Blackcurrant (Ribes nigrum L.) – whole fruit [46]
cya-3-glu, cya-3-rut, del-3-glu, del-3-rut
Blueberry (V. corymbosum L.) – whole fruit [46]
cya-3-ara, cya-3-gal, cya-3-glu, del-3-ara, del-3-gal, del-3-glu, mal-3-ara, mal-3-gal, mal-3-glu, peo-3-gal, peo-3-glu, pet-3-ara, pet-3-gal, pet-3-glu
…. the list continues at: https://www.ncbi.nlm.nih.gov/labs/pmc/articles/PMC5613902/

The bottom line: Prepare for a new global outbreak of hemorrhagic fever, and prepare yourself using knowledge of nutrition
If Dr. Yan is correct, our world is about to be subjected to something akin to "COVID 2.0" — but far worse if it's an engineered hemorrhagic fever bioweapon.
Unlike the case with covid, there's no simple, low-cost, widely-available drug that we know of which will prevent 80% of deaths (or even close to that). Ivermectin has saved countless lives in the context of covid, but ivermectin is not effective against hemorrhagic fever (at least not that we know of).
This underscores the importance of nutritional preparedness — getting your body's terrain ready for an onslaught of aggressive, deadly nanoparticles or "virus" strains that are apparently being deployed against humanity in **an escalation of the global war against the human race**.
With covid, those who died the quickest were those with comorbidity factors such as high blood pressure, diabetes and respiratory conditions. When it comes to hemorrhagic fever attacks, it may turn out that those who have poor nutrition and who live on processed, nutrient-depleted foods may be the most vulnerable.

The End Game of China's Zero-Covid Policy Nightmare

Source: https://www.wired.com/story/china-zero-covid-vaccines/

Feb 18 – On December 22, 2021, the entire western Chinese city of Xi'an was put into lockdown. "It was all of a sudden," says Fan, a Xi'An native and university student in his early twenties who didn't give his full name, due to privacy concerns. "The university wouldn't let us go outside of the dorms. Our freedom was restricted, and they stopped all our classes. I couldn't leave and I couldn't go home. We were stuck." Xi'an, a city of 13 million people, spent the end of December 2021 and much of January 2022 in one of China's most severe lockdowns. The trigger? A handful of cases of Covid-19.
Since the start of the pandemic, China has clung to a zero-Covid strategy consisting of strict containment measures that have served the nation remarkably well. China's official death toll has remained under 5,000, and its total reported caseload of 124,900 is significantly lower than the 78 million cases in the United States or the 18.4 million in the United Kingdom. Aside from travel disruptions, life has been largely normal—and China's success at containing the virus has become a source of national pride.
Yet the emergence of more infectious variants, like Omicron, is changing the calculus. While other countries are responding to Covid's evolution by moving toward a strategy of living with the virus, China continues to rely on some of its harshest restrictions since the outbreak began. Surrounding the Lunar New Year and Winter Olympics, small but regular outbreaks of the Omicron and Delta variants have left Chinese authorities scrambling. After Beijing failed to trace its first local Omicron infection in January, its Center for Disease Control and Prevention pointed the finger at a mail delivery from Canada, prompting various cities to frantically disinfect international mail and test package recipients.

After two years of being a global Covid success story, China now appears to be struggling. In the Xi'an lockdown, national outrage has followed grocery shortages and the case of a woman losing her unborn baby in her eighth month of pregnancy after being denied medical attention for hours.

In China and abroad, people have started to question the validity of the government's zero-tolerance approach. "I understand many are still afraid of the virus and willing to bear the burden [of zero-Covid], but I feel we've reached a certain point," says Fan, whose parents had to quarantine for two weeks at their own expense after meeting a friend who visited a grocery store linked to a single Covid case. "It has a huge impact on us." So why is the government insisting on pursuing a zero-tolerance strategy? The official line is that abandoning it would lead to a devastating outbreak that would overwhelm the health care system and disrupt social stability. And experts say this is valid—to a certain degree. But the situation is far from straightforward.

One key challenge is that Chinese vaccines are proving to be less effective. While approximately 87 percent of China's total population is vaccinated, the majority received doses of the country's homegrown Sinovac and Sinopharm inactivated-virus vaccines, which use a dead version of the virus to expose the body's immune system to it. About one-third of the population has also received inactivated-virus booster shots.

In December, researchers from Hong Kong found that two doses of Sinovac failed to produce enough antibodies to fight Omicron. Pfizer and Moderna's vaccines, while less effective against Omicron than previous strains, still provide substantial protection—especially after three doses. And even before the variants arrived, China's vaccines were still some way behind the West's mRNA jabs. The numbers are stark: Sinovac is 51 percent effective in preventing symptomatic Covid infection. Pfizer is 95 percent effective. China has yet to approve Pfizer and Moderna's shots for use on the mainland, although Shanghai-based Fosun Pharmaceuticals was given the right to distribute Pfizer's vaccine to Hong Kong, Macau, and Taiwan.

That issue of vaccine effectiveness is compounded by the uneven spread of coverage throughout China. Much of the country's elderly population also remains unvaccinated and vulnerable—due to the government's decision to delay vaccinating seniors in order to prioritize those in high-risk jobs and to ensure the vaccine was safe for older people. (Chinese vaccine makers reportedly included fewer elderly people in final-stage trials than did those in the West.) Although China opened up vaccinations for seniors aged 60 and above in March, health authorities proceeded cautiously and vaccine hesitancy remains high—nearly nine months after China started offering Covid-19 vaccines to people aged 60 and above, about 50 million in this age group remain unvaccinated. For those aged 80 or older, vaccination rates range from slightly above 40 percent to below 30 percent in some areas, a National Health Commission official told state broadcaster CCTV in December.

Zhang Wenhong, an infectious disease expert who has become the country's most trusted source on the pandemic, claimed earlier this month that the mortality rate among the elderly has remained high even after three doses. China has an estimated 4.37 ICU beds per 100,000 people, much lower than that of developed countries like the US and Germany, which have 34.7 and 29.2 ICU beds per 100,000 people, respectively.

"The initial rationale of having a zero-Covid strategy was to buy time so that a sufficient percentage of the population is vaccinated to reach herd immunity," says Yanzhong Huang, senior global health fellow at Council on Foreign Relations, a US-based think tank. "But Chinese vaccines are not that effective in preventing infections. They cannot tolerate even a small number of infections."

What has for so long been a point of national pride is now something of a trap. With ineffective vaccines and low protection from previous infections, a large-scale Covid outbreak could threaten vulnerable communities and overwhelm China's health care system. To address this threat, China is adapting. Responding to the Delta variant in August, the

government moved from its initial "zero-Covid" policy of literally pursuing zero cases to its current "dynamic zero-Covid" strategy, which seeks to instead swiftly crack down on outbreaks when they inevitably occur.

That shift in strategy doesn't necessarily mean a loosening of restrictions. In the short run, the state will continue enforcing strict measures, like snap lockdowns, because unlike many countries—where lockdowns have become politically and economically unfeasible—China is both able to do so and prepared to pay the cost, according to Ben Cowling, chair of epidemiology at the University of Hong Kong. And in purely economic terms, the policy isn't too much of a drag on China. A recent report by the Australia and New Zealand Banking Group found that the dynamic zero-Covid approach had shaved just 2.6 percent off the Chinese economy in terms of gross domestic product. "China's been really good at cracking down and getting to zero," says Cowling. "It's very disruptive and involves lockdowns, mass testing, and isolation of cases, but that's affecting a minority of people. If they can limit the spread, I'd say it's an optimal strategy."

As with the rest of the world, China is seeking to buy time so it can use science to beat back the virus—but on its own terms. In the coming months, officials are pinning their hopes on developing better, homegrown mRNA vaccines to target Omicron and other variants. The current mRNA frontrunner, ARCoV, completed its first-stage clinical trials (on 120 people between the ages of 18 and 59) and was found to have an efficacy rate of 80 to 95 percent, which is on par with Pfizer and Moderna's vaccines.

And ARCoV might even have a logistical advantage. Unlike Pfizer and Moderna, which are challenging to distribute and store, this mRNA vaccine can be kept for six months at a normal refrigerator temperature of between 2 and 8 degrees Celsius. Pfizer and Moderna, by comparison, have to be kept at minus 70 degrees Celsius and minus 20 degrees Celsius, respectively. Experts predict that at least one Chinese mRNA vaccine could be launched for public use by the end of the year and an Omicron-targeting vaccine may be ready in two to six months' time.

Yet scientists like Dongyan Jin, a biomedical professor at the University of Hong Kong, argue that it is "completely unwise" to wait for the development of homegrown vaccines instead of simply approving Pfizer or Moderna. Not only will waiting stall the process of building higher immunity in the population, but there's also no guarantee that homegrown vaccines will be effective. Currently being tested in a global Phase 3 clinical trial, ARCoV recently exhibited a sharp drop in neutralizing antibodies against Omicron—although a third booster shot did trigger antibody activity in animal tests.

"There is no scientific reason for not approving them," says Jin of the Pfizer and Moderna vaccines, adding that the Chinese government has made similar mistakes in the past. Jin cites the delayed approval of the human papillomavirus (HPV) vaccines against cervical cancer, which is the third most common cancer among women in China aged 15 to 44 and the sixth most frequent among women overall, as one such example. Although the first HPV vaccine was licensed by the US in 2006 and then by 80 more countries a year later, foreign HPV vaccines were only approved in China from 2016 to 2018, due to regulatory delays (China's food and drug administration required repeated clinical trials to ensure safety and effectiveness prior to approval). China still suffers from a supply shortage of HPV vaccines, even after the country launched its first locally produced HPV vaccine in 2020.

In the fight against Covid, delays could prove even more costly. Even if homegrown vaccines are successfully developed, China would still need to make and administer them—though it only took 10 months to jab 1 billion people against Covid back in 2021. That's quick, but Huang argues it's unlikely to be quick enough. "By the time China achieves a high vaccination rate, the Omicron-driven wave might already be in retreat," he says. "We are likely going to see the emergence and dominance of new variants."

So why doesn't China approve Western vaccines? As well as citing the need to protect the domestic market, Calvin Ho, a bioethicist at the University of Hong Kong, says the move would also be costly and could trigger a global supply crisis. "Even if they approved Pfizer, it's going to take some time to vaccinate everyone. Leaving aside the financial cost, there would be implications of global justice. If China approves it and is prepared to pay, what would be the implications for other countries that cannot afford it?" Ho says. "Realistically speaking, the way forward may be to hope there will be a more effective vaccine developed in the mainland or Hong Kong."

China's stance may be shifting. In a surprise move, the country this week conditionally approved Pfizer's Paxlovid pill—even though the country is developing its own antiviral drugs and treatments. Earlier this month, an antiviral drug called Favilavir reportedly received approval to move forward with clinical trials investigating its possible use as a treatment against Covid, and the state's drug authority granted emergency approval for a monoclonal antibody treatment in December. But the latter needs to be administered through injections, which Huang says would still put a burden on the health care system, since patients would need to go to the hospital.

And even if China can develop its own vaccines and treatments, that doesn't mean it will abandon its dynamic Covid-zero strategy, officials have said. "As long as China has no new measures to prevent the imported strains of the coronavirus from triggering large-scale transmission and no effective way to contain the epidemic, the country will not adjust its dynamic zero-tolerance policy," Wu Zunyou, chief epidemiologist of the Chinese Center for

Disease Control and Prevention, told state media outfit *Global Times* in early February. "Relying on vaccines cannot contain Covid-19."

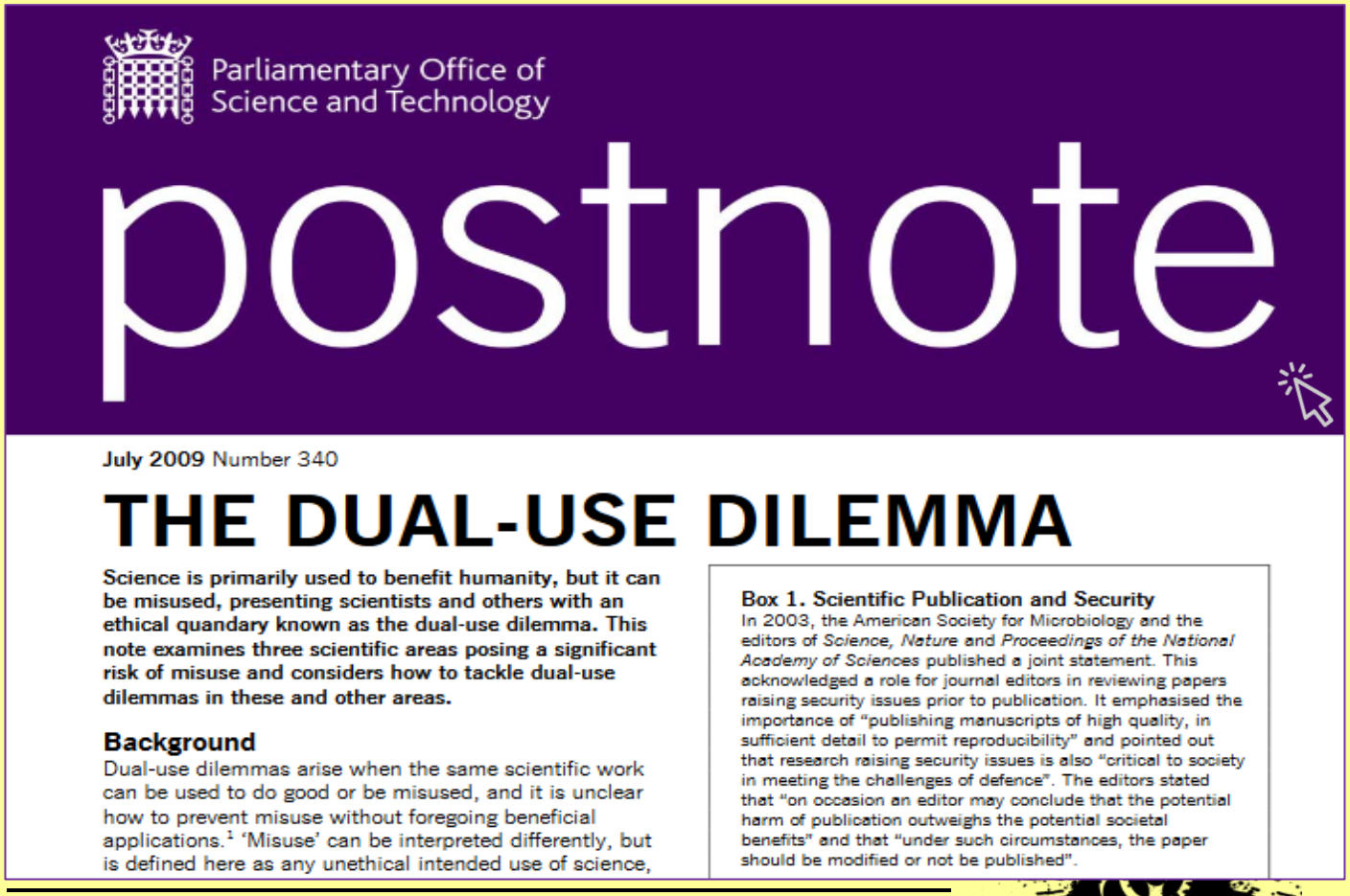
Not everyone agrees a large-scale outbreak would be as disastrous as the state makes it out to be. In fact, there are many steps China can take to mitigate the damage done to vulnerable communities and the health care system as it eases out of a zero-tolerance strategy, experts argue. Such measures include introducing more effective vaccines from Pfizer and Moderna, making more accessible antivirals available for use, and educating the public on the health risks posed by the virus. "If you have these measures in place, you can significantly reduce the risk to make it manageable," Huang says. The cost of maintaining zero-tolerance, he adds, will only increase over time. "You have to give up that strategy. You can't expect the virus to disappear."

But for all the science, it's impossible to untangle China's Covid response from politics. In the mainland, discussions around China's zero-tolerance strategy and homegrown vaccines have become highly politicized. Scientists advocating for a less strict approach have been attacked on social media, and in January one lawmaker in Hong Kong said that health experts who promote the idea of "living with Covid" should be seen as violating national security. "They see this [strategy] as a matter of national pride," says Jin. "Many Chinese people are proud." Chinese state media has played a significant role, too, he adds, by creating a partially false narrative around how the rest of the world is suffering.

Pandemic restrictions have also allowed the state to tighten its control over people in China, with security experts saying the virus has become a pretext for the government to accelerate mass surveillance and clamp down on freedom of speech. In February 2020, the government in Hangzhou introduced the mandatory Alipay Health Code app that tells people whether they should be quarantined or allowed into certain public spaces. The app, which appears to share information with the police, is now used across China and has become a normalized part of daily life.

For now, scientists say China will likely only shift away from a zero-tolerance strategy when the population is sufficiently vaccinated with an effective, homegrown, Omicron-targeted vaccine. Another scenario is that the virus evolves into a form mild enough to allow the country to open up without many casualties—a scenario that is unpredictable, to say the least.

In the short term, it is unlikely China would risk any such test before the Communist Party National Congress, which is set for this fall. The Congress, a major political event ushering in top-level leadership changes that is held every five years, will likely see president Xi Jinping announce his intention to seek an unprecedented third term in office. As with the rest of the world, the only way for China to end the pandemic is to rely on science. But there's a lot of politics involved too.



Parliamentary Office of Science and Technology

postnote

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THE DUAL-USE DILEMMA

Science is primarily used to benefit humanity, but it can be misused, presenting scientists and others with an ethical quandary known as the dual-use dilemma. This note examines three scientific areas posing a significant risk of misuse and considers how to tackle dual-use dilemmas in these and other areas.

Background

Dual-use dilemmas arise when the same scientific work can be used to do good or be misused, and it is unclear how to prevent misuse without foregoing beneficial applications.[1] 'Misuse' can be interpreted differently, but is defined here as any unethical intended use of science,

Box 1. Scientific Publication and Security

In 2003, the American Society for Microbiology and the editors of *Science*, *Nature* and *Proceedings of the National Academy of Sciences* published a joint statement. This acknowledged a role for journal editors in reviewing papers raising security issues prior to publication. It emphasised the importance of "publishing manuscripts of high quality, in sufficient detail to permit reproducibility" and pointed out that research raising security issues is also "critical to society in meeting the challenges of defence". The editors stated that "on occasion an editor may conclude that the potential harm of publication outweighs the potential societal benefits" and that "under such circumstances, the paper should be modified or not be published".

The lax laws that could allow assembly of deadly virus DNA

Source: https://www.theguardian.com/world/2006/jun/14/terrorism.topstories3

June 2006 – DNA sequences from some of the most deadly pathogens known to man can be bought over the internet, the Guardian has discovered.

In an investigation which shows the ease with which terrorist organisations could obtain the basic ingredients of biological weapons, this newspaper obtained a short sequence of smallpox DNA. The deadly virus has existed only in laboratories since being eradicated from the world's population 30 years ago.

A vial containing an incomplete sequence of smallpox DNA, obtained by the Guardian over the internet. Photo: Martin Argles

The DNA sequence of smallpox, as well as other potentially dangerous pathogens such as poliovirus and 1918 flu are freely available in online public databases. So to build a virus from scratch, a terrorist would simply order consecutive lengths of DNA along the sequence and glue them together in the correct order. This is beyond the skills and equipment of the kitchen chemist, but could be achieved by a well-funded terrorist with access to a basic lab and PhD-level personnel.

One study estimated that because most people on the planet have no resistance to the extinct virus, an initial release which infected just 10 people would spread to 2.2 million people in 180 days.

The DNA sample we ordered had, at our request, three small modifications to render it harmless before it was sent by post to a residential address in London. The company has since conceded that it was not aware it was sending out a sequence of modified smallpox DNA.

There are legitimate reasons for researchers to buy lengths of DNA from pathogens, for example in developing treatments or vaccines against them. However, because this industry is so new and unregulated, companies are selling custom-made DNA without making thorough checks on the identities of the people who are placing the orders or what the sequences are.

Of the four main companies operating in the UK, none currently screens all their DNA orders. There are 39 companies operating in North America and not all screen their orders.

"This is the most disturbing story I have heard for some time," said Phil Willis MP, chairman of the parliamentary science and technology committee. "There is clearly a massive loophole which needs to be dealt with by regulation or legislation."

Alistair Hay, who is an expert on biological and chemical weapons at the University of Leeds and who advises the government and police, said he was concerned that the company was prepared to supply the DNA to a residential address. "I am surprised that it was so easy," he said.

"I think for any company offering [DNA] sequences there is a need to have some screens in place for sequences that may be suspect," added Prof Hay.

"This is a new field and the regulations haven't really caught up with the technology yet," said Robert Jones at Craic Computing in Seattle, a company that makes software which some DNA synthesis companies use to screen their orders for potentially dangerous sequences.

The potential to manufacture viruses from scratch first came to light in 2002 when US researchers pieced together the genome of the polio virus using short sequences of DNA around 70 letters long. And last year, another team recreated the 1918 flu virus, a devastating and now extinct strain that killed an estimated 50 million people, more people than the first world war.

Building smallpox using the same technique as scientists used to make polio and 1918 influenza would be technically difficult because the virus is larger - the smallpox genome is 185,000 letters long, the influenza genome is 13,500 letters and polio is 7,741 letters. But as techniques improve there is no theoretical reason why it could not be done.

Craig Venter, the US entrepreneur famous for sequencing the human genome, announced in 2003 that his team had constructed the virus phage PhiX174 in two weeks. This has a genome 5,386 letters long. He is currently working on making a bacterium Mycoplasma genitalium from scratch which has a genome around twice as large as smallpox.

The Guardian placed an order online with VH Bio Ltd, a company in Gateshead, Tyne and Wear, that supplies equipment and chemicals used in standard molecular biology labs. We used an invented company name along with just a mobile telephone number and free email address.
VH Bio Ltd rang to check whether the address provided was a residential address. The journalist told VH Bio Ltd that our company was in the process of moving offices and so wanted to make sure the order arrived.
The package, which contained a 78-letter sequence of DNA, which is part of one of the smallpox virus's coat protein genes, was delivered by the Royal Mail to a flat in north London. The A5-sized Jiffy bag contained a small plastic phial with a tiny blob of white gel at the bottom - the DNA. The order cost £33.08, plus an additional £7 for postage.
Alan Volkers, chairman of VH Bio Ltd said the company had no idea that the sequence they produced was a modified sequence of smallpox DNA.
He added that many of its regular customers carry out research which requires supplies of DNA sequences from pathogenic organisms, and his company does not normally screen DNA orders less than 100 letters long. After discovering that it had supplied a small sequence of smallpox DNA, the company carried out checks on two European databases and a 30-minute check using scanning software, but none of them raised any alert.
Dr Volkers added that the company processes several hundred short-sequence orders per day and added: "It would be impossible to run them all through [standard scanning software] and operate successfully."
"There are no regulations in place which require us to carry out background checks on potential customers," he said. "We will, of course, comply with any regulations which are introduced."
Before beginning the investigation, the Guardian obtained advice from four independent scientists, including an international expert on pox viruses, the family to which smallpox belongs. They told us the order would be safe to produce, transport and receive.
Without modifications to the sequence, it could potentially fall foul of the Anti-terrorism, Crime and Security Act 2001. This lists so-called Schedule 5 pathogens and toxins which are illegal to keep or use without first notifying the authorities. Also covered by the act is DNA "associated with the pathogenicity" of the organisms on the same list.
In order to avoid our sequence coming under the act the DNA sequence we ordered had three changes built into it to create so-called "stop codons".
These are effectively full stops in the genetic code which mean that if the sequence were ever put together with others to make a smallpox gene the protein production machinery would stop at that point. So the sequence could never form part of a functional gene.
In making and receiving the order neither we, nor VH Bio Ltd, have broken the law, but the most widely used software (called Blackwatch) for screening DNA orders for potential bioterror agents picked out our sequence as suspicious in a scan run by Craic Computing. This is because it looks for sequences of DNA letters close to sequences from dangerous organisms.

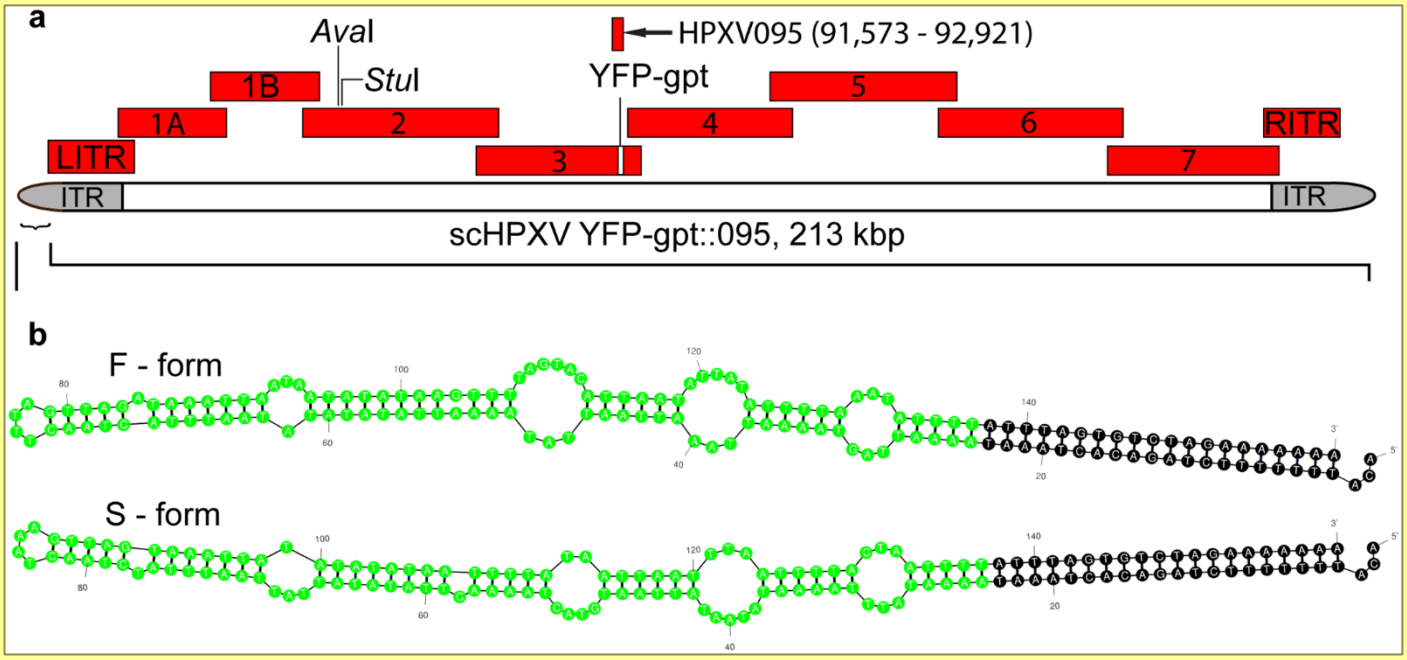
Construction of an infectious horsepox virus vaccine from chemically synthesized DNA fragments

By Ryan S. Noyce, Seth Lederman, and David H. Evans
PLOS ONE | Jan 19, 2018
Source: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0188453

Abstract

Edward Jenner and his contemporaries believed that his *variolae vaccinae* originated in horses and molecular analyses show that modern vaccinia virus (VACV) strains share common ancestry with horsepox virus (HPXV). Given concerns relating to the toxicity of modern VACV vaccines, we asked whether an HPXV-based vaccine might provide a superior alternative. Since HPXV may be extinct and the only specimen of HPXV that has been identified is unavailable for investigation, we explored whether HPXV could be obtained by large-scale gene synthesis. Ten large (10–30 kb) fragments of DNA were synthesized based on the HPXV sequence along with two 157 nt VACV terminal sequences, and were recombined into a live synthetic chimeric HPXV (scHPXV) in cells infected with Shope fibroma virus (SFV). Sequencing of the 212 kbp scHPXV confirmed it encoded a faithful copy of the input DNA. We believe this is the first complete synthesis of a poxvirus using synthetic biology approaches. This scHPXV produced smaller plaques, produced less extracellular virus and exhibited less virulence in mice than VACV, but still provided vaccine protection against a lethal VACV challenge. Collectively, these findings support further development of scHPXV as a novel replication-proficient smallpox vaccine.

Virus design strategy.



(**a**) Cloned synthetic DNA fragments used to assemble HPXV. Nine different clones were synthesized spanning all but the first and last 40 bp in GenBank entry DQ792504, each overlapping the adjacent fragment by ~1 kbp. All of the *Aar*I and *Bsa*I restriction sites were eliminated from fragments 1A to 7, inclusive, using silent mutations and the same strategy was used to add *Ava*I and *Stu*I sites in Frag_2. To facilitate virus recovery a gene encoding a YFP-gpt fusion protein was inserted into Frag_3, at the site of the HPXV thymidine kinase locus. An additional HPXV095 fragment spans the thymidine kinase locus and was subsequently used to delete and replace the YFP-gpt marker using homologous recombination. (**b**) Synthetic hairpin telomeres. Because the HPXV genome was not sequenced to the ends, we substituted two hairpin sequences based upon those reported for VACV strain WR (green coloured nucleotides). These are called "fast" and "slow" forms based upon their electrophoretic properties. The nucleotides coloured in black come from the HPXV genome sequence and provide an element essential for telomere resolution.

"Designer bugs": how the next pandemic might come from a lab

By R. Daniel Bressler and Chris Bakerlee

Source: https://www.vox.com/future-perfect/2018/12/6/18127430/superbugs-biotech-pathogens-biorisk-pandemic

Dec 2018 – This week, diplomats from around the world are meeting in Geneva, Switzerland, as part of an annual gathering of state parties for the Biological Weapons Convention (BWC). The BWC has an important mandate: It prohibits the 182 countries that have signed on and ratified the convention from developing, producing, and stockpiling biological weapons.

The BWC, and the biosecurity community broadly, has historically been more focused on existing pathogens with clear potential to be used as biological weapons, such as anthrax and the agents causing botulism and Q fever. In addition, health security experts are worried about the "next big one" — the next global pandemic. Pandemic diseases are often zoonotic, meaning they jump from animals to humans. Zoonotic diseases like Ebola, Zika, SARS, and HIV are created when, say, the wrong pig meets up with the wrong bat — and then meets the wrong human.

The emergence of such diseases depends a great deal on spontaneous genetic mutations and circumstantial factors. So here's a scary thought: Possible future pandemics may not depend on the chance meeting of different animal species and chance mutations, but may be deliberately designed instead. New tools from the field of synthetic biology could endow scientists with the frightening ability to design and manufacture maximally dangerous pathogens, leapfrogging natural selection.

The threat is very much on the minds of security officials. This past May, the Johns Hopkins Center for Health Security (CHS) led an exercise involving former US senators and executive branch officials on how the country would respond to an international outbreak of an engineered pathogen. In this fictional scenario, a terrorist group constructed a virus that was both deadly and highly contagious. More than a year into the made-up pandemic, the

worldwide death toll was soaring past 150 million, the Dow Jones had fallen by 90 percent, and there was a mass exodus from cities amid famine and unrest.

In biotech, the story of the past several decades has been one of exponential progress. Just 75 years ago, we were not even confident that DNA was the primary material governing genetic heredity. Today, we are able to read, write, and edit genomes with increasing ease.

But biotechnologies are dual-use — they can be used for both good and ill. We fear that with even just current capabilities, an engineered pandemic could join the growing list of seismic changes made possible by biotechnological advances. Sufficiently capable actors could work to resurrect the deadliest pathogens of the past, like smallpox or Spanish flu, or modify existing pathogens such as bird flu to be more contagious and lethal. As genome engineering technologies become more powerful and ubiquitous, the tools necessary for making these modifications will become increasingly accessible.

This leads to the terrifying specter of independent actors intentionally (or unintentionally) engineering pathogens with the potential to inflict worse harm than history's deadliest pandemics. No obvious physical or biological constraints preclude the construction of such potent biological weapons. According to biosecurity expert Piers Millett, "If you're deliberately trying to create a pathogen that is deadly, spreads easily, and that we don't have appropriate public health measures to mitigate, then that thing you create is amongst the most dangerous things on the planet."

Mitigating this risk is shaping up to be one of the major challenges of the 21st century — not only because the stakes are high, but also because of the myriad obstacles standing between us and a solution.

The technologies that help us might also hurt us

Natural pandemics can be horrific and catch us completely off guard. For example, three years elapsed between the first officially documented US AIDS cases in 1981 and the identification of HIV as its cause. It took another three years to develop and approve the first drug treating HIV. While antiretroviral treatments now allow those living with HIV to manage the disease effectively (that is, if they can afford the treatment), we still lack a promising HIV vaccine.

Yet as ill-equipped as we may be to fight newly emergent natural pathogens, we are even less prepared to cope with engineered pathogens. In the coming decades, it may become possible to create pathogens that fall well outside the range of infectious agents modern medicine has learned to detect, treat, and contain.

Worse yet, malicious actors might build disease-causing microbes with features strategically tailored to thwart existing health security measures. So while advances in the field of synthetic biology will make it easier for us to invent therapeutics and other technologies that can defend us from pandemics, those very same advances may allow state and nonstate actors to design increasingly harmful pathogens.

For example, new gene-synthesis technologies loom large on the horizon, allowing for the automated production of longer DNA sequences from scratch. This will be a boon for basic and applied biomedical research — but it also will simplify the assembly of designer pathogens.

Compared to other weapons of mass destruction, engineered pathogens are less resource-intensive. Although malicious actors would currently need university-grade laboratories and resources to create them, a bigger obstacle tends to be access to information. The limits of our knowledge of biology constrain the potential of any bioengineering effort. Some information, like how to work proficiently with a specific machine or cell type, can be acquired only through months or years of supervised training. Other information, like annotated pathogen genome sequences, may be easy to access through public databases, such as those maintained by the National Center for Biotechnology Information.

If information such as pathogen genome sequences or synthetic biology protocols is available online, this could make it much easier for malicious actors to build their own pathogens. But even if they're not online, hackers can also steal sensitive information from the databases of biotechnology companies, universities, and government laboratories.

Preventing damage from engineered pathogens is complicated by the fact that it takes only one lapse, one resourceful terrorist group, or one rogue nation-state to wreak large-scale havoc. Even if the majority of scientists and countries follow proper protocols, a single unilateral actor could imperil human civilization.

And some wounds can be self-inflicted. Between 2004 and 2010, there were more than 700 incidents of loss or release of "select agents and toxins" (i.e., scary stuff) from US labs. In 11 instances, lab workers acquired bacterial or fungal infections. In one instance, a shipment of a harmful fungus was lost — and, according to the FBI, destroyed — in transit. In a world in which well-meaning but sometimes careless biologists are creating dangerous organisms in the lab, such accidental release events could prove even more frightening.

A global problem

Like naturally occurring pandemics, engineered pandemics will not respect national borders. A contagious pathogen released in one country will emigrate. Actions that protect against engineered pathogens are an example of a global public good: Since a deadly engineered pathogen would adversely affect countries around the world, doing something to prevent them is a service that benefits the whole world.

A fundamental challenge of global public goods is that they tend to be underprovided. With global public goods, individual countries prefer to free ride over unilaterally providing global public goods if they can get away with it.

This doesn't mean that countries won't do anything to provide global public goods; they just won't do as much as they should. For example, a country such as the United States will consider the potential damage an engineered pathogen could wreak on its 325 million people, and it will take actions to prevent this from happening. However, the actions it takes won't be as extensive as they would be if it were to consider the toll an engineered pathogen could take on the planet's 7.6 billion people.

To address this dilemma, world leaders created the Biological Weapons Convention in the 1970s. The BWC has the important goal of constraining bioweapons development; in practice, it has been ineffective at verifying and enforcing compliance.

Unlike the BWC, the major nuclear and chemical weapons treaties have extensive formal verification mechanisms. The Nuclear Non-Proliferation Treaty (NPT), effective since 1970, verifies the compliance of signatories through the International Atomic Energy Agency, which has a staff of about 2,560. The Chemical Weapons Convention (CWC), effective since 1997, verifies compliance through the Organisation for the Prohibition of Chemical Weapons, which won the Nobel Peace Prize in 2013. It has a staff of 500. By contrast, the Implementation Support Unit for the BWC, the convention's sole administrative body, currently has just four employees.

And bioweapons have specific characteristics that make verification and enforcement difficult compared to chemical and nuclear weapons.

Consider nuclear technology. Nuclear power plants require low levels of uranium enrichment (typically around 5 percent), whereas nuclear weapons require highly enriched uranium (typically above 90 percent). Highly enriched uranium requires large industrial facilities with

precise centrifuges. When granted access, it is comparatively easy for inspectors to determine when a facility is being used for the production of highly enriched uranium.
Partly for these reasons, no country has ever developed nuclear weapons while being a party to the NPT. Of the nine nuclear weapons nations, the US, USSR (whose weapons are now exclusively owned by Russia), UK, France, China, and likely Israel had nuclear weapons before the treaty was enforced. India (first test in 1974) and Pakistan (first test in 1998) never signed the NPT. North Korea withdrew from the treaty in 2003, three years before its first nuclear test in 2006.
In contrast, bioengineered organisms require fewer resources and smaller facilities to make, and it is harder to readily distinguish between organisms that are being developed for scientific purposes from those that are being developed with malicious intent.
Historically, the BWC does not have a good track record of preventing the possession of bioweapons. The Soviet Union maintained a large bioweapons program after it signed on to the BWC in 1975. The South African apartheid regime held bioweapons in the 1980s and '90s while being a party to the BWC.
Fearing that invasive verification by the BWC could compromise sensitive intellectual property and hurt the competitiveness of its cutting-edge biotechnology sector, the US chose to withdraw from negotiations at the BWC's Fifth Review Conference in 2001. The US later rejoined those negotiations, but serious measures to improve the BWC's verification and enforcement mechanisms have not been implemented, and the agreement remains largely ineffective.
Despite this concern about the invasiveness of verification, there is a growing consensus that the BWC must become more effective. The 2015 Bipartisan Report of the Blue Ribbon Study Panel on Biodefense, chaired by Joe Lieberman, the 2000 Democratic vice presidential candidate, and Tom Ridge, the first secretary of homeland security under George W. Bush, called for the vice president and the secretary of state to chair a series of meetings with relevant Cabinet members and experts to come to an agreement on verification protocols that would satisfy US concerns while adequately enforcing compliance with the treaty. The study led to the introduction of the National Biodefense Strategy Act of 2016, which is still awaiting a vote.
In September 2018, the Trump administration released a National Biodefense Strategy, though this document contained little specific information on how the US would strengthen the BWC and didn't mention Cabinet-level meetings chaired by the vice president, as was recommended by the blue ribbon panel.
Some have questioned the seriousness of the threat posed by bioweapons. For example, in his recent book, Harvard University professor Steven Pinker suggests that "Bioterrorism may be [a] phantom menace." He claims that terrorists wouldn't weaponize pandemic pathogens, since their goal is typically "not damage but theater." Others have suggested that even if terrorists wanted to engineer a pathogen as a weapon, they'd lack the requisite biological knowledge and practical know-how to get the job done.
While it is true (and quite fortunate) that these factors reduce at least the present risk of a biological attack, it is cold comfort. In the coming decades, it will only become easier for nonstate actors to acquire and deploy powerful biotechnologies for ill. And beyond terrorists, state actors also pose serious risks.
For example, Japan launched devastating bioattacks against China during World War II. Japanese Unit 731 dropped bombs filled with swarms of plague-infested fleas on Chinese cities, likely killing hundreds of thousands of civilians. The unit's commander, Shiro Ishii, found plague to be a potent weapon because it could present itself as a natural epidemic and kill large numbers of people through person-to-person transmission.
In addition, the US had a bioweapons program from 1943 to 1969 that, among other things, made propaganda videos bragging about testing biological weapons on human subjects. The Soviet Union's covert bioweapons program that it maintained after signing on to the BWC had more employees at its peak in the 1980s than Facebook currently has.

We don't know what we don't know — but here's what we can do

Many questions remain unanswered when it comes to the potentially catastrophic risks posed by engineered pathogens. For example, what is the full spectrum of microbes that cause human disease? And which types of microbes would most likely be used as bioweapons? Research centers such as the Center for Health Security at Hopkins, the Future of Humanity Institute, and the Nuclear Threat Initiative are working hard to answer such questions.
But just because we don't have answers to all the questions — and don't even know all the questions to begin with — doesn't mean there aren't things we can do to mitigate our risks.

Thinking and acting globally

For starters, we should develop a process to address advancements in biotechnology in the BWC. Currently, the BWC lacks a dedicated forum where the treaty implications of new developments in biotechnology can be discussed. Other international agreements like the

CWC have dedicated scientific advisory boards to track and respond to new science and technological changes. The BWC has no such board.
There's some movement on this issue — the Johns Hopkins Center for Health Security hosted an event in Geneva earlier this week to discuss how the BWC can evolve to address rapid advances in biotechnology. Still, it is crucial to establish a permanent institutional capacity within the BWC to address biotechnological change.
This all connects to another priority: give the BWC's Implementation Support Unit more resources. The four-person implementation support unit, the convention's sole administrative body, has immense responsibilities that far exceed its current resources. These responsibilities include supporting and assisting nations as they implement the treaty, administering a database of assistance requests, facilitating communication between the parties, and much more.
But the resources remain minuscule, especially compared to other international treaties. The annual cost allocated to BWC meetings and its implementation support unit is less than 4.5 percent of the cost allocated to the CWC. This inadequate budget sends a grim signal about how seriously the world is currently taking the growing risks from bioweapons.
Another global priority should be finding ways to regulate dual-use gene synthesis technologies. To facilitate their research, biologists regularly order short, custom pieces of DNA from companies that specialize in their manufacture. In 2009, the International Gene Synthesis Consortium proposed guidelines for how gene synthesis companies should screen customers' orders for potentially dangerous chunks of DNA, such as those found in harmful viruses or toxin genes. Most companies voluntarily follow these guidelines, and they represent 80 percent of the global market.
However, even companies currently applying recommended screening procedures only test whether ordered sequences match those of *known* pathogens. An engineered pathogen with a novel genome could potentially slip past this filter.
Presently, the gene synthesis market is expanding internationally and synthesis costs are falling. It is urgent that governments both independently and multilaterally act to mandate proper screening of sequences and customers. As Kevin Esvelt of MIT writes, "adequately screening all synthesized DNA could eliminate the most serious foreseeable hazards of biotech misuse by nonstate actors."

Dealing with biorisk on the ground and in the lab

Beyond developing new global standards and practices, we need to adopt more flexible countermeasures to face off the threat of bioengineered pathogens. As noted in a recent CHS report, "One of the biggest challenges in outbreak response, particularly for emerging infectious diseases, is the availability of reliable diagnostic assays that can quickly and accurately determine infection status."
Diagnostics based on cutting-edge genome sequencing methods could provide detailed information about all the viruses and bacteria present in a blood sample, including even completely novel pathogens. Meanwhile, as genome sequencing technology becomes less expensive, it could be more widely applied in clinics to provide unprecedented real-time insights into genetic diseases and cancer progression.
We also need to invest more in developing antivirals that hit a wider range of targets. Such broad-spectrum drugs may stand a better chance of slowing the proliferation of an engineered bug than treatments specific to single known pathogens.
And we should also develop "platform" technologies that allow rapid vaccine development. Currently, the process of designing, testing, and manufacturing a vaccine to prevent the spread of a new pathogen takes years. Ideally, we could immunize all at-risk individuals within months of identifying the pathogen. Accelerating vaccine development will require us to innovate new and likely unconventional technologies, such as vectored immunoprophylaxis or nucleic acid vaccines.
Even as we pursue and accelerate such research, we should also be mindful of the possibility of self-inflicted wounds. To avert a terrible accident, the international biomedical community should establish firmer cultural guardrails on the research into pathogens.
Currently, career advancement, financial gain, and raw curiosity motivate biologists at all levels to push the envelope, and we all stand to gain from their efforts. However, these same incentives can sometimes lead researchers to take substantial and perhaps unjustified risks, such as evolving dangerous strains of influenza to be more contagious or publishing instructions for cultivating a close cousin of the smallpox virus. It's important for biologists to do their part to promote a culture in which this adventurous intellectual spirit is tempered by caution and humility.
Encouragingly, synthetic biology luminaries like Esvelt and George Church of Harvard University are doing just that, pioneering technological safeguards to mitigate accidental release risks and advocating policies and norms that would make 21st-century biology a less perilous pursuit. As the tools of synthetic biology spread to other disciplines, their example is one that others should follow.
Underlying the prescriptions above is the need to approach the problem with the sense of urgency it warrants. As our biotechnological capabilities grow, so too will the threat of

engineered pathogens. An engineered pandemic won't announce itself with a towering mushroom cloud, but the suffering of the individuals it touches will be no less real.

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Chris Bakerlee is a PhD candidate in molecules, cells, and orgamisms at Harvard University, where he uses genetic engineering to study how evolution works.

Engineered Pathogens and Unnatural Biological Weapons: The Future Threat of Synthetic Biology

By J. Kenneth Wickiser, Kevin J. O'Donovan, Michael Washington, Stephen Hummel, and F. John Burpo
CTCSENTINEL | August 2020, Volume 13, Issue 8
Source: https://ctc.usma.edu/engineered-pathogens-and-unnatural-biological-weapons-the-future-threat-of-synthetic-biology/

The COVID-19 pandemic has demonstrated that significant biological threats can and will emerge from nature without warning, demonstrating that a single viral strain can have a profound impact on modern society. It has also demonstrated that infectious diseases can rapidly spread throughout a population without human engineering making them the ideal substrates from which to develop engineered weapons. Viruses and bacteria have been used as weapons for millennia.[1] Historically, biological weapons were derived from natural sources, such as anthrax from herbivores and domesticated animals, and smallpox from rodents. Those pathogenic organisms that were found to be suitable for weaponization were cultured directly from the environment; they were then isolated, purified, stored, propagated,[a] and used to fill biological munitions.[2]
The most recent of example of this was the production and stockpiling of numerous agents by the biological weapons program of the former Soviet Union. In this program pathogens were selected for specific characteristics directly from the natural environment, propagated, and stored for later use.[3] While these pathogens have evolved in nature for the purpose of persisting, they are not optimized for maintenance, storage, and deployment in a military setting. Consequently, while biological agents have not been widely employed as strategic or tactical weapons by state or non-state actors, there are some examples of their use in conflicts. The most significant of these is the well-documented use of crude bacteriological agents by the Japanese army against China during the Second World War.[4]
Recently, the convergence of advances in computer science, engineering, biological science, and chemistry have made it possible to engineer living systems to optimize growth and increase pathogenicity (the propensity to cause disease). This interdisciplinary approach to providing novel biological functionality has had a positive impact on the biotechnological and biopharmaceutical industries. At the same time, these engineered bacteria and viruses can be co-opted for belligerent purposes. Indeed, the use of designer biological weapons could theoretically give a state or non-state actor an asymmetric advantage over an adversary that favors conventional weapons.
Synthetic biology (SynBio) is the scientific discipline that encompasses all aspects of the engineering of biological systems.[5] Beginning with the discovery of the chemical structure of DNA[b] in the 1950s, SynBio tools such as recombinant DNA technology[c] and genome editing tools[d] have developed at a fast pace as the fundamental molecular mechanisms underlying biology are discovered. These SynBio tools are lowering the education, training, cost, time, and equipment threshold required to modify and employ pathogenic organisms as biological weapons. The asymmetric threat posed by biological weapons will continue to increase as new tools and techniques are developed and as terrorist organizations become aware of and inspired by the society-wide economic, emotional, and government-destabilizing impacts caused by the COVID-19 pandemic.[e] Indeed, it can be argued that the total cost of this pandemic—including the loss of life and the stress to the economy—could be rivaled only by the deployment of an atomic bomb.
Therefore, developments in SynBio should be continually monitored and reassessed within the context of technological change and its capacity to shift the geopolitical paradigm. In this article, the authors describe how biological systems' modular nature makes them amenable to engineering, the recent advances in synthetic biology, the impact of synthetic biology on the threat landscape, and the potential policy responses to the maturation of biotechnology in general, and synthetic biology in particular. This article has been developed using both primary and secondary literature sources recently published in peer-reviewed scientific papers.

The Inherent Modularity of Biological Systems

Modularity is essential to the purposeful engineering of biological systems to create weapons. In general terms, modularity refers to the ability to replace or update a piece of equipment. For example, a set of interchangeable parts is what allows an individual to modify or optimize a complex piece of equipment, such as a home computer or an automobile. The genetic material (DNA or RNA) of any organism contains all of the information required for its proper functioning and is comprised of many modular components. Specific genes can be removed from one pathogen and inserted into another as a means of altering the activity of the recipient.[6] This modularity enables a measure of predictability of the effects on the complex network of genes when employing molecular engineering methods to insert a foreign gene into a host genome. For example, the modular nature of the non-pathogenic vaccine-strain of the poliovirus genome is what enables it to acquire pathogenicity genes from other viruses and revert to a pathogenic state (horizontal gene transfer).[7] It has been postulated that molecular modularity evolved as a natural genomic tool, allowing biological systems to rapidly adapt to changing environmental conditions.[8] While the process of a virus acquiring pathogenicity has been occurring naturally through horizontal gene transfer for as long as these biological agents have existed, the use of SynBio molecular engineering tools provides a pathway to purposeful and precise changes in genomes on fast timescales not found in nature. Modular genes can be mixed and matched to increase the speed with which organisms can evolve and adapt, producing the type of functionality required of a given environment and providing the organism with a selective advantage compared to its competitors. There is currently an effort underway to identify the minimal genome necessary for the survival of the simplest strain of bacteria.[9] Once it is determined what genes are necessary for survival and reproducibility in bacteria, it may be possible to swap-out non-essential genes for genes conferring any number of desired characteristics. An increased understanding of the modularity of biological systems will impact the fields of biosecurity and military medicine by providing a "molecular toolkit" which can be used for peaceful purposes or by adversaries to design and manufacture biological agents.

Synthetic Biology Enables the Design and Development of Biological Weapons

In 1997, a team of accomplished scientists within a group known as the JASON[f] group met to discuss the future of biological warfare.[10] They identified six emerging biological threats that needed to be monitored by military planners and strategists: (1) the development of binary weapons,[g] (2) the construction of designer genes, (3) the use of gene therapy as a weapon, (4) the development of viruses that evade the immune response of the host, (5) the use of viruses that can move between insects, animals, and humans, and (6) the development of designer diseases. These threats were once considered to be futuristic and speculative. Advances in SynBio techniques, however, have moved many of these predicted contingencies from the realm of speculation into the realm of reality. As the molecular engineering techniques of the synthetic biologist become more robust and widespread, the probability of encountering one or more of these threats is approaching certainty.

The extent and impact of SynBio on future state-on-state conflicts and terrorist violence will increase as the tools and techniques of this discipline continue to mature and diffuse throughout the scientific community, as well as among the novice citizen-scientists in the do-it-yourself biology labs that have emerged around the world in recent years.[11] The ability to produce custom-designed bacterial and viral pathogens will enhance the ability of hostile state and non-state actors to develop and deploy relatively inexpensive and efficient biological weapons. Additionally, some of these weapons will likely be engineered with increased pathogenicity, environmental stability,[h] and the ability to withstand the shock of the rapid changes in temperature and pressure that may accompany delivery by explosive warhead. Below are several notable 21st century examples where scientists employed emergent SynBio techniques to rediscover or recreate pathogenic microorganisms.

In 2002, scientists from the State University of New York at Stony Brook chemically synthesized the complete poliovirus genome, highlighting the transformative potential of SynBio.[12] While this effort was accomplished by experienced professional scientists over the course of years in well-equipped laboratories, the playbook is now freely available and the tremendous advances in molecular engineering techniques since then have only reduced the complexity of this once-monumental effort. This achievement was followed by the first chemical synthesis of a much larger bacterial genome in 2008 and the development of an entirely synthetic cell in 2010.[13] The use of SynBio tools has endowed scientists with the ability to purposefully dissect the inherently complex series of coupled chemical reactions that compose fundamental cellular metabolism. These networks of reactions can be engineered using modular genes and molecular tools to enhance synthetically produced organisms with desired biochemical properties.[14] Significantly, by combining standard molecular and cellular laboratory techniques with cellular selection (or evolution) strategies, which are accomplished daily by high school and college students in biology classes and research competitions across the world, detailed knowledge of the nature of each chemical reaction is not required to achieve the desired outcome for the engineered biological agent.[15]

In 2005, a group of researchers from the U.S. Centers for Disease Control (CDC), the Mount Sinai School of Medicine, the Armed Forces Institute of Pathology, and the Southeast Poultry

Research Laboratory reconstructed the 1918 pandemic influenza virus. This was a particularly striking example of how the modular nature of a viral genome could be used to manufacture a pathogen.[16] The reconstruction was performed by first determining the genomic coding sequences of the virus from lung tissue specimens obtained from pandemic victims who were preserved in permafrost.[17] The relevant DNA sequences were then inserted into a set of circular DNA strands known as plasmids, which were subsequently used to infect host human kidney cells. As predicted, fully functional and replicative viral particles emerged from the kidney cells. The pathogenicity of the reconstructed virus was evaluated in mice, ferrets, and non-human primates, and it was found that the 1918 influenza strain was significantly more lethal than modern strains.[18] It produced severe damage to the lungs, it stimulated an aberrant immune response, and it led to the development of high viral titers (levels of virus) in both the upper and lower respiratory tracts.[19] The reconstruction procedure was conducted in a standard molecular biology laboratory setting, and all the materials needed for the construction of this viral particle are present in many university biology laboratories. The methods that were employed are not beyond the means of the talented amateur and therefore not beyond the means of a dedicated, well-resourced terrorist organization.[20]

More recently in 2016, a small Canadian research group was successful in constructing infectious horsepox virus directly from genetic information obtained solely from a public database for the relatively modest sum of $100,000 in U.S. currency.[21] Horsepox is a genetically distinct relative of the now extremely rare smallpox virus. Smallpox was once a highly feared pandemic disease that either permanently disfigured or ended the lives of millions of people worldwide. The same techniques used to construct horsepox can easily be adapted to construct smallpox with a minimal investment of time and money. SynBio has therefore placed the ability to recreate some of the deadliest infectious diseases known well within the grasp of the state-sponsored terrorist and the talented non-state actor.

The International Genetically Engineered Machine (iGEM) competition provides another striking example of the ease by which genetic engineering can be mastered at the undergraduate level.[22] The iGEM competition was initiated by a group of non-biologist researchers at the Massachusetts Institute of Technology (MIT) who wanted to develop and use synthetic biology tools similar to the way electrical engineers use a breadboard[i] and a set of interchangeable and scalable parts such as resistors and capacitors. These scientists and engineers wanted to develop an easy-to-use system to genetically engineer bacteria by swapping genetic parts around to create unique genes and gene sets that produce novel and useful proteins and to force the organisms to perform tasks that they normally would not accomplish. At its heart, the iGEM competition is an agreed-upon set of molecular engineering techniques and a large library of DNA parts that are accessed by the competitors in their bid to create novel cellular tools, biological circuits, and gene products. As the competition progressed over the years, the participants have taken advantage of nascent SynBio tools to improve the complexity of their designs. Today the sophistication of the high school and undergraduate student research projects has matched that of many highly trained personnel who were working in advanced laboratories less than a decade ago. While it has been claimed that the young student competitors directed by a responsible Principal Investigator are not truly independent,[23] it is important to note that the iGEM competition has a loose minimum age requirement,[24] so the high school students are inexperienced with lab procedures and have only a thin understanding of biology at the outset of the competition. Yet by the time these students defend their work at the Jamboree (international science fair held each fall), they have either attained a full understanding of the work or they are judged poorly. iGEM has helped democratize the science and engineering of biological systems for the benefit of mankind. The organization has dedicated significant resources to biosafety, bioethics, and biosecurity efforts[25] drawing from the expertise of leaders in academia and industry. Defense leaders need to take note of the spread of this information because both state and non-state actors with nefarious intent can benefit from the good work of these young scientists.

A case study in the dual-use nature of these activities can found in the 2017 winning project. A team from Lithuania created a tool to improve the rate of inheritance of genetically altered sequences throughout generations of microbes. While this tool may eventually be used by thousands of researchers for peaceful purposes, there is a possibility that it could be harnessed to develop engineered biological weapons by rapidly altering the genomes of the starting material. The Lithuanian team was just one of 295 teams competing that year. There were 125 from Asia, 84 from North America, 74 from Europe, 10 from Latin America, and two from Africa. This competition and these technologies are truly global in nature, and while they are intended for peaceful and mutually beneficial purposes, the science and tools created may be manipulated by those with bad intentions.[26]

The Impact of Synthetic Biology on the Threat Landscape

The threat landscape is constantly evolving as advances are made in materials, computational power and speed, and the bioengineering of viruses and cells. While there are challenges to weaponizing a biological system, including contending with the analog nature of biology, the advantages of bioweapons compared to relying on conventional explosives or nuclear weapons include their self-generating properties and the ease in

creating a binary weapon allowing for safe production and assembly.[27] Thus, it is possible for an unsophisticated adversary to design biological weapons with enhanced virulence and infectivity. As already noted, one challenge to weaponizing a biological system is the analog nature of most metabolic circuitry (compared to the digital signals governing much of the electronic world). Further challenges are the presence of significant noise in the normal operation and response of these biochemical circuits and the difficulty in optimizing synthetic pathways while retaining the viability and reproducibility of the living system.[28] However, the use of natural selection techniques in the lab preclude the need for detailed rational design so that an amateur scientist member of a terrorist organization can simply employ SynBio techniques for a large number of cells and select those that perform to the desired effect.

Cells are the fundamental unit of life containing all the molecular architecture required to engage in metabolism (transfer energy), grow, adapt to their environment, respond to stimuli, reproduce, and evolve. Under the right conditions, cells will replenish and increase their numbers if there exists enough food and space. A scientist who has engineered a cell with novel properties can keep producing that system by simply feeding the cells, clearing out the waste products, and harvesting cells when desired. Cell-based systems have co-evolved with viruses that target very specific cell types using lock-and-key-like receptor proteins on both the virus and cell. While viruses rely on cells to reproduce, it is standard lab practice to produce significant quantities of viruses using their cognate cells [cells taken over by the viruses] as hosts. Unlike conventional weapons, biological weapon development requires all the work up front and then the system will reproduce and provide the bad actor with a supply of the weapon as long as the growth-permissive environment is maintained.

SynBio also facilitates the development of binary biological weapons. Although the design and production of binary biological weapons may have been difficult in the past, the ability to engineer and 'boot-up' entire genomes has revolutionized the process. With modern synthetic biology tools, an undergraduate student could conceivably engineer and produce two related, non-lethal viruses that are individually harmless. However, following host infection with the two viruses, mixing of the two strains allows for a full restoration and production of highly infectious, pathogenic viruses. Importantly, such genetic mixing has also been documented in nature wherein two or more non-pathogenic poliovirus vaccine strains can recombine to form pathogenic recombinants.[29] Thus, it is not difficult to imagine a non-state actor developing binary weapons consisting of components stored separately for safety in transport and then brought together in a biological munition prior to delivery.

The advances in SynBio have not occurred in isolation. The increase in the understanding of biological systems and the development of the tools of molecular biology that occurred in the late 20th and early 21st centuries were paralleled by commensurate developments in automation, engineering, computer science, and information technology. In particular, the ease of scaling-up the production of bacteria and viruses has increased exponentially in recent decades due to the availability of inexpensive instrumentation for the growth, or culture, of biological material, and the development of standardized reagents such as bacterial growth media by commercial laboratories.[30] Once the purview of scientists with doctorates in microbiology, genetic engineering is practiced every day in high schools and colleges across the world. The instructions, or protocols, for these processes are freely available on the internet and in undergraduate microbiology and cell biology textbooks. Many of the difficulties faced by early microbiologists and cell biologists in the culturing of microorganisms have lessened; indeed, many advanced placement biology programs in high schools across the United States include blocks of instruction on culturing and engineering *Escherichia coli* (*E. coli*) and other benign bacterial species.[31] Some authors have argued that the skills and abilities developed over the course of a career in the biological sciences are not available to the amateur and that this may hinder the widespread use of synthetic biology for the development of biological weapons.[32] While this argument may be true for some of the more complex techniques in biochemistry and molecular biology, the techniques used to propagate bacteria and viruses and to cut and paste genetic sequences from one organism to another are approaching the level of skill required to use a cookbook or a home computer. A vast amount of knowledge would be necessary to describe in detail the biochemistry, genetics, and physiology of baker's yeast, but anyone with a cookbook, flour, yeast, and sugar can bake bread. Similarly, understanding the algorithms necessary to manipulate images on a computer screen requires expert knowledge, but anyone can point at an icon with a mouse to open it. As technology increases and spreads, those with a simple home laboratory system may be able to manipulate bacterial and viral genes without expert training or years of experience.

Policy Responses to the Potential Threats Posed by Synthetic Biology

An effective response to the threats posed by those using synthetic biology for nefarious purpose will require vigilance on the part of military planners, the development of effective medical countermeasures[i] by the research community, and the development of diagnostic and characterization technologies capable of discriminating between natural and engineered pathogens. A 2002 biological warfare counterproliferation study identified six key basic biological research areas that should be emphasized to protect against the threat: human genomics; immunology and the

development of methods for the boosting the immune response; bacterial and viral genomics; bacterial and viral assay development;[k] vaccine development; and the development of novel antiviral agents and antibiotics.[33] A continued research and education effort within the Department of Defense will be required to develop and maintain expertise in each of these areas.

The rapid availability of experienced civilian and military personnel is a prerequisite for effective incident response. Therefore, training and education in SynBio, biological engineering, and related disciplines should be emphasized and funded. Many organizations already exist to meet the threat of natural, man-made, and weaponized biological material. These organizations include the Defense Threat Reduction Agency (DTRA); the Chemical and Biological Center (CBC) at Edgewood, Maryland; the Defense Advanced Research Projects Agency (DARPA); the Biomedical Advanced Research and Development Authority (BARDA); the National Institutes of Health (NIH); the Centers for Disease Control (CDC); and United Stated Department of Agriculture-Agricultural Research Service (USDA-ARS) within the United States. The World Health Organization (WHO), a specialized organization within the United Nations, and several research and response organizations in other countries have historically served similar purposes. Each of these entities deal with systems rooted in the natural world, and while some organizations restrict their focus to naturally occurring threats, they all deal—in one way or another—with the extraordinary pace of technology development unique to the biomedical community. Every advancement in biomedicine is dual-use, and so it is incumbent upon those privileged to work in the scientific field to predict the ways that these technologies might be used for nefarious purpose and to develop the technologies and systems necessary to undermine the efforts of those who might use these unique biological entities as weapons.

Conclusion

SynBio is a rapidly developing and diffusing technology. The wide availability of the protocols, procedures, and techniques necessary to produce and modify living organisms combined with an exponential increase in the availability of genetic data is leading to a revolution in science affecting the threat landscape that can be rivaled only by the development of the atomic bomb. As the technology improves, the level of education and skills necessary to engineer biological agents decreases. Whereas only state actors historically had the resources to develop and employ biological weapons, SynBio is changing the threat paradigm. The economic and social impact of COVID-19 has highlighted the broad and lasting effects that can result from the spread of a novel biological agent. This collective experience has increased the chance that terrorist organizations will attempt to use biological agents to asymmetrically attack the United States and its allies. This possibility should be anticipated and planned for at all levels of government.

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COL F. John Burpo currently serves as the Head of the Department of Chemistry and Life Science at USMA. As an artillery officer, he served in airborne, armor, and Stryker units with humanitarian, peacekeeping, and combat operational deployments. He also served as the Deputy Commander-Transformation for the 20th CBRNE Command. He has a Sc.D. in Bioengineering from the Massachusetts Institute of Technology.

The views expressed in this article are those of the authors and do not necessarily reflect those of the Combating Terrorism Center, United States Military Academy, Department of Defense, or U.S. Government.

Substantive Notes

[a] Propagation of bacteria means to provide nutrients so that the bacteria can reproduce and be maintained as a viable entity.

[b] Deoxyribonucleic acid (DNA) is the genetic material in all living organisms whereas RNA can serve as the genetic material for some viruses.

[c] Recombinant DNA technology refers to widely employed techniques to manipulate DNA segments and, in the process, modify genes and organisms.

[d] Genome editing tools refers to several now widely utilized enzyme toolkits—e.g., TALEN (transcription activator-like effector nuclease) and CRISPR (clustered regularly interspaced short palindromic repeats)—to precisely modify viral, bacterial, and eukaryotic genomes to achieve a desired outcome.

[e] Juan Zarate, who served as Deputy National Security Advisor for Combating Terrorism from 2005 to 2009, recently noted in this publication that "the severity and extreme disruption of a novel coronavirus will likely spur the imagination of the most creative and dangerous groups and individuals to reconsider bioterrorist attacks." Paul Cruickshank and Don Rassler, "A View from the CT Foxhole: A Virtual Roundtable on COVID-19 and Counterterrorism with Audrey Kurth Cronin, Lieutenant General (Ret) Michael Nagata, Magnus Ranstorp, Ali Soufan, and Juan Zarate," *CTC Sentinel* 13:6 (2020).

[f] Founded in 1960, JASON is a group of American scientists dedicated to producing reports of value to the U.S. federal government. The organization's relationship with the Department of Defense changed in 2019 when the Assistant Secretary of Defense (Research & Engineering) (ASD (R&E)) cut ties with it. "Update: Legislator asks Pentagon to restore contract for storied Jason science advisory group," *Science Magazine*, April 11, 2019.

[g] Binary biological weapons are organisms or biological products that are non-lethal when separated and only become lethal upon mixing the separate components together.

[h] Environmental stability refers to the ability of a pathogen to survive outside of a host where it is exposed to UV light, reactive oxygen species, and other elements that could degrade or destroy the pathogen.

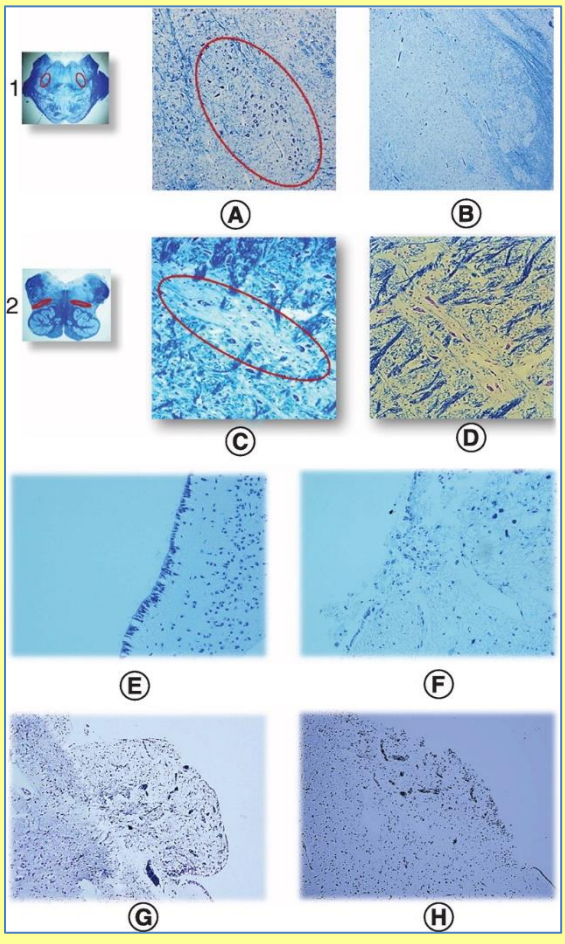
[i] A breadboard is a base platform used in custom-designing electronic circuits. Resistors, capacitors, and other electrical engineering components are plugged into the breadboard to form a circuit to perform a desired function.

[j] According to the U.S. government, "Medical countermeasures, or MCMs, are FDA-regulated products (biologics, drugs, devices) that may be used in the event of a potential public health emergency stemming from a terrorist attack with a biological, chemical, or radiological/nuclear material, or a naturally occurring emerging disease." "What are Medical Countermeasures?" fda.gov, accessed August 27, 2020.

[k] Viral and bacterial assay development refers to generating new methods for the rapid detection and identification of viral and bacterial pathogens.

●▶ References are available at the source's URL.

Novel chemical-physical autopsy investigation in sudden infant death and sudden intrauterine unexplained death syndromes



By Antonietta M Gatti, Marko Ristic, Stefano Stanzani, and Anna M Lavezzi

Must Read

Nanomedicine (2022); Vol. 17, No. 5

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Abstract

Aim: Verify the presence of inorganic nanoparticle entities in brain tissue samples from sudden infant death syndrome (SIDS)/sudden intrauterine unexplained death syndrome (SIUDS) cases. The presence of inorganic debris could be a cofactor that compromises proper brain tissue functionality.

Neuropathological main findings.

(1) Transversal histological section of caudal pons showing in the circled areas the location of facial-parafacial complex (F/PFc). **(A)** Normal cytoarchitecture of the F/PFc in a newborn of the control group (male, 1 month old). **(B)** Hypoplasia of the F/PFc in a male, age-matched Sudden Infant Death Syndrome (SIDS) case. **(2)** Transversal histological section of medulla oblongata showing in the circled areas the location of the pre-Bötzinger nucleus (pBn). **(C)** Normal cytoarchitecture of the pBn in a fetus of the control group (male, 37 gestational weeks). **(D)** Hypoplasia of the pBn in a male, age-matched Sudden Intrauterine Unexplained Death Syndrome (SIUDS) case.

(E) Normal structure of the ependyma (EP) covering the fourth ventricle in a control case (female, 1 month old). **(F)** EP desquamation in a male age-matched SIDS case. **(G)** Normal structure of the area postrema (AP) in the medulla oblongata of a control case (female, 1 month old). **(H)** AP erosion in a SIDS case (male, 1 month old). Kluver–Barrera stain; magnification (1) and (2) 0.5×; **(A & B)** 10×; **(C & D)** 20×; **(E–H)** 10×.

Materials & methods: A novel autopsy approach that consists of neuropathological analysis procedures combined with energy dispersive spectroscopy/field emission gun environmental scanning electron microscopy investigations was implemented on 10 SIDS/SIUDS cases, whereas control samples were obtained from 10 cases of fetal/infant death from known cause.
Results: Developmental abnormalities of the brain were associated with the presence of foreign bodies. Although nanoparticles were present as well in control samples, they were not associated with histological brain anomalies, as was the case in SIDS/SIUDS.
Conclusion: Inorganic particles present in brain tissues demonstrate their ability to cross the hemato–encephalic barrier and to interact with tissues and cells in an unknown yet pathological fashion. This gives a rationale to consider them as cofactors of lethality.

EDITOR'S COMMENT: The study demonstrates the penetration of foreign bodies the size of micrometers and nanometers into the fetuses and infants' brain. Exposure of the mother to a pollutant that is inhaled, swallowed, or injected can be easily transmitted to the fetus and can affect the current and future lives of infants/fetuses. Medicine of the future must adopt these innovative analyzes, performed with an electron scanning microscope and an X-ray microscope, to investigate diseases, especially of unknown origin. This study is an additional reason why the global scientific community should have a detailed knowledge of the content of all vaccines against Covid-19.

EU – pandemic (February 2022)

EudraVigilance - European database of suspected adverse drug reaction reports

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

Last Update: Feb 12, 2022	Reported Cases	Fatalities	% fatalities to cases	All Multiple Symptoms	Serious injuries	% serious to ALL
Pfizer-BioNTech	775 829	18 185	2,34%	1 791 261	798 017	44,55%
Oxford/AstraZeneca	450 733	8 174	1,81%	1 170 321	606 915	51,86%
Moderna	233 461	11 138	4,77%	573 035	270 479	47,20%
Janssen	50 953	2 500	4,91%	131 394	51 815	39,43%
Total:	**1 510 976**	**39 997**	2,65%	**3 666 011**	**1 727 226**	47,11%

Biodefense experts to Congress: The United States is still unprepared for pandemic and bioweapons threats

By Matt Field
Source: https://thebulletin.org/2022/02/biodefense-experts-to-congress-the-united-states-is-still-unprepared-for-pandemic-and-bioweapons-threats/

Feb 17 – The first official case of COVID-19 in the United States was confirmed on Jan. 21, 2020, but studies suggest the disease was actually circulating weeks or even a month earlier than that, undetected. When COVID cases started to shoot up that spring, few people had access to testing. Personal protective equipment was in short supply, even in hospitals. The country wasn't prepared for the biological threat of the coronavirus pandemic, and experts say that in key areas, it still isn't prepared for such a crisis.
Asha M. George, a member of the *Bulletin*'s Science and Security Board, testified at a Senate hearing Thursday, along with other biodefense experts, about shortcomings in federal preparedness for disease outbreaks and other biological threats. Those shortcomings involve the 2003 program designed to detect biothreats in dozens of US cities and the tangle of government programs and agencies that are supposed to protect the country from biological threats.
"I come before you today to warn you that again, while COVID-19 dominates our national and global attention, the biological threat continues to increase, George said. "And while some strides have been made, we are still not adequately prepared."
George warned that the US government can't focus exclusively on diseases like COVID-19, noting that the US State Department concluded last spring that Russia and North Korea maintain active biological weapons programs. "We must assume that our enemies, both nation states and terrorists, are paying attention to the vulnerabilities revealed during

COVID-19 and that we must prepare for an attack on the US homeland with biological weapons," she said.
George, the executive director of the Bipartisan Commission on Biodefense, singled out the Department of Homeland Security's BioWatch program for reconsideration, saying the nearly two-decade old program—which monitors sensors in more than 30 cities and claims to be able to "minimize the catastrophic impact of a biological attack"—is outdated. She said other US government agencies were working on technologies that could better detect biological threats. Her organization highlighted these efforts in a 2021 report.
The BioWatch program detects only a handful of known biological agents. Natural disease outbreaks, Sen. Maggie Hassan, D-N.H, said, are more "likely to consist of previously unknown biological agents." She pressed George on what a successful bio-detection program would look like.
George said more detection systems in a lot more places that could incorporate different information would be useful.
"If you look at how we detect disease anyway, whether we have a detector, or not, we're always drawing on a number of pieces of information," George said. "'Hey there's something going over in in China.' 'Oh look, somebody's in a hospital now.' 'This seems to be unexplained.' … 'CVS is suddenly reporting that everybody's running in to get certain medications from them,' and so forth. That's how you would put together such a system."
You can read the full text of George's submitted testimony or watch George; Christopher P. Currie, a director of a Government Accountability Office; and Gerald W. Parker, an associate dean at Texas A&M University, testify before the Senate Homeland Security & Governmental Affairs Committee below. (George's opening statement begins at the 16-minute mark.)

Hearing of the Committee on Homeland Security and Governmental Affairs
United States Senate
"Addressing the Gaps in America's Biosecurity Preparedness"
February 17, 2022
Statement for the Record Asha M. George, DrPH
Executive Director, Bipartisan Commission on Biodefense

Chairman Peters, Ranking Member Portman, and other Members of the Committee, thank you for your invitation to provide the perspective of the Bipartisan Commission on Biodefense during today's hearing, "Addressing the Gaps in America's Biosecurity Preparedness." It is a pleasure to be with you today to talk about federal biodefense programs, particularly those executed by the Department of Homeland Security (DHS).

The Commission is co-chaired by former Senator Joe Lieberman and former Secretary of Homeland Security, Governor Tom Ridge; with former Senate Majority Leader Tom Daschle, former Secretary of Health and Human Services, Representative Donna Shalala; former Representative Susan Brooks; former Representative Jim Greenwood; former Commissioner of the Food and Drug Administration Peggy Hamburg; and former Homeland Security Advisor Ken Wainstein serving as Commissioners. The Commissioners and I, as Executive Director, have addressed national and homeland security in various capacities for decades. Although we have left our previous government and military positions, we remain committed to public service and the health, safety, and security of our Nation.
In 2015, the Commission released our foundational report, A National Blueprint for Biodefense: Major Reform Needed to Optimize Efforts, containing 33 recommendations and 87 associated action items for addressing what we saw as serious capability gaps in national

biodefense. Senator Lieberman and Governor Ridge appeared before this very Committee the day of that report's release to discuss its major findings and recommendations. A little over six years after that hearing – and two years into a deadly pandemic that has claimed the lives of more than 900,000 Americans – we find the government has implemented far too little of the Blueprint, and the Nation remains at catastrophic biological risk. In our 2020 follow up report, Biodefense in Crisis: Immediate Action Needed to Address National Vulnerabilities, we determined that only 3 of the 87 action items in our Blueprint for Biodefense had been completed, and that the Executive and Legislative Branches had taken little to no action to address 22 of them.

The federal government's response to the pandemic has illustrated the broad swath of departments and agencies involved in biodefense. Before COVID-19, much of the public would never have guessed that the White House would call upon the Federal Emergency Management Agency (FEMA) and the Department of Defense to coordinate federal activities for a public health emergency, let alone in all 50 states and 13 territories simultaneously. All Cabinet 2 Departments, the Intelligence Community and even the Smithsonian Institution possess biodefense responsibilities. Therefore, biological threats demand an all-of-government response.

Leadership is key to successfully coordinating federal biodefense activities. No one department has authority over the policies or spending of another. White House involvement will always be necessary. We originally recommended in our National Blueprint for Biodefense that the President put the Vice President in charge of defending the Nation against biological threats. While we continue to believe that the Vice President should play a valuable role in ensuring that the White House prioritizes biodefense, we also acknowledge that successive Presidents have chosen not to assign the Vice President this responsibility. In our report, Biodefense in Crisis, we recommended the creation of a Deputy National Security Advisor for Biodefense, overseen by the Vice President of the United States, and supported by National Security Council staff in two directorates: a Directorate for Global Public Health Security and Biodefense, and a Directorate for Domestic Public Health Security and Biodefense.

We appreciate congressional interest in our reports and the efforts by Congress to address our recommendations. For example, in the National Defense Authorization Act for Fiscal Year 2017, Congress required the creation of a National Biodefense Strategy, intended to align existing presidential directives, public laws, and international treaties, partnerships, and instruments that address biodefense, as well as all of the many federal policy, strategy, and guidance documents that address bits and pieces of biodefense. Recommendation 3 from our National Blueprint for Biodefense called for the development of such a strategy to govern and coordinate the federal biodefense enterprise. President Barack H. Obama signed this requirement into law, the Trump Administration developed and released the Strategy in 2018, and we understand that the Biden Administration is updating it currently, but the government has yet to fully implement it. Congress included additional language in the National Defense Authorization Act for Fiscal Year 2021 to require a more robust implementation plan for the Strategy. Even as the government identifies and addresses lessons learned from the novel coronavirus 2019 (COVID-19) pandemic, it is clear that sustained federal coordination will continue to be necessary to address future naturally occurring, accidentally released, and intentionally introduced biological threats.

We now have an opportunity to make investments across the federal government to address the vulnerabilities exposed by COVID-19. This moment calls for bold action and clear vision to address national biological crises. Last year, our Commission released a report, The Apollo Program for Biodefense, which proposed a 10-year sustained investment of $100 billion ($10 billion per year for 10 years) in biodefense science and technology research and development to better defend the Nation against biological threats. Through The Apollo Program for Biodefense, we believe that America can effectively take pandemic threats off the table within the next decade. We will release a follow-on report later this year with specific, actionable recommendations to inform implementation of this grand program by the Administration and Congress.

Like the rest of the Cabinet departments, DHS shares responsibility for the biodefense enterprise. All of the operational components within the Department engage in activities that contribute to national biodefense. For examples, FEMA possesses the logistical and emergency management 3 expertise to lead national response activities, provides direct assistance to non-federal governments through the State Homeland Security Grant Program, and plays a critical role in ensuring continuity of government during a large-scale biological event affecting national security. Agricultural inspectors within U.S. Customs and Border Protection (CBP) work to prevent disease carrying pests from crossing our borders. CBP and the Transportation Security Administration screen passengers at ports-of-entry when diseases move through the global transit system. The U.S. Coast Guard advises vessel owners and operators to report suspected crewmembers and passengers sick with diseases of concern to the Centers for Disease Control and Prevention as part of its longstanding responsibility to implement quarantine measures. The U.S. Secret Service maintains discreet protective measures to defend the White House from biological attacks and manages the biological risk to National Special Security Events. Starting in October 2021, U.S. Citizenship and Immigration Services began requiring immigration applicants to vaccinate against COVID-19. U.S Immigration and Customs Enforcement works to combat counterfeit pharmaceuticals and theft of intellectual property rights (such as for newly developed

COVID-19 vaccines), and plays a critical role in export enforcement. The Cybersecurity and Infrastructure Security Agency previously addressed biodefense of critical infrastructure during the H1N1 influenza pandemic and issued guidance to the sectors early in the COVID-19 pandemic.

Additionally, the DHS Science and Technology Directorate supports biological attribution and characterization activities through the National Biodefense Analysis and Countermeasures Center (NBACC) located at Fort Detrick in Frederick, Maryland. The Federal Bureau of Investigation (FBI) also utilizes the National Bioforensic Analysis Center (housed within the NBACC facility) to analyze biological specimens related to criminal investigations. We have been concerned for six years about the current arrangement with regard to this Center. The FBI is the sole user of the Center, but they do not own it. Funds provided by DHS to support the Center add to the FBI budget, something not allowed by Congress. Clearly, this arrangement requires congressional reassessment.

Despite DHS contributions to national biodefense, the Department lacks a headquarters entity that supports the operational components and their activities in this regard. In 2017, the Department combined some of its existing chemical, biological, nuclear, and radiological functions into an Office of Countering Weapons of Mass Destruction (CWMD). Congress subsequently authorized the Office a year later. Though Department officials envisioned CWMD as a central hub for weapons of mass destruction (WMD) policy and activities within the Department, authorizing legislation did not reflect that mission. The most recent authorizing legislation created a domestic WMD detection office, modeled in large part on the former Domestic Nuclear Detection Office, despite the significant differences between how DHS executes its nuclear port monitoring activities and how DHS tries to detect biological and chemical agents. CWMD continues to be little more than the sum of its parts, focusing on legacy programs that existed before the Office's creation, trying to incorporate elements from other parts of DHS (e.g., WMD intelligence and analysis, removed from the Office of Intelligence and Analysis) and struggling to explain why some elements regarding WMD (e.g., the Office of 4 Bombing Prevention, WMD policy) remain outside of CWMD. It also appears that DHS is moving the position of the Chief Medical Officer out from CWMD (where it had been subsumed when DHS created this office) to the Office of the Secretary, consolidating health care, occupational health, and public health activities in one organizational element led by the chief medical advisor to the Secretary of Homeland Security. While absolutely reasonable, questions arise as to how the Chief Medical Officer can execute their congressionally mandated responsibility to oversee programs (e.g., BioWatch, National Biosurveillance Integration Center) while the assistant secretary for CWMD actually runs these programs.

The CWMD Office focuses largely on two programs addressing biosurveillance and biological detection. The former, known as the National Biosurveillance Integration Center (NBIC), was intended to collect and analyze biosurveillance data from other federal departments and agencies to enable early warning and shared situational awareness. Such a capability would prove critical to tracking the spread of infectious diseases. However, NBIC lacks the authorities and resources necessary to achieve this goal fully. Congress did not mandate that other federal departments and agencies provide this data to DHS. NBIC works endlessly to convince others to provide data to the Center, receives little data from a few departments and agencies, and relies on public sources of information for many of their products.

The state of the CWMD biological detection program – BioWatch – provides even greater cause for concern. The George W. Bush Administration deployed the system in 2003 to provide a modicum of biological detection capability against potential attacks in advance of the 2004 presidential election. Located in 35 metropolitan jurisdictions, the system collects air samples in outdoor public spaces that must then be manually gathered at least once every 24 hours. Public health laboratories then test the samples for the presence of five biological agents. However, the equipment does not perform well, and the system takes too long to produce results. Hospital admissions would indicate a biological event long before the system definitively reported a positive test result. Though decisionmakers knew at the time of deployment that the technology was imperfect, and that they would eventually need to replace it, the system has remained virtually unchanged for almost two decades. It is important to note that the federal government's national biological detection system could not assist with tracking the spread of COVID-19, the worst biological event in a century, because they designed the system to detect only a handful of previously weaponized biological agents.

In 2018, CWMD launched a new initiative – Biodetection 21 or BD21 – to finally identify and replace aging BioWatch technology. However, this effort has run into its own problems. The core of the program was an unproven algorithm that would speed time to detection. The program would also only address indoor detection initially, leaving existing BioWatch systems (composed of outdoor detectors) in place. CWMD paused BD21in October 2021 after recognizing the limitations of anomaly detection, and after previously pausing the program for other reasons. Officials are currently determining next steps for the program. In the meantime, DHS continues to spend $80 million in taxpayer money each year for the BioWatch program. 5 Recommendation 31 from our National Blueprint for Biodefense called for the development of an advanced environmental detection system to replace BioWatch. The Commission further examined the program and potential solutions in our 2021 report Saving Sisyphus: Advanced Biodetection for the 21st Century. Understanding the political reality that Congress

will not terminate BioWatch without a replacement in place, Saving Sisyphus presents short and longterm action plans to both deploy better technology right now and to create a technology development process to regularly refresh both the biological detection mission and technology. A research and development strategy that regularly reassesses the mission of the system and the needs of participating jurisdictions is also essential. Any BioWatch successor must also keep pace with the evolution of technology and the ever-changing nature of the biological threat. If CWMD is correct that the basic science needed to produce valid and reliable detectors for BioWatch does not exist, then it should not be CWMD that engages in research and development, it should be the DHS Science and Technology Directorate. However, we are confident that technology already exists that would greatly improve the program. For example, if CWMD chooses to continue pursuing indoor biodetection capabilities, then the Department of Defense has already produced, emplaced, and generated performance data for indoor biodetectors, currently manufactured by private sector vendors. The National Aeronautics and Space Administration (NASA) has also produced viable technology – paid for by CWMD – that could be adapted for use in biodetection. The National Laboratories produced the original BioWatch technology more than 18 years ago. It stands to reason that they could produce better technology now.

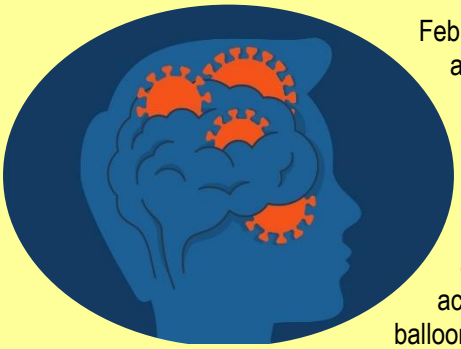
CWMD also faces issues with its authorization. Current statute does little more than re-label the part of the Homeland Security Act that previously authorized the Domestic Nuclear Detection Office, now a part of CWMD. The result is language that prioritizes nuclear activities and says little about either chemical or biological responsibilities, authorities, or programs. Congress included a sunset in that authorization, which is set to expire at the end of 2023. Should Congress decide to reauthorize CWMD, this statute requires extensive work to provide additional (and in some cases, initial) guidance and clarification. Congress must make its intent known for this Office. There is a vast difference between a domestic detection office and the homeland security equivalent of the Defense Threat Reduction Agency, yet another construct adopted and discarded by CWMD previously. Congress must also clean up legislation that previously addressed the Chief Medical Officer and their responsibilities, and clarify who should be in charge of what. Additionally, should Congress decide to let the CWMD authorization sunset as currently stipulated in statute, then it must make clear what it expects to happen at that time. It is unclear whether the authorization will disappear but the organizational element will not, or whether the organizational element would cease to exist. Lastly, Congress must direct CWMD to directly support the DHS operational components in more than an advisory capacity.

The Commission also believes there is value in establishing a regular review process of DHS biodefense activities. We recommend that Congress require DHS to compile and submit an annual report on its biodefense policies, programs, and expenditures as they align with the National Biodefense Strategy, including those undertaken by CWMD and the Science and 6 Technology Directorate, as well as those undertaken by the DHS operational components. As DHS should already be providing much of this information in support of the congressional mandated biodefense cross-cut, it should be easy for the Department to provide this information to Congress as well.

This concludes my written remarks. We appreciate the Committee's interest in our Commission since its inception. I also thank Hudson Institute, which serves as our fiscal sponsor, and all of the organizations that support our efforts financially and otherwise. With this testimony, I am submitting eight of the Commission's reports. Thank you again for inviting me to testify today. I look forward to answering your questions and working with you to defend the Nation against biological threats.

COVID-19 raises risk of mental health problems in year after infection

Source: https://newatlas.com/health-wellbeing/coronavirus-risk-mental-health-addiction-long-covid/



Feb 20 – A large study has found high rates of mental health problems in COVID-19 patients up to a year after their acute infection. Looking at health records from millions of Americans the research found mild or severe COVID-19 increased a person's risk of developing anxiety, depression, substance use disorders, cognitive decline, and sleep disorders.

"We know from previous studies and personal experiences that the immense challenges of the past two years of the pandemic have had a profound effect on our collective mental health," said senior author Ziyad Al-Aly, from Washington University. "But while we've all suffered during the pandemic, people who have had COVID-19 fare far worse mentally. We need to acknowledge this reality and address these conditions now before they balloon into a much larger mental health crisis."

The new study follows on from a similar analysis conducted by Al-Aly and colleagues published recently that looked at the relationship between COVID-19 and cardiovascular

complications. That prior study, published in *Nature Medicine*, found COVID-19 survivors were 55 percent more likely to experience a serious cardiovascular event in the year after recovering.

The current research focused on medical records gathered from the U.S. Department of Veterans Affairs. Around 150,000 subjects with COVID-19 diagnosed between March 2020 and January 2021 were compared against two control groups, each composed of more than five million people. One control looked at people who did not catch COVID-19 in the same time frame, and the other control looked at patients spanning an 18-month period before the pandemic began.

The researchers incorporated a variety of conditions under the general umbrella of mental health disorders. These included clinically diagnosed depression, anxiety or stress disorders, sleep problems, and neurocognitive declines including dementia, fatigue and brain fog, as well as newly diagnosed substance use disorders such as opioid addiction.

Overall, the researchers found more than 18 percent of COVID patients developed one or more mental health problems in the year after recovering from an acute infection. This compared to around 12 percent of people developing similar problems in the control groups. This means those with COVID are over 50 percent more likely to experience mental health problems compared to those without COVID.

"To put this in perspective, COVID-19 infections likely have contributed to more than 14.8 million new cases of mental health disorders worldwide and 2.8 million in the U.S.," said Al-Aly. "Our calculations do not account for the untold number of people, likely in the millions, who suffer in silence due to mental health stigma or a lack of resources or support."

More specifically, the study found, compared to those without a history of COVID, recovered patients were 40 percent more likely to develop depression, 35 percent more likely to develop anxiety, and 41 percent more likely to experience sleep disorders. Opioid use disorders were 34 percent more likely in COVID patients and they were 55 percent more likely to be prescribed antidepressants at some point in the year following infection.

Additionally, COVID patients were 80 percent more likely to experience some kind of neurocognitive problem in the year following their acute infection. This includes more serious cases of dementia progression and more milder instances of things like fatigue, confusion and brain fog.

The more severe the initial case, the higher the likelihood of subsequent mental health problems. However, Al-Aly stressed the association was still consistently detected in mild and even asymptomatic cases.

"People who were hospitalized had it worse, but the risk in non-hospitalized [patients] is significant and absolutely not trivial – and that represents the majority of people in the US and the world," Al-Aly said recently to The Guardian.

Julia Faulconbridge, from the British Psychological Society, says the new findings are certainly interesting but unpacking exactly what could be causing this uptick in mental health problems will be challenging. Al-Aly and his team hypothesize a number of viral-induced physiological mechanisms that plausibly could be playing a role, "including peripheral T cell infiltration of brain parenchyma, dysregulated microglia and astrocytes, and disturbances in synaptic signaling of upper layer excitatory neurons."

But Al-Aly and colleagues do recognize a number of non-physiological mechanisms could also be influencing the development of mental health problems, from social stresses to changes in diet or physical activity. Faulconbridge also noted that those living in poverty or with insecure work are more predisposed to mental health problems and known to be at higher risk of catching COVID, so it will take a lot more work to better understand exactly what is contributing to these problems arising.

"There is no data on the impact that having COVID has had on their lives, for example their ability to work, and the subsequent impact on their mental health," said Faulconbridge. "This is particularly important given that estimates of the incidence of long COVID are in the area of 10 percent of infections. There will be people who were coping with problems before the illness, who may have been tipped over the edge by the impact of the illness."

Regardless of the specific cause of these newly developed mental health problems, Al-Aly says it is clear society will have to deal with this emerging problem over the coming months and years. And, he says that means more work by governments and health services to diagnose and treat those experiencing these issues.

"What I'm absolutely certain about is that urgent attention is needed to identify and treat COVID-19 survivors with mental health disorders," said Al-Aly. "There needs to be greater recognition of these issues by governments, public and private health insurance providers, and health systems to ensure that we offer people equitable access to resources for diagnosis and treatment."

●▶ **The new study was published in** *The BMJ*.

Funeral Directors and Embalmers Alarmed by Weird, Freakishly Large Blood Clots Clogging Veins in Vaccinated Bodies

Source: https://ninetymilesfromtyranny.blogspot.com/2022/02/funeral-directors-and-embalmers-alarmed.html

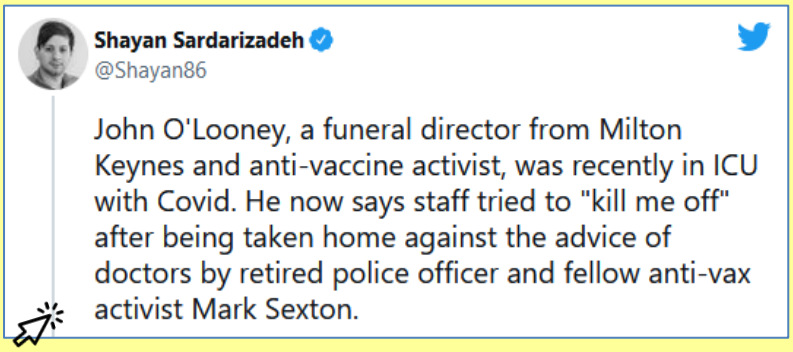
Feb 19 – Board-certified funeral directors and embalmers are coming forward to tell tales of horror featuring vaccinated bodies with veins and arteries clogged with strange, rubbery, worm-like clots.

Richard Hirschman, a funeral director and embalmer from Alabama, with over twenty years of experience in the field, has said in recent interviews that he had never seen anything like it until around the middle of 2021, after the mass injections of the experimental COVID vaccines began. He says his colleagues in the field are seeing the same thing, and the numbers are increasing.

Earlier this month, Hirschman told Steve Kirsch, the Executive Director of the Vaccine Research Center, that in Jan 2022, 37 out of 57 bodies (65 percent) had these suspicious clots.

Prior to the vaccines, Hirschman said blood clots in patients who died of COVID were seen, but they appeared to be more typical, and not in the alarming numbers he's seeing now.

Since Hirschman has gone public, Cary D. Watkins, a colleague from Alabama with over 50 years' experience as a funeral director and embalmer, has come forward to corroborate his story, and Anna Foster, an embalmer from Missouri with 11 years of experience, has revealed in an interview that 93 percent of her last 30 cases died due to unusual clots completely filling their vascular systems.



EDITOR'S COMMENT: We do not know whom to believe anymore! A major adverse effect of Covid-19!

Funeral director John O'Looney of Milton Keynes, England, is also blowing the whistle on the alarming increase in number of thrombosis deaths. O'Looney said in an interview that it's not just "a two or three-fold increase—it's around a 500 or 600 percent increase," and nine out of ten of these cases were vaccinated.

"I've got doctors and police ringing me, nurses ringing me, all saying the same thing. It's a total lie. On our media, they are saying the hospitals are full of the non-vaccinated. That's a total fabrication. It's the polar opposite. Nine out of ten patients in there, full of blood clots, are the vaccinated. I've heard that from so many professionals that I've lost count. So, whether you choose to believe it or not, it makes it no worse. That is the truth. That is the reality. You can lead a horse to water, but you can't make it drink," O'Looney said in an interview late last month.

Hirschman told the Blaze's Daniel Horowitz on his Conservative Review podcast Wednesday, that he was hesitant to come forward because any information that questions the government's pro-vaccine narrative gets mocked and ridiculed, and his reputation could suffer.

But as Kirsch pointed out, there is no other explanation for what is happening.

"It pretty much has to be a novel injectable product, first used in 2021 that results in blood clots and is injected into well over 50 percent of the population. There is only one drug that fits that bill: the COVID vaccines," he wrote on his Substack.

Since the vast majority of people survive the shots, the question of whether a vaccinated person dies or not is likely a combination of how well they "take up and replicate the mRNA, how dangerous the batch is, and other factors," Kirsch wrote.

He explained why Hirschman's information is "explosive."

So let's say the actual rate of vaccine-caused deaths is 40 percent of all deaths (which is less than the 65 percent rate that Hirschman is seeing).

The CDC says around 65,000 people die a week. So that would be 26,000 people a week killed by the vaccine. He started noticing these deaths in May (they could have started sooner), so let's just say it's only been in the last 6 months to be conservative.

26 weeks *26,000 deaths/week=676,000 vaccine-related deaths.

Hirschman told Horowitz that he's discussed the phenomenon with 15 of his colleagues, and every one of them has seen same things he has, but they are afraid to speak out publicly.

"That white, fibrous stuff just isn't normal, Hirschman told Dr. Ruby. "Typically, a blood clot is smooth—it's blood that's coagulated—but if you squeeze it, or touch it, or try to pick it up, it generally falls apart," he explained. "But this white, fibrous stuff is pretty strong. It's not weak at all. You can manipulate it, it's very pliable, it's not hard—it is not normal," the embalmer insisted. "I don't know how anybody can live with this inside him."

Hirschman said he's seen the abnormal blood clots mostly in older people, but pointed out that younger people tend to be cremated these days, so he doesn't...

Hirschman, who was first interviewed by Dr. Jane Ruby in late January, shared photos and videos of the strange fibrous clots that were extracted from people who reportedly died of heart attacks, strokes, and aneurysms.

In many cases, Hirschman says, the freakishly long clots start out looking fairly typical on one end, and then become white and fibrous and wormlike. The specimen below, which bifurcates toward the end, was allegedly taken from a person's groin area, and was nearly the length of their leg.

Hirschman washed off the white, fibrous portions of the clots from one person, and put the worm-like materials in a bowl.

Can Covid-19 be treated like flu? Here's the definitive answer

Source: https://www.thenationalnews.com/coronavirus/2022/01/28/is-it-correct-to-say-covid-be-treated-like-flu-heres-the-definitive-answer/

Jan 28 – With more than 36 million people in the UK now fully vaccinated and boosted, and England's remaining coronavirus rules now lifted, the British government is moving away from treating the disease as separate from the broader spectrum of respiratory illnesses circulating the population.

Confirming this shift, and to the horror of the World Health Organisation, UK Health Secretary Sajid Javid has suggested the virus should now be treated like the flu. The WHO called this position premature and believes coronavirus should continue to be seen as a separate entity.

So, who's right: the UK government or the WHO? Or, given the many thousands of respiratory-illness deaths in the UK each year, is the more pertinent question should flu be treated more like Covid-19?

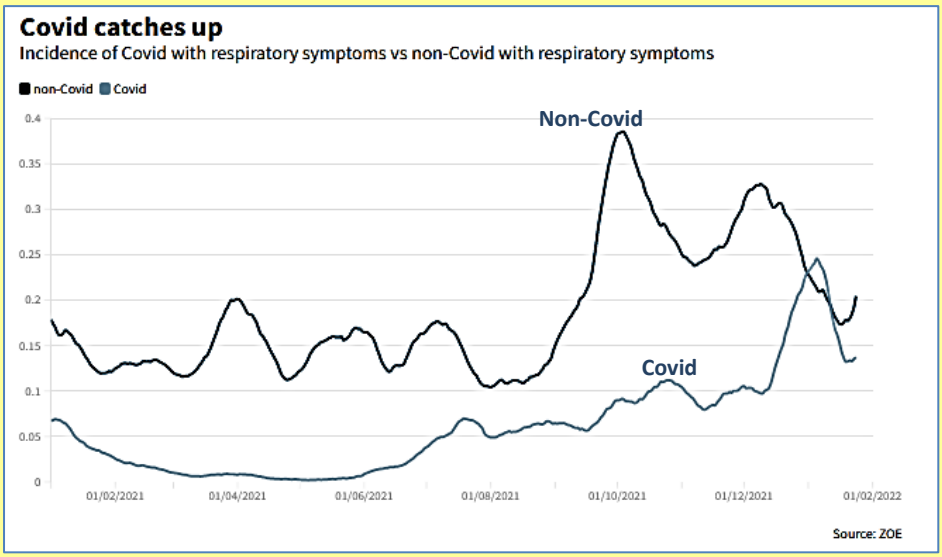
To answer, it is first worth addressing the elephant in the room: the concept of "flu" is highly subjective — and now political.

"I think people use the term depending on whether they want to call [Covid-19] mild or severe, we don't have any real benchmarks because there can be very severe forms and mild forms," Prof Tim Spector of King's College London told *The National*.

The acclaimed genetic epidemiologist and founder of the Covid-19 symptom-tracking ZOE app called for a revision in how flu is defined to ward against its politicisation.

Its latest data set shows that for the first time in the UK since the pandemic struck, the incidence of Covid-19 with respiratory symptoms has converged with the incidence of cold and flu-like respiratory symptoms not related to Covid-19.

In simple terms, in the UK if you feel like you have a respiratory illness, it is just as likely to be Covid-19 as one of the many other respiratory illnesses currently circulating.



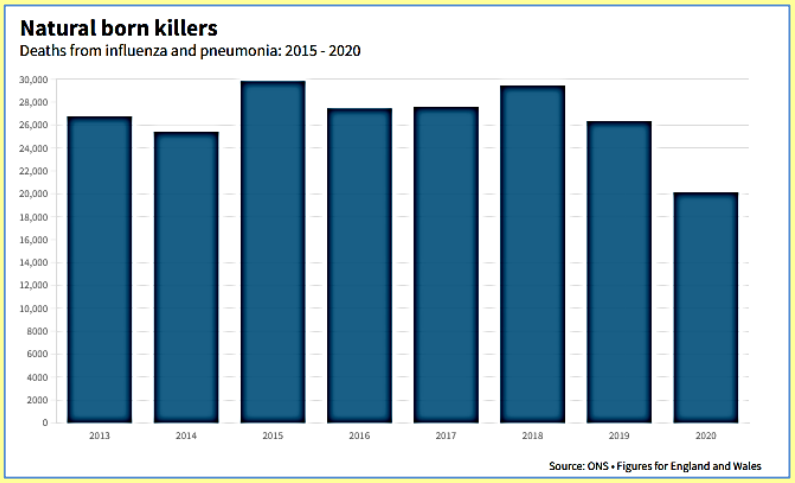
Unlike the UK government, Prof Spector does not see this convergence as the green light to return to our behaviours before the pandemic, but instead as an opportunity to reset our entire approach to public health.

"I think we have got to realise this pandemic is just going to be one of many that are inevitable due to the population size and our interactions with animals — and seeing how [Covid-19] has now gone into many animals, it's likely to come back at us in different forms", he said.

This politicisation has been on clear display during the pandemic, with "it's no worse than flu" the mantra of many a Covid-19 sceptic since early 2020.

In this context, flu is used as a proxy for mild illness, certainly not a virus which warrants the imposition of public health measures and the limitation of personal freedoms.

Yet UK Office for National Statistics mortality data between 2013 and 2015 show that flu and its attendant complications, namely pneumonia, are far from benign.



During the time period monitored, on average more than 26,625 people a year died from influenza or pneumonia — a figure dwarfed by the 73,512 people who died from Covid-19 in 2020, according to Public Health England data, but hardly statistically insignificant.

Another complicating factor has been the conflation of seasonal flu and flu pandemics.

Francois Balloux, professor of computational biology at University College London, told *The National* it was somewhat ironic that Covid-19's comparison with flu had become a trope of those seeking to play down its severity.

"The most dramatic pandemics, with the exception of HIV, were influenza pandemics," he said. "1957 and 68 were not particularly mild, and 1918 the same!"

To illustrate his point, the latter, also known as the Spanish Flu, is estimated to have killed between 17 and 50 million people globally. Quite a broad estimate, admittedly, but even if the lowest parameter is taken as accurate, that is still over three times the number killed by Covid-19 globally to date.

Perhaps the only thing that is clear about flu, then, is that no one is very clear about it at all, even scientists who struggle to harvest accurate data. Prof Balloux said the Centre for Disease Control in the US has produced "the best estimates", but that even these are "pretty rough".

The flu paradox

That flu does mean different things to different people raises one rather alarming question. How can the UK government base its future Covid-19 mitigation strategy on a non-existent strategy for an indefinable and interpretative virus which was already killing many thousands a year?

The lack of logic concerns Prof Balloux.

"We have such bad numbers and people underestimated the burden of the flu before, including academics. They saw it as something trivial, which it isn't."

Treating Covid-19 with similar triviality would be a risk for any government, even in a largely vaccinated population like the UK's.

Deaths as a percentage of overall cases have fallen dramatically by dint of the vaccine and the relative mildness of the dominant Omicron variant.
This is not to say the data support Covid-19 in highly vaccinated and previously exposed populations continuing to be delineated from other respiratory illnesses.
"I think we have to realise that things have changed and [Covid-19] is acting more similarly to most respiratory viruses in the current environment of previous exposure and vaccinations," said Prof Tim Spector.
"So calling it a cold or flu-like illness, or cold or flu-like virus, is probably becoming more appropriate now than it was. You can't separate them symptomatically in vaccinated populations."
This assertion is corroborated by data mined from Prof Spector's ZOE Covid-19 symptom tracker, which throughout the pandemic has invited downloaders to log their daily symptoms, whether they have a Covid-19 infection or not. Through this mechanism, the researchers at ZOE have been able to glean early insights on the changing nature of the virus and how it manifests symptomatically. Its success in doing so is clear. In the incipient stages of the pandemic, the app was instrumental in alerting policymakers to the emergence of loss of smell and taste as indications of an infection.
"I do think we need a more global monitoring not only of the genetics … but also like the ZOE app of symptoms, so people can see when something funny is happening and investigate," said Prof Spector.
"I think we just haven't devoted really any money to this kind of stuff in the past."

The global data black hole

Prof Spector is bemused that other countries have not set up something similar to the ZOE app and called the data it has extracted showing the convergence of Covid-19 and non-Covid-19 respiratory symptoms "unique".
The importance of producing better data more quickly is central to Prof Spector's thinking in the fight against future pandemics, although he acknowledged the concomitant ethical challenges.
"An early warning system I think is needed by every country that can afford it," he said.
"And I think the other thing we missed out on is realising that most of these waves have started in kids, which we cottoned on to rather late, even in our [ZOE] data. Because of the complicated ethical ways of getting at kids, we had to get to them from their parents and get them to do these tests.

Go with the lateral flow

Prof Spector does see cause for hope: "I think there are some good things that come out of it. We have incredibly compliant populations who are doing lateral flow tests and reporting their symptoms. And we've managed all this without any real government support or publicity.
"So if any government wants to get behind a national programme that gets populations to test for viruses once a week and log their symptoms, and particularly get kids in schools involved, it would be pretty easy."
These tests must be the quick lateral flow tests, according to Prof Spector, who suggested a lateral flow test which tested for a combination of Covid-19 and other circulating respiratory illnesses would be a useful tool for the next couple of years "until Covid fades into the distance".
"Lateral flow is definitely the way to go; PCR is too expensive and too slow," he said.
"Naturally these viruses get quicker so everything's got to be done faster. And generally done at home, at the airport, at the office, to get a real result immediately, not waiting 72 hours. That's nonsense."
Getting public buy-in through relatively non-divisive measures such as lateral flow testing has to be prioritised, Prof Spector believes. He thinks measures like the wearing of masks — state funded and high grade — and societal restrictions can be leveraged in future, but they can't be taken for granted.
Prof Balloux is doubtful that they should be used at all.
"I think we cannot just stay in a pandemic mood forever," he said.
"I'm really in favour of people feeling free and encouraged to do anything they're happy to do.
"And on the mask debate, I think we've got that very wrong because now I think it's clear to everyone that it's only high-grade masks that really have an effect."

Tackling poor health

Instead of a focus on masks and societal restrictions, which he described as "mission creep", Prof Balloux would like to see a more holistic approach to health.

"While producing better ventilated buildings and controlling transmission in hospitals can help, we have to face it that the main problem is the poor health of populations," he said.
He believes a focus should be placed on education and young people, and exhorted the need for better school meals and more exercise, things he believes require "less political will" — although the child poverty campaigner and Manchester United footballer, Marcus Rashford, may well disagree.
The nub of Prof Balloux's thinking is that it is not feasible or reasonable in the long term to ask people continuously to think what they can to do protect others. He wants the approach to shift to how individuals can better protect themselves.
With the UK public facing a cost-of-living crisis, the greatest squeeze on real-time wages since the Napoleonic wars and rising inequality, some may question placing the emphasis on the individual to improve their own health.
And some would argue it is debatable that people cannot be asked to think about others in the long term, especially if doing so comes at very little personal cost and only offers personal gain.

Cultural change required

Prof Spector would like to see the adoption of an attitude to health which is far more societally and communally minded. "We need to learn from the Japanese who for the last 10 years have been wearing masks every winter, and travelling to work in them even if they don't have a cold. "They realise it's a sign of respect and, and they wouldn't sneeze on people. So I think we need to change our cultural habits." Although Prof Spector and Prof Balloux diverge in their public-health visions and their prescriptions for how to contend with Covid-19 in the future, they agree that it is now reasonable in fully vaccinated populations for Covid-19 to be given broad equivalence with other respiratory illnesses. Does this mean treat it like flu, or even flu like Covid-19? No. It means as a matter of exigency global society must look again at its approach to public health management and its preparedness for future pandemics.

Time to end secret data laboratories—starting with the CDC

By Dr. Marty Makary
Source: https://www.foxnews.com/opinion/cdc-secret-data-rochelle-walensky-marty-makary

Feb 22 – The American people are waking up to the fact that too many public health leaders have not always been straight with them. Despite housing treasure troves of critical COVID data on vaccines and on natural immunity, the Centers for Disease Control and Prevention has only been releasing slivers of data that support its own scientific dogma.

Most of the media has fallen for it. Throughout the pandemic, the New York Times and other outlets has only sourced doctors agreeing with the establishment groupthink, dangled fear to young people, and amplified every headline government doctors feed them as they did with weapons of mass destruction.

The Center for Disease Control and Prevention (CDC) has been criticized and mocked from all sides after a series of muddled messages have baffled Americans amid a record surge in COVID-19 cases and the spread of the omicron variant. (iStock) (iStock)

But this week, one Times reporter picked up on what many of us have been saying about the CDC's deception. The reporter learned that the CDC data on booster efficacy released two weeks ago conveniently left out hospitalization data for people under age 50.

So, let's trace the origin of the widespread employer and college booster mandates for young people. There never was, and still is, zero scientific, clinical data that boosting reduces COVID hospitalizations in young healthy people. The FDA had bypassed its expert advisory group to authorize boosters in young people after its own experts previously voted 16-2 against the idea and two top FDA officials quit over White House pressure over this very issue.

Throughout the saga, the media gave public health leaders a megaphone to broadcast their agenda, unchecked, failing to ask them any basic questions. Like, where's the supporting data? Colleges and universities, which pride themselves as bastions of intelligent inquisition, embarrassed themselves by blindly following the scientific dogma, requiring all vaccinated students to get boosted, even when many already had natural immunity. So, do public health officials understand why people don't trust them?

Hiding data on boosters in young people is only one piece of the political shell game the CDC plays. There more than 150 studies supporting natural immunity, including a JAMA study recently published by my Hopkins team. Moreover, the observational clinical data are clear—natural immunity reduces the risk of mechanical ventilation and death in healthy people to nearly zero.

But despite this overwhelming body of scientific evidence that has withstood the test of time, the CDC has consistently cited two studies to the contrary, both highly flawed studies it published itself. One of those studies is a CDC study using a 2-month sliver of Kentucky data. Despite having data on all 50 states, the CDC only reported data from that one state last year. The obvious explanation is that it was the only state and time period that gave the CDC the results it wanted. Why else would it not report the same data from any of the other 49 states? Moreover, in its jury-rigged study, the rate of infection in each group was less than 0.01 percent.

Regardless, the CDC study vigorously concluded that vaccinated immunity was 2.3-times better than natural immunity, based on a very small difference in the sample which was likely attributable to other factors. Dr. and CDC Director Rochelle Walensky used it to propagate the notion that those who had COVID still must get vaccinated.

Last month, New York and California released data to the CDC that natural immunity was 2.8 times more effective in preventing hospitalizations than vaccinated immunity—a benefit that was the same for those with hybrid (natural and vaccinated) immunity. But absent from its reversal was any apology to the many American workers with natural immunity it insisted be fired from their job for not being vaccinated unvaccinated. Ironically, when employers fired those with natural immunity for not being vaccinated, they fired those least likely to spread the infection or get hospitalized. Similarly, the CDC put out two highly flawed studies that promoted mask mandates, detailed by Dr. Vinay Prasad.

The American people are just hungry for honesty. They want the data straight, not politically curated by a small group of like-minded scientists.

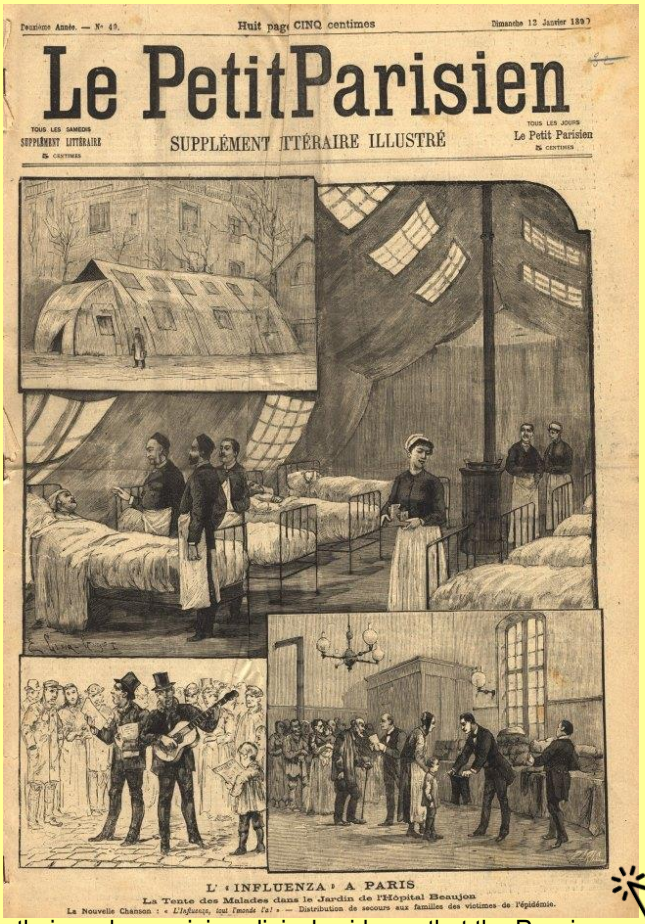
If I were advising President Joe Biden, I would tell him that the CDC needs to restore the public trust by making all CDC data available in real-time for researchers around the country to access and to study. It's time we end secret data laboratories in the government.

The CDC has a pattern of hoarding data in order to cherry-pick the findings it likes and then publish them in its own journal, called MMWR. This is not how a respectable country should function during a pandemic. An optimal response to a national health emergency should warrant more data transparency, not less.

Marty Makary, M.D., is a professor of surgery and health policy at the Johns Hopkins University School of Medicine and a Fox News medical contributor. He is the bestselling author of "The Price We Pay." The opinions presented are his and do not represent the views of Johns Hopkins University.

Was the Late 19th Century's "Russian Flu" Actually a Coronavirus?

Source: https://www.homelandsecuritynewswire.com/dr20220222-was-the-late-19th-century-s-russian-flu-actually-a-coronavirus



Feb 22 – Gina Kolata recently wrote in the *New York Times* about how scientists are increasingly speculating the famous Russia flu that emerged in 1889 may have actually been driven by a coronavirus. As she explains, it emerged in Bukhara, then part of the Russian Empire, before spreading globally, overwhelming hospitals and killing the elderly in droves.

She explains that much of what happened sounds eerily familiar in 2022 writing, "Schools and factories were forced to close because so many students and workers were sick. Some of the infected described an odd symptom: a loss of smell and taste. And some of those who recovered reported a lingering exhaustion."

After a few years and at least three waves, the Russian flu drew to a close. This pattern and noted symptoms have sparked interest from virologists and historians of medicine who are curious whether this pandemic was caused by a coronavirus and, if so, what that might tell us about the COVID-19 pandemic.

Pandora Report notes that it is challenging to make a definitive ruling on this. Kolata explains that molecular biologists are now able to find old virus in preserved lung tissues from Russian flu patients, prompting some researchers to go on the hunt for jars that might contain these lungs.

Harald and Lutz Brüssow published in *Microbial Biotechnology* last year their work examining clinical evidence that the Russian flu pandemic may in fact have been caused by a coronavirus. In it they note the similarities of characteristics writing, "Most notable are aspects of multisystem affections comprising respiratory, gastrointestinal and neurological symptoms including loss of taste and smell perception; a protracted recovery resembling long covid and pathology observations of thrombosis in multiple organs, inflammation and rheumatic affections. "

They also note that, as with COVID-19 but unlike with influenza, the elderly were severely impacted while children fared much better during the Russian flu.

New York City Study Sheds Light Over Biological Attack Response Strategy

Source: https://i-hls.com/archives/113184

Feb 22 – Chemical and biological materials pose a threat to urban environments, whether spread maliciously or accidentally. The US Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Urban Threat Dispersion Project conducted a test aimed at mitigating the challenge.

In an airflow study conducted recently in New York City, a team led by MIT Lincoln Laboratory collected safe test particles and gases released earlier in subway stations and on streets, tracking their journeys. The exercise measured how far the materials traveled and what their concentrations were when detected.

The results are expected to improve air dispersion models, and in turn, help emergency planners improve response protocols if a real chemical or biological event were to take place.

The project is largely driven by Lincoln Laboratory's Counter–Weapons of Mass Destruction (CWMD) Systems Group to improve homeland defenses against airborne threats.

This exercise followed a similar, though much smaller, study in 2016 that focused mainly on the subway system within Manhattan.

The particles and gases used in the study are safe to disperse, and have been used in prior public safety exercises. To enable researchers to track the particles, the particles are modified with small amounts of synthetic DNA that acts as a unique "barcode." This barcode corresponds to the location from which the particle was released and the day of release.

When these particles are later collected and analyzed, researchers can know exactly where they came from.

To make processes more efficient for this large study, the team built special filter heads that rotated through multiple filters, saving time spent revisiting a collection site. They also

developed a system using NFC (near-field communication) tags to simplify the cataloging and tracking of samples and equipment through a mobile app.
The researchers are still processing the approximately 5,000 samples that were collected over the five-day measurement campaign. The data will feed into existing particle dispersion models to improve simulations. Together, these models can show how a plume would travel from the subway to the streets, for example. These insights will enable emergency managers in New York City to develop more informed response strategies, as they did following the 2016 subway study, according to mit.edu.

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Application of the Cynefin Framework to COVID-19 Pandemic

By Judy Kruger & Romeo Lavarias

Since the spring of 2020, variables such mistrust of government leaders, anti-maskers, and economic concerns complicated COVID-19 community response. The Cynefin framework is a sensemaking theory in the social sciences to create a framework for emergency managers in large-scale events. It is useful because it can help identify the complexity of an infectious disease problem to inform resource allocation across many domains in the hopes of identifying gaps that can be addressed. This article looks at the pandemic as an event outside the realm of regular expectations due to the scope, duration, scale, and social climate.

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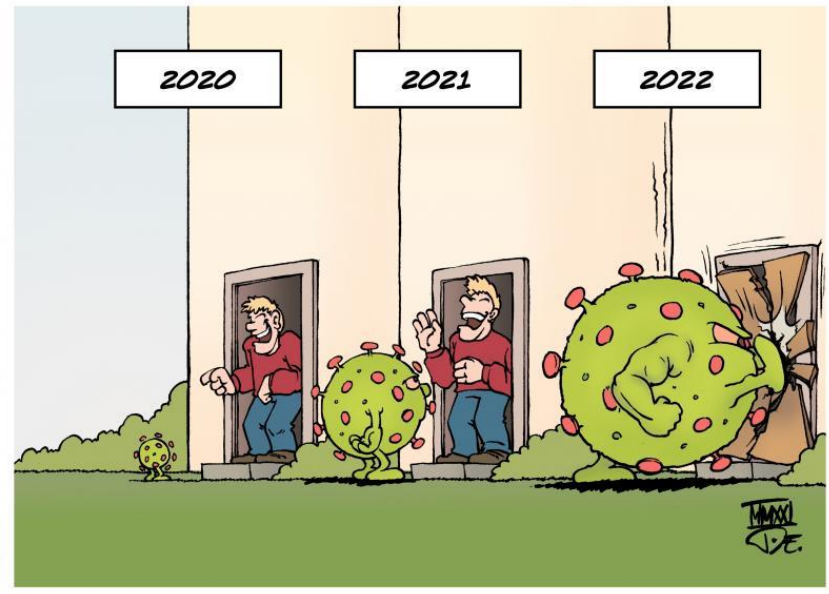

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