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C²BRNE DIARY

Dedicated to Global First Responders

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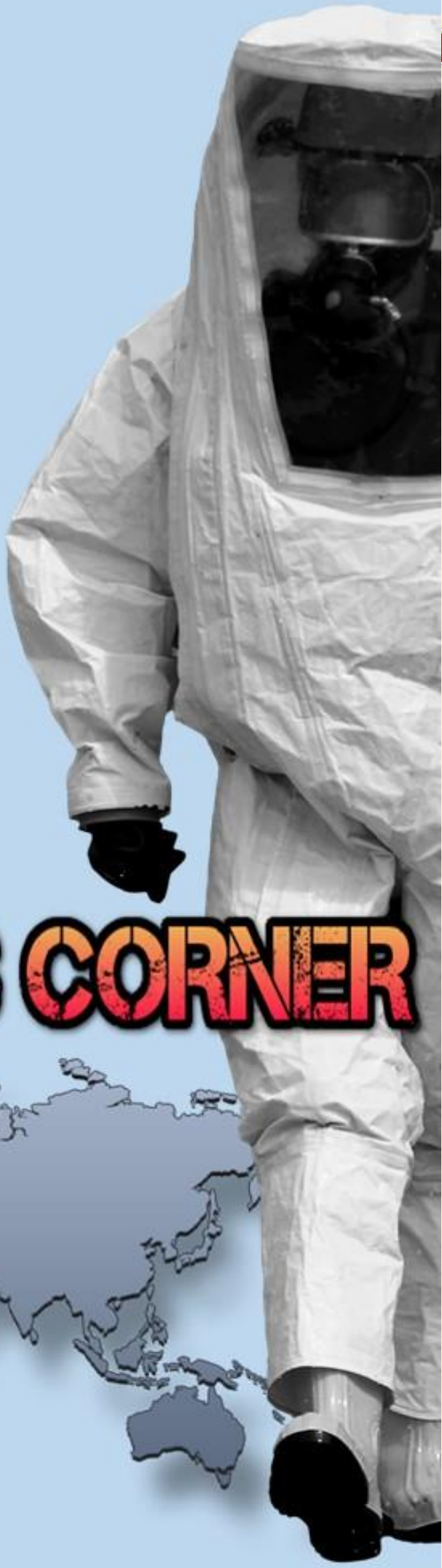


EDITOR'S CORNER

Editorial

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

Editor-in-Chief
ICI C²BRNE Diary

Dear Colleagues,

Pandemic: Year 3
War: Month 3
Hope level: Close to Zero!

Pandemic

Many countries are withdrawing measures to combat the pandemic but this does not mean that return to normal is a reality. In addition, we continue to learn new things about the ingredients of the mRNA vaccines (e.g., N1-methyl-pseudouridine) and the new side effects of vaccination and boosters (e.g., cognitive impact of severe Covid). As I pointed out in the previous issue, either we have to change the definition of "vaccine" or produce a new vaccine able to provide annual protection from coronaviruses – end of story. And profit (from new vaccines) is not an ethical excuse when life is at stake. Writing about life, ask the Chinese!

We have declared "back to normal" in many countries but monkeys might have a different opinion! Hope that the outbreak will remain an outbreak although, so far, it has a pandemic potential!

War

The fire of war in Ukraine continues to be fueled by European countries, the United States, and NATO (practically the same). Nobody is willing to find solutions to halt the war and restore peace in the area overlooking the fact that Ukraine is as important to Russia as Canada and Mexico to the United States. On the contrary, NATO continues to provoke Russia and provide fake reassurances to Sweden and Finland that they will protect them if they decide to join the alliance (recent promises 😉 from the US Secretary of State Antony Blinken to Swedish Foreign Minister Ann Linde)[1]. At the same time, a pile of money is flowing toward Ukraine – a vivid example is the approval of 33 billion USD given by the US Congress plus 2 billion USD given by France. A pile of money for a country that might not be there tomorrow – why? Almost all European countries are buying weapons (guess from whom) based on lessons learned from the war and the infodemic guided by those selling the weapons. German Chancellor Olaf Scholz during his recent visit to Japan stated "A strong German army is needed as a deterrent to a possible Russian attack" – perhaps a good excuse for a WWIII. There is a sick perception that both the Americans and the Europeans are wishing for a nuclear incident or in the best case the use of chemical weapons in the Ukrainian fields. By the way, what really happened with the US and German bio-labs in Ukraine? A case of smokeless fire?

The Ukrainian war brought to the surface several questions on a single issue puzzling me for a long time. What constitutes/defines an act of war? Does an act of war mean hostile or warlike action, whether declared or not, in a time of peace or war, whether initiated by a local government, foreign government, or foreign group, civil unrest, insurrection, rebellion, or civil war? Is there a universal definition of an act of war? Is an act of war defined separately by each country? Is violation of national airspace and sea an act of war? Is the land invasion the only acceptable act of war? Are (Russian) "special operations" an act of war? Do violations of airspace and sea justify an armed response? Is the non-armed response to the above violations an act of treason or

[1] It is highly advisable to read the role of Sweden and Finland during the 2nd WW and how these two nations become independent countries after the great war. Same for the NATO country that is currently opposing their entrance to the alliance…

why there are borders between countries, international treaties, and armed forces? Some of you have realized that these questions are addressing the long-standing Greek-Turkish disputes characterized by countless violations of airspace and daily interceptions along with sea violations by drilling vessels in areas that are Greek territories – a situation that can easily escalate badly and bloodier.

Terrorism

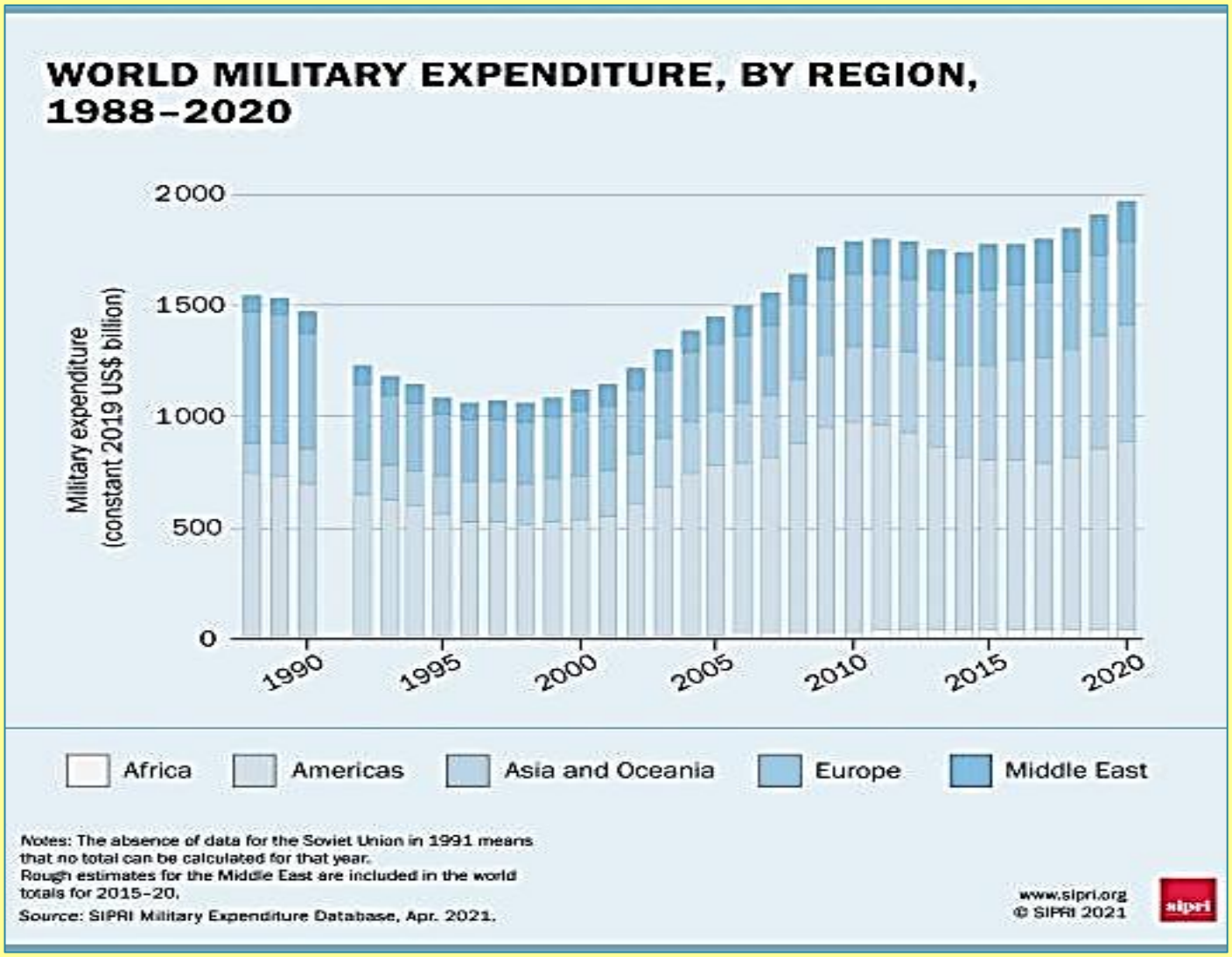
Who cares about terrorism right now? It seems that soon terrorists will convene α press conference to denounce the West for lack of interest! One cluster caught my attention and it is about cyberattacks against large food processing factories in the US. Random incidents or the beginning of a new era of terrorism that will spread worldwide in conjunction with the food crisis due to the war?

Dear first responders, the unexpected always happens and now we have two strong proofs for this wise quote – a pandemic and a war! Keep this in mind and be prepared because at zero time there will be no time for theory; only for immediate action!

The Editor-in-Chief

World military spending rises to almost $2 trillion in 2020

Source: https://www.sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020



World military spending, by region, 1988–2020. Data and graphic: SIPRI

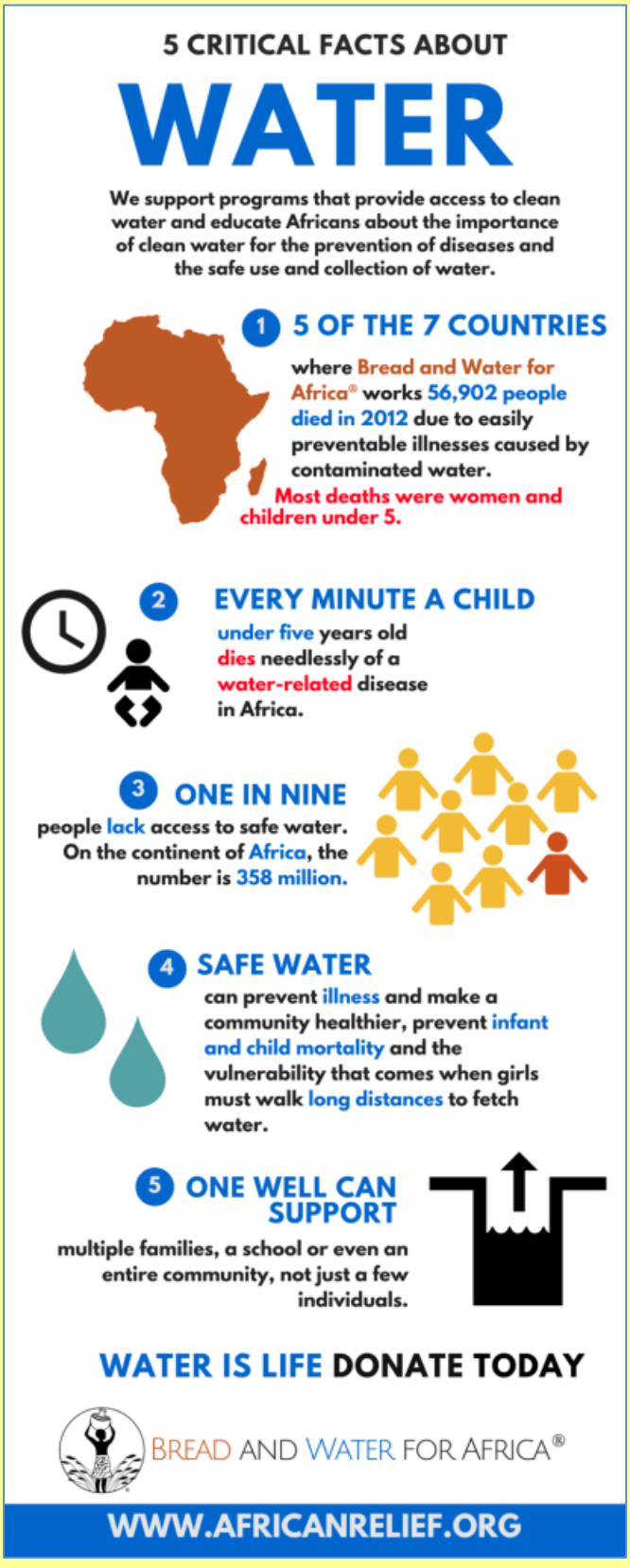
Apr 26 – Total global military expenditure rose to $1981 billion last year, an increase of 2.6 per cent in real terms from 2019, according to new data published today by the Stockholm International Peace Research Institute (SIPRI). The five biggest spenders in 2020, which together accounted for 62 per cent of global military expenditure, were the United States, China, India, Russia and the United Kingdom. Military spending by China grew for the 26th consecutive year.

Military expenditure increases in the first year of the pandemic

The 2.6 per cent increase in world military spending came in a year when global gross domestic product (GDP) shrank by 4.4 per cent (October 2020 projection by the International Monetary Fund), largely due to the economic impacts of the Covid-19 pandemic. As a result, military spending as a share of GDP—the military burden—reached a global average of 2.4 per cent in 2020, up from 2.2 per cent in 2019. This was the biggest year-on-year rise in the military burden since the global financial and economic crisis in 2009.

Even though military spending rose globally, some countries explicitly reallocated part of their planned military spending to pandemic response, such as **Chile** and **South Korea**. Several others, including **Brazil** and **Russia**, spent considerably less than their initial military budgets for 2020.

'We can say with some certainty that the pandemic did not have a significant impact on global military spending in 2020,' said Dr Diego Lopes da Silva, Researcher with the SIPRI Arms and Military Expenditure Programme. 'It remains to be seen whether countries will maintain this level of military spending through a second year of the pandemic.'



Strong increase in US military spending continues in 2020

In 2020 **US** military expenditure reached an estimated $778 billion, representing an increase of 4.4 per cent over 2019. As the world's largest military spender, the USA accounted for 39 per cent of total military expenditure in 2020. This was the third consecutive year of growth in US military spending, following seven years of continuous reductions.

EDITOR'S COMMENT

Tell these, before the war, numbers to these people!

'The recent increases in US military spending can be primarily attributed to heavy investment in research and development, and several long-term projects such as modernizing the US nuclear arsenal and large-scale arms procurement,' said Alexandra Marksteiner, a researcher with SIPRI's Arms and Military Expenditure Programme. 'This reflects growing concerns over perceived threats from strategic competitors such as China and Russia, as well as the Trump administration's drive to bolster what it saw as a depleted US military.'

China's military expenditure rises for 26th consecutive year

China's military expenditure, the second highest in the world, is estimated to have totalled $252 billion in 2020. This represents an increase of 1.9 per cent over 2019 and 76 per cent over the decade 2011–20. China's spending has risen for 26 consecutive years, the longest series of uninterrupted increases by any country in the SIPRI Military Expenditure Database.

'China stands out as the only major spender in the world not to increase its military burden in 2020 despite increasing its military expenditure, because of its positive GDP growth last year,' said Dr Nan Tian, SIPRI Senior Researcher. 'The ongoing growth in Chinese spending is due in part to the country's long-term military modernization and expansion plans, in line with a stated desire to catch up with other leading military powers.'

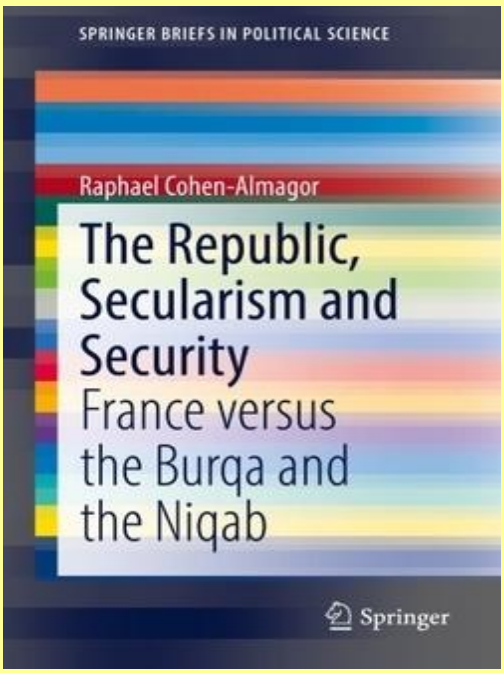
Economic downturn leads to more NATO members passing the spending target

Nearly all members of the North Atlantic Treaty Organization (**NATO**) saw their military burden rise in 2020. As a result, 12 NATO members spent 2 per cent or more of their GDP on their

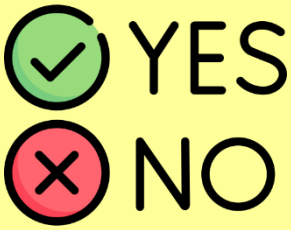
militaries, the Alliance's guideline spending target, compared with 9 members in 2019. **France**, for example, the 8th biggest spender globally, passed the 2 per cent threshold for the first time since 2009.
'Although more NATO members spent more than 2 per cent of GDP on their militaries in 2020, in some cases this probably had more to do with the economic fallout of the pandemic than a deliberate decision to reach the Alliance's spending target,' said Lopes da Silva, Researcher with the SIPRI Arms and Military Expenditure Programme.

Other notable developments

- **Russia**'s military expenditure increased by 2.5 per cent in 2020 to reach $61.7 billion. This was the second consecutive year of growth. Nevertheless, Russia's actual military spending in 2020 was 6.6 per cent lower than its initial military budget, a larger shortfall than in previous years.
- With a total of $59.2 billion, the **UK** became the fifth largest spender in 2020. The UK's military spending was 2.9 per cent higher than in 2019, but 4.2 per cent lower than in 2011. **Germany** increased its spending by 5.2 per cent to $52.8 billion, making it the seventh largest spender in 2020. Germany's military expenditure was 28 per cent higher than in 2011. Military spending across **Europe** rose by 4.0 per cent in 2020.
- In addition to China, **India** ($72.9 billion), **Japan** ($49.1 billion), **South Korea** ($45.7 billion) and **Australia** ($27.5 billion) were the largest military spenders in the **Asia and Oceania** region. All four countries increased their military spending between 2019 and 2020 and over the decade 2011–20.
- Military expenditure in **sub-Saharan Africa** increased by 3.4 per cent in 2020 to reach $18.5 billion. The biggest increases in spending were made by **Chad** (+31 per cent), **Mali** (+22 per cent), **Mauritania** (+23 per cent) and **Nigeria** (+29 per cent), all in the Sahel region, as well as **Uganda** (+46 per cent).
- Military expenditure in **South America** fell by 2.1 per cent to $43.5 billion in 2020. The decrease was largely due to a 3.1 per cent drop in spending by **Brazil**, the subregion's largest military spender.
- The combined military spending of the 11 **Middle Eastern** countries for which SIPRI has spending figures decreased by 6.5 per cent in 2020, to $143 billion.
- Eight of the nine members of the **Organization of the Petroleum Exporting Countries (OPEC)** for which SIPRI has figures cut their military spending in 2020. **Angola**'s spending fell by 12 per cent, **Saudi Arabia**'s by 10 per cent, and **Kuwait**'s by 5.9 per cent. Non-OPEC oil exporter **Bahrain** also cut its spending by 9.8 per cent.
- The countries with the biggest increases in military burden among the top 15 spenders in 2020 were **Saudi Arabia** (+0.6 percentage points), **Russia** (+0.5 percentage points), **Israel** (+0.4 percentage points) and the **USA** (+0.3 percentage points).



The Case for Banning Burqas and Niqabs



By Daniel Pipes
Source: https://www.meforum.org/63181/the-case-for-banning-burqas-and-niqabs

Apr 23 – A short new book argues for permitting women to wear tent-like full-body coverings (sometimes but erroneously called *veils*) in public places. Raphael Cohen-Almagor, a self-described "poet, human rights and peace activist," as well as a professor at the University of Hull, offers sundry reasons for this surprise conclusion, including:
The ban on the burqa and the niqab is wrong in principle, is counter-productive and illiberal. It fails to respect freedom of religion which is a basic human right. It undermines the agency of women it claims to emancipate. ... and it offends the dignity of women who voluntarily opt to wear this garment for religious reasons. ... It undermines the agency of women it claims to emancipate. ...The ban that was designed to liberate women actually increases their isolation.

Cohen-Almagor devotes much of *The Republic, Secularism and Security: France versus the Burqa and the Niqab* (Cham, Switzerland: Springer, 2022) to refuting arguments heard in France for the ban on burqas and niqabs in public: these garments oppress women and diminish their dignity, they challenge French identity and unity, they are offensive, they cause sensory deprivation and vitamin D deficiency, and they undermine public safety and order.

Examples of the burqa (left) and niqab

On this last topic, Cohen-Almagor uses me as his foil:
Daniel Pipes (2018) compiled incidents in which niqabs and burqas were used for terrorist incidents. He argues that both garments should be banned on security grounds. However, there are many things that are used and abused but still, they are not banned in democracies. Chemistry books are often used for very good, productive purposes but sometimes they are abused for terrorist bomb-making. Motorcycle helmets are used to protect human lives, but sometimes they are abused to rob banks and to serve anti-social purposes. Knives play an essential role in the kitchen and at the dinner table, but they are also used for murder. The Internet contains the best products of humanity, but it is also abused by terrorists, criminals and hate mongers. The telephone connects between families and friends, but it is also abused to concoct crimes. The fact that a dress is used and abused in different ways does not justify banning the dress.
My response: Of course, chemistry books, motorcycle helmets, knives, the Internet, and the telephone can be abused. Indeed, all foods and drinks, all types of clothing, every means of communication and transportation, all structures, every technological breakthrough, and so forth, *ad nauseum*, can be abused. Further, one can walk or sleep before engaging in either good or ill deeds. In the end, all things and actions are *dual use*, meaning they have potentially benign or malign purposes. Cohen-Almagor's seemingly clever logic leads only to triviality.

Ski-mask used on a TD Bank robbery, Fairfield, Conn. Oct. 25, 2013.

The niqab-like outfit on a robber at the Audubon Savings Bank in New Jersey on Sep. 23, 2014

For that matter, even burqas and niqabs can used for benign purposes: to help a supermodel sneak around the paparazzi, meet a lover, retrieve an abducted child, avoid persecution, not catch a virus, capture a wanted suspect, flee an oppressive country, or escape murderers.
But these rare positive uses pale beside the massive number of negative ones. To take the city where I live, Philadelphia, criminals used burqas and niqabs as accessories in at least 34 incidents over 9 years, or almost one every three months. These included violent robberies of many banks, of a jewelry store, a real estate office, a spa, a pharmacy, a grocery store, a dollar store, and even a gun shop. They also included the abduction and rape of a 5-year-old girl and the murder of a policeman.
In addition, families use these all-encompassing articles of clothing to oppress women, and jihadis use them to engage in violent operations. Finally, they harm health because

insufficient sunlight "results in vitamin D deficiency, which can lead to bowlegs and thickened wrists and ankles, muscle and bone pain, pelvic fractures during childbirth, dementia, rickets, osteomalacia, and perhaps multiple sclerosis. Also, rashes, headaches, and respiratory disease sometime result or even strangulation. Babies suffer from seizures, growth retardation, and muscle weakness and fractures."

It bears noting that burqas and niqabs are an option, not something required by the dictates of Islam, as indicated by the vanishingly few Muslim women who wear them voluntarily.

The burqa and niqab may not look like hard drugs, machine guns, or explosives, but like them, they endanger the public good by concealing the identity of their wearers. Common sense demands that these garments be banned from public places.

Daniel Pipes is president of the Middle East Forum.

EDITOR'S COMMENT: There is no doubt that there is a security issue when the face is covered and a CBRN decontamination issue when the headcover needs to be removed and disposed of. Apart from this, I have no objection regarding scarfs, burqas, and niqabs provided that the woman **agrees** to wear them!

Джордж Сорос: «Происходящее на Украине – мой лучший проект»

George Soros: "What is happening in Ukraine is my best project"

Source (in Russian): https://russtrat.ru/comments/20-aprelya-2022-0007-9994

……..

George Soros never concealed the fact that "his main enemy is in Moscow": "*I believe that European society does not react sharply enough to Russia. That's why I'm trying to explain what kind of danger it really poses. Of course, our country, with its conservatism and loyalty to traditional values, poses a serious threat to the organizers of the "new world order*". Recall what Zbigniew Brzezinski said to the former national security adviser of the 39th US President Jimmy Carter: "*A new world order under US hegemony is being created against Russia, at the expense of Russia and on the ruins of Russia. Ukraine for us is an outpost of the West against the restoration of the Soviet Union.*"

EDITOR'S QUESTION

Is the physical presence of NATO troops necessary to ignite Russian retaliation actions against countries providing heavy military equipment (i.e., Gepard Flakpanzer) to Ukraine or convoys transferring weapons to Ukraine?

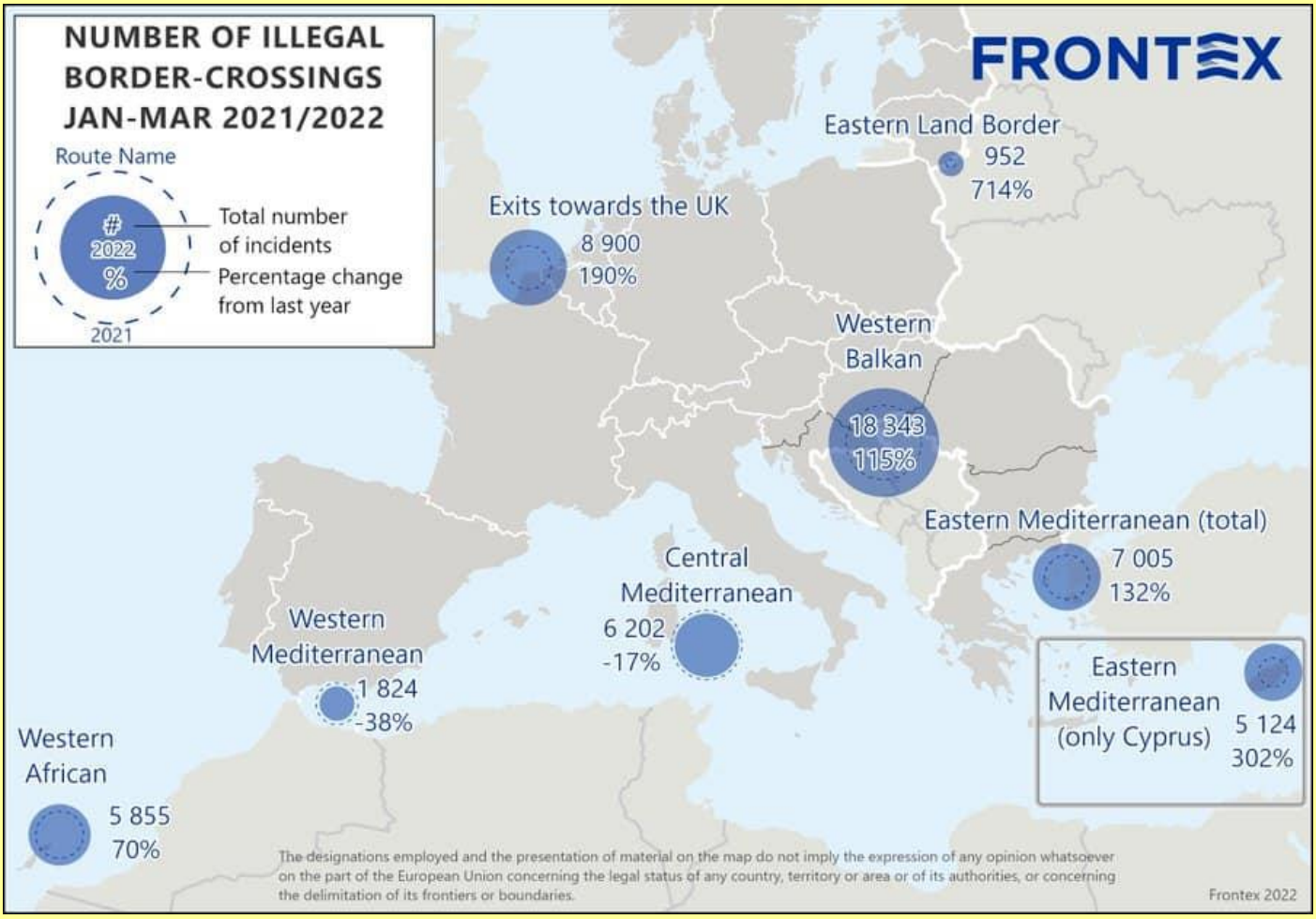
Did Macron abandon French military to die in Azovstal to protect his election campaign?

Source: https://beeley.substack.com/p/did-macron-abandon-french-military?s=r

Apr 25 – According to reports from Aydinlik, a Turkish media outlet the re-elected French President abandoned French soldiers to die, unacknowledged, in Azovstal steel plant in Mariupol, Ukraine because he did not want their existence and possible deaths to jeopardise his election campaign. The same sources also claimed that the two French military-insigated failed helicopter rescues were an attempt to extract the French officers and to bring them to safety. Both helicopters crashed, one in the sea and the other close to the Azovstal plant. The sources have informed Aydinlik that two of the dead were French Intelligence officers.


154 CCTVs
69 security/tourism policemen
Hagia Sophia
Constantinople
Yazık Türkiye!
0:05
0:00

Blessed those living away from the Gates of Europe …



Tactical Ultraviolence, Hybrid and Coordinated Attacks: an Integrated Approach

By Mr. Frank Rando

NCT Magazine 5/17

Source: https://nct-magazine.com/nct-magazine-april-2022/tactical-ultraviolence-hybrid-and-coordinated-attacks-an-integrated-approach

Asymmetric threats, urban warfare and tactical ultraviolence are no longer limited to the battlefields of Iraq, Afghanistan, Syria, or Africa. While foes and enemies have drowned us in urban warfare and terror attacks in the streets and venues of Belfast, London, Paris, New York, Tel Aviv, Munich, Boston, Moscow and other cities throughout the world, the carnage continues today in the form of armed assaults, edged weapons attacks, vehicles mowing people down and, of course, improvised explosive devices at our schools, houses of worship, shopping centers and other locations. Sometimes, multiple modalities may be used such as semi-automatic weapons, assault-type rifles, explosives, or even incendiary devices. These acts of violence are not restricted to jihadists, political revolutionaries, or anti-government extremists. Oftentimes, these attacks are perpetrated by disgruntled employees, bullied students, delusional individuals, or an individual hate monger among other characterizations.

While any form of violence, whether perpetrated against an individual or a group is frightening and a cause for alarm, the use of military or paramilitary tactics, maneuvers and weapons against a civilian population entails especially ominous, vicious, and terrifying connotations and consequences. For instance, the realities imposed by confronting an armed attacker(s) who commits arson and is executing individuals using an AK-47, strapped with a bandolier of ammunition and fragmentation grenades, and wearing head-to-toe ballistic protection and night vision equipment, are quite different than those of the urban mugger demanding money or the armed street thug committing a robbery at a liquor store. In tactical ultraviolence/hybrid tactical violence, the perpetrator(s) has/have "upped the ante", possibly via thorough tactical

planning and sophisticated military-style assault tactics and weaponry. At this juncture, the emergency services triad of police, fire and EMS assets responding will be confronted with a complex, challenging, evolving and dynamic tactical situation which may exceed the range of operational hazards that they are accustomed to.
Hybrid tactical violence attacks, especially, go beyond the definition of an active shooter event. The compound effect of this type of violence requires a paradigm shift of thought which involves a synergistic planning and response strategy. Essentially, the collective efforts and focus of the emergency services/public safety sector must stress a comprehensive and integrated counterterrorism/anti-terrorism approach.
In planning for such attack scenarios, planners need to conduct a historical survey of hybrid tactical violence events by revisiting the occurrences at, namely, Mumbai, the Columbine High School, the Aurora, Colorado movie theatre attack, the Dubrovka theater siege, the Las Vegas mass shooting, the Christchurch, New Zealand attack, the Charlie Hebdo event, the Sandy Hook, the Connecticut mass shooting and the multitudes of other examples of tactical ultraviolence, hybrid tactical violence and coordinated attacks. Lessons learned from these, and more such tragedies, are very valuable and close analysis is warranted to effectuate proper, safe, and successful collaborative multiagency responses. Optimal multiagency operational goals must focus on threat elimination and lethality/mortality reduction. This cooperative level of response can only be achieved through pre-event dialogue, collaborative planning, and joint public safety - emergency services exercises and simulation. Traditionally, the police, firefighters and EMS have compartmentalized roles, responsibilities, expectations, and rivalries that need to be adjusted and adapted to form effective and integrated public safety response/rescue task forces to respond to these high-acuity high-impact events.

●▶ 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 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.

A new form of EU and NATO alliance

We provide the weapons; you fight and be killed in the field

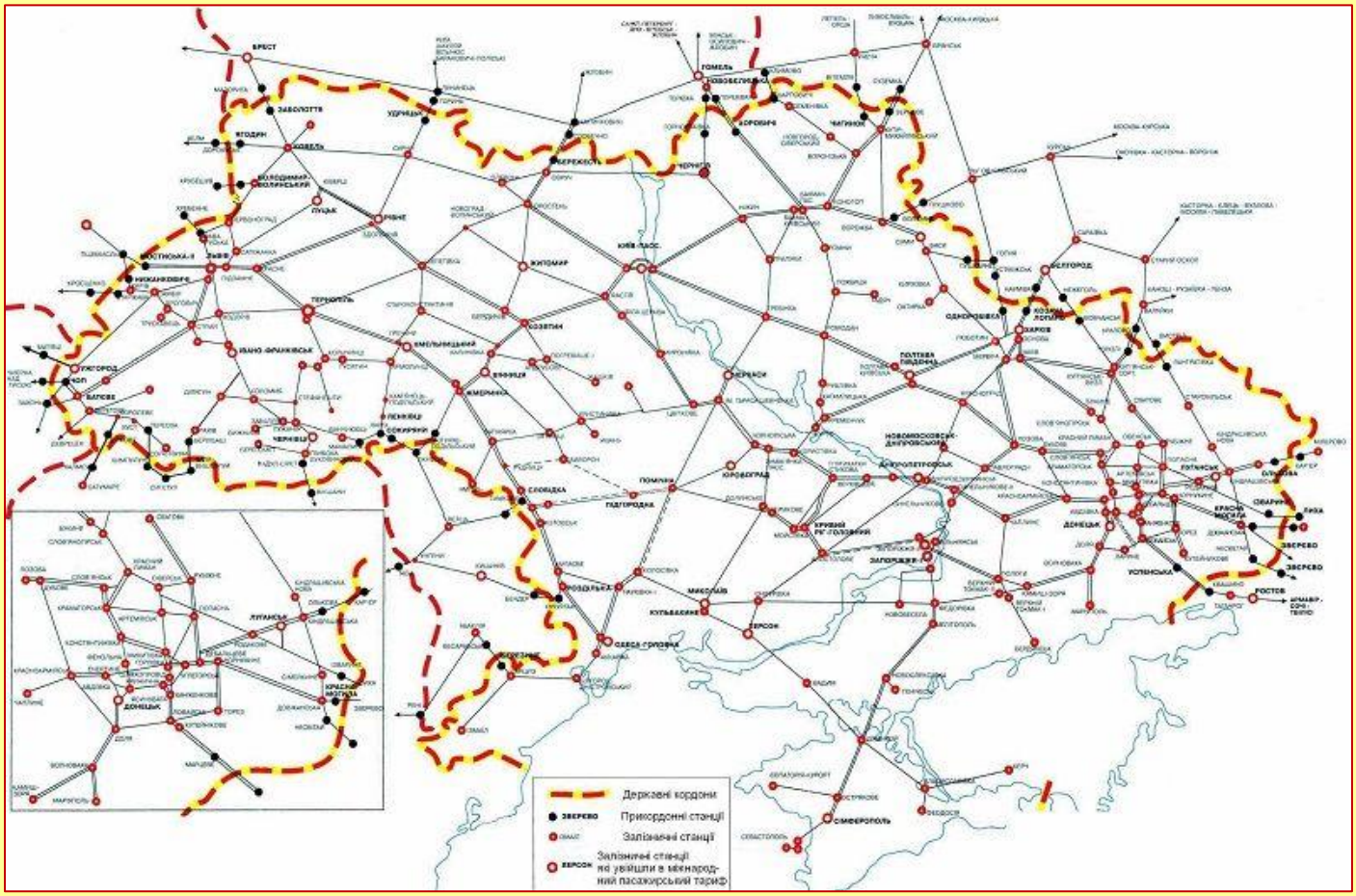
New candidates: Finland, Sweden, Moldavia

Ukraine is relying on its secret weapon in the war against Russia: Trains

Source: https://news.yahoo.com/ukraine-relying-secret-weapon-war-185757606.html

Apr 28 — The passenger train from Kyiv to Sumy was running Thursday morning with just a six-minute delay. The 200-mile route crosses territory scarred by more than two months of ground battles and aerial bombardment since Russia's invasion began.
Despite what appear to be concerted efforts by the Russian military this week to disable the vital Ukrainian rail network, this journey and dozens of others are providing a crucial means of military support and civilian escape through the country.
Rail also acts as a symbol of Ukraine's defiance and the limits of Russia's military power. After cities and towns were reduced to rubble, with thousands killed, the trains are still running.

Ukraine has one of the largest rail networks in the world, with 12,400 miles of track. Rail is one of the country's largest employers, with more than 260,000 staff members.



Before the war, it played a minor role in Ukraine's agriculture and mining industries, but it has become a crutch for commodity industries as Russia maintains a blockade on the Black Sea. The movement of grain now is essential to maintain the country's reputation as "Europe's breadbasket."

But the trains are no longer just for commodities and long journeys, as the network now moves military ordnance, refugees and humanitarian aid. Increasingly, it is transporting families back to areas previously held by Russian troops.

It delivers foreign leaders, too: Secretary of State Antony Blinken and Defense Secretary Lloyd Austin visited Kyiv on Sunday, arriving by train from Poland, as have several other Western officials.

Rail has played a pivotal role for both sides of the war, and it may help explain the failure of Russian forces to win control of the country. Russia was unable to fully use the railways in the early stages of the invasion, experts say, leading to logistical problems and images of Russian trucks stuck in winter mud.

"The railways have played a massively important role in the conflict so far, insofar as it's the way the Russian motorized ground forces move their troops around," said Emily Ferris, a Russia expert at the Royal United Services Institute, a think tank in London. "All of the problems they've had in the north are because they weren't able to control the logistical hubs."

Until recently, Russian forces had stopped short of targeting railway infrastructure in Ukraine in the hope they would take control of it themselves, said Oleksandr Pertsovskyi, the CEO of Ukrainian Railways' passenger trains business.

"The Russian military depends heavily on rail logistics, and one of the reasons why they're rather inefficient is the fact that they don't have reliable supply lines at the moment," he said.

Seemingly unable to take control of the rail network, Russia instead now appears to be intent on trying to disable it.

"Two weeks back, it appears that there were more and more deliberate attacks on rail infrastructure," Pertsovskyi said.

Missiles rained down on five Ukrainian train stations and regional railway hubs Monday night, mostly in western and central areas, killing a railway worker and wounding four others, the Ukrainian rail authority said. The Russian Defense Ministry said in a briefing Monday that the railway station attacks were designed to stop the shipment of "foreign weapons and military equipment" to Ukrainian troops in the eastern Donbas region.

It's there that Russian forces are now focused, with a crucial battle for eastern Ukraine that could be decided by Kyiv's ability to mobilize equipment and weapons — much of which is being sent by allies to aid the defensive stand — by road and rail.
Russia wants to stop the inbound military aid from Western countries that are beginning to resupply the Ukrainians, said Gen. Philip Breedlove, a retired four-star Air Force general and former supreme allied commander of NATO, speaking by phone from Florida.
But that's not the whole story.
"It's also just another step in Russia's ongoing war against the Ukrainian civilian population, on innocents," said Breedlove, now the chair of the Frontier Europe Initiative at the Washington-based Middle East Institute. "I believe the Russians are attacking, on purpose, civilian structures that move people around and protect people," he said. "They want Ukrainians to lose confidence in the civilian transportation infrastructure." The Russians are "scattering these little attacks around" to keep killing a "few people in this town, kill a few people in that town, kill a few people over here," to maintain pressure and civilian fear, Breedlove said.
Other experts agree that the airstrikes on railway targets also underscore the slow progress of Russia's campaign and signal that the conflict has entered a dangerous new phase. Perhaps the first glimpse of that was the deadly attack on a train station in Kramatorsk in the Donetsk region on April 8, in which at least 30 people died and 100 others were injured, Ukrainian officials said.
"In general, it's part of a wider pattern to target Ukrainian infrastructure and civilians and to degrade their physical capacity to resist but also their morale — which doesn't seem to be working," said Ruth Deyermond, an expert in Russian security policy at King's College London. "Once it became clear that the Russian army wasn't going to walk in and take Kyiv or Kharkiv or other cities, they moved to the second phase, which was trying to reduce parts of Ukraine to rubble, exactly as they did in Chechnya in the 1990s — it's part of a long-standing pattern," she said. So far, every time a railroad is damaged, it just keeps getting repaired. In some cases, Pertsovskyi said, damaged train lines can be fixed in a few hours. Destroyed or damaged bridges are harder to address, but "the bottom line is that even though the attacks are constant and intensifying, we still are able to run the system," he said. Actually destroying the rail infrastructure, he said, is "not an easy task, because the system is quite reliable." The railway system Russia has relied upon may not have proven so resilient. Satellite pictures showed trains laden with military hardware making their way to the Ukrainian border in the weeks of buildup to the invasion — including through Belarus.
But the rail link from Belarus to Ukraine was severed, the head of the Ukrainian rail network said in March, leaving Russian forces even more reliant on their limited number of trucks, which were prime targets for small-scale ambush attacks, Ferris said.
"Controlling the railways is key here," she said. "The Ukrainians know that, and they tried quite hard when they saw Russian advances on certain cities and villages … to bomb things like the bridges and cut off rail connections to stop the Russians where they were."
The next logical step for Russia's plan to create a corridor across Ukraine's south is to take the Black Sea port of Odesa. A bridge linking the region with the rest of Ukraine and neighboring Romania was shelled twice this week, a possible effort to cut it off from military supplies. But as in the north, Russian forces may find victory here easier said than done. "The Russian army has done very badly and suffered tremendous losses," Deyermond said. "Now they're talking about the south and Donbas — but even there it's very hard to see how they have the capacity to do that. "Will they make significant military gains?" she said. "Possibly, but are they going to be able to hold them? That seems much less likely."

EDITOR'S COMMENT: A very catchy title but irrelevant. From the moment the so-called allies and supporters of Ukraine started providing weapons and ammunition to the country, it was easy to anticipate that the railway network and all roads leading to the borders of Ukraine would be **severely** bombed by the Russian Air Force. It seems that none of these counteractions have been done to a point causing problems and there is a big operational question about this.

A Russian naval base is defended by dolphins. It's not as unusual as it sounds

By Rachel Treisman
Source: https://www.npr.org/2022/04/29/1095549251/russia-dolphins-black-sea-naval-base

Apr 29 – Russia's military is using specially trained dolphins to defend a critical naval base off Crimea, according to an analysis published by U.S. Naval Institute News.
Submarine analyst H I Sutton wrote this week for the online news and analysis outlet — which is editorially independent from the nonprofit USNI — that satellite imagery from Maxar Technologies shows two dolphin pens at the entrance to Sevastopol's harbor, the Russian navy's "most significant" naval base in the Black Sea. He said the pens were moved there in February, around the time that Russia launched its full-scale invasion of Ukraine.

Satellite imagery from Friday appears to show dolphin pens at the entrance to Sevastopol's harbor. The naval base there is important to the Russian military because of its proximity to the Crimean Peninsula. (Satellite image ©2022 Maxar Technologies)

The Maxar News Bureau confirmed to NPR that it agrees with that analysis. The firm also provided new satellite images, taken on Friday and showing a closer view of dolphin pens in the water at the entrance to the bay.

Andrew Lambert, a professor of naval history at King's College London, told NPR that he isn't surprised by the use of defense dolphins in the conflict, since they were in Sevastopol's harbor "long before it started."

Indeed, the Soviet navy ran several marine-mammal programs during the Cold War, including training dolphins near Sevastopol. That particular unit transitioned to the Ukrainian military when the Soviet Union collapsed, Sutton explained, but "barely stayed open," despite attempts to remain operational. Russia took control of the unit after it annexed Crimea in 2014, and it expanded the program once again.

"The Ukrainian work that pre-dated the seizure of Crimea was a continuation of existing programmes, and we know the Russians seem to be using other marine mammals, including belugas in the Arctic," Lambert added in an email.

And Russia isn't the only country to do this kind of work with marine mammals. In fact, the U.S. Navy has a history of similar programs, and it trains dolphins as well as seals for similar purposes to this day. Here's a look at why dolphins make good defenders and which countries rely on them.

Dolphins' agility, speed and sonar make them valuable assets

Many kinds of animals have been key assets in war, Lambert says, but dolphins are especially well suited to their underwater duties because they are "fast, agile and brilliantly adapted to hunting and killing underwater."

"Dolphins would be ideal for killing human divers ... fast, clever, and powerful," he added via email. "There is no evidence that they have done this or are trained to do so, but it is probable. Any diver in the harbour at night would be a target."
According to Sutton, the dolphins in the Black Sea could be tasked with counter-diver operations, with the aim of preventing Ukrainian special operations forces from infiltrating the harbor underwater and sabotaging the high-value Russian warships there.
Dolphins can also use echolocation — also called sonar — to detect underwater mines. Sam LaGrone, an editor of USNI News, told PRX's *The World* that dolphins can detect things that electronic and mechanical systems are unable to find. They're also less likely to accidentally set off those mines, he added, because they're nimble in the water and, unlike ships, don't carry a "magnetic signature" that could detonate one.
He also noted that they can swim faster than people and are also more trainable, since they can dive down and back up to the water's surface quickly without having to deal with decompression sickness as a human diver would.

A trainer calms a U.S. Navy dolphin before it is transported to a boat prior to a training exercise at Naval Base Point Loma in San Diego in 2007. The Navy's Marine Mammal Program was declassified in the 1990s. (Sandy Huffaker/Getty Images)

And dolphins make excellent patrol animals, he said, calling them "kind of like the guard dogs of the sea." Lambert made a similar comparison, noting powerful dogs are used for security on land.
Still, putting dolphins not only in captivity but on the potential front lines of a conflict raises a slew of ethical questions. Activists have long called on the U.S. to end its dolphin program, saying it's cruel and outmoded.
Dolphins and other marine mammals have been trained to do this work for decades — even as technology has improved. So why hasn't that changed?

"Someday it may be possible to complete these missions with underwater drones, but for now technology is no match for the animals," says the webpage for the Navy's Marine Mammal Program.
And, LaGrone adds, "sometimes you can't beat hundreds of thousands of years of evolution."

There's a long history of animals playing a role in war (and possible espionage)

The use of defense dolphins — and marine mammals more generally — is by no means a new practice.
Lambert says that during World War I, the United Kingdom's Royal Navy bribed trained circus sea lions to find submarines.
"They could find the submarines, but got bored," he adds.
The U.S. established the Navy's Marine Mammal Program in 1959. It operates out of San Diego, where it trains bottlenose dolphins and California sea lions to "detect, locate, mark and recover objects in harbors, coastal areas, and at depth in the open sea," according to the program's webpage.
(The Navy's program was declassified in the early 1990s, though its website still reminds people not to believe the rumors reinforced in the popular 1973 sci-fi thriller *The Day of the Dolphin* — in which dolphins are trained as offensive weapons.)
One of the first uses of defensive dolphins was by the U.S. during the Vietnam War. Navy dolphins named Garth, John, Slan, Tinker and Toad were stationed in Cam Ranh Bay and worked to prevent enemy swimmers from attacking an ammunition pier, according to *MIT Technology Review*. And in 2003, the Navy flew nine dolphins to an Iraqi port on the Persian Gulf to identify mines.
Sutton, writing on his website this year, identified four countries that have marine-mammal programs: the U.S., Russia, North Korea and Israel. (Sweden set up a seal-training program in the 1940s.) The programs primarily use dolphins, he said, but have also involved beluga whales, seals and sea lions.
And all sorts of animals have been accused of being spies, as the BBC reports.
Some of those accusations are based on confirmed training programs. During the Cold War, for example, the CIA spent millions of dollars on a project that would fit listening devices inside cats to pick up Russian intelligence (it ended in failure on the first day, apparently).
Other accusations were more based on hunches. Iranian intelligence operatives "arrested" 14 squirrels, saying they had been caught within the country's borders wearing Western spy gear. And in 2013, Egyptian police took a stork into custody on suspicion of spying, because it was fitted with a noticeable tag (which was actually being used by French scientists to track its movements).

The case of Hvaldimir, the beluga whale accused of being a Russian spy

Russia's marine-mammal endeavors have already made headlines in recent years. For one, satellite imagery suggests that its Black Sea dolphins were deployed to a Russian base in Tartus, Syria, for several months in 2018.

And in April 2019, fishermen in Norway spotted a beluga — notable because it had an unusual affection for human attention and was an unusual sight that far south of the Arctic. It turned out to be wearing a harness attached to a camera mount and clip inscribed "Equipment St. Petersburg." That immediately led to widespread speculation that the whale was a spy. He was locally named Hvaldimir — a combination of *hval*, the Norwegian word for whale, and Russian President Vladimir Putin's first name.
In May 2019, The Barents Observer reported that satellite images — identified by Sutton — showed a secret Arctic marine-mammal facility belonging to the Russian navy, with Beluga whales visible in pens. The BBC reported last year that Norway's domestic intelligence agency concluded in an investigation that the whale likely came from a Russian research program, though Russia's military has not addressed its origins. A retired Russian colonel told Reuters he had been informed that scientists in Russia's north were "using beluga whales for tasks of civil information gathering, rather than military tasks."
According to OneWhale, a nonprofit established specifically to protect Hvaldimir, the whale has spent the majority of his time at industrial salmon farms, which is both a workplace hazard and environmental liability. The organization adds that his affinity for humans and celebrity spy status have also made him a target of dangerous "unregulated tourism" and that he has suffered injuries from boat propellers, fishing hooks and other sharp objects. OneWhale aims to relocate Hvaldimir to "his own safe fjord" and create a protected nature reserve for him and other whales needing refuge, before potentially releasing them back into the wild.

First Lessons from Ukraine-Russia War

Admiral (ret.) James Stavridis, USN, notes "I would say that the new trio of war on the battlefield, is: special forces with high-tech weapons; unmanned vehicles and cyber warfare." He and (Silver Star; Purple Heart holder) Eliot Ackermann (former head of the Marine Corps Special Operations Team) write in their book "2034"[2] [a novel of the next World War] that "You cannot beat technology with more technology. You can only beat it without technology. "

Great Expectations . . .

Abandoned Detroit, Michigan, USA – 30 billion USD would be nice to revive the city.

[2] Everything in "2034" is an imaginative extrapolation from present-day facts on the ground combined with the authors' years working at the highest and most classified levels of national security. Sometimes it takes a brilliant work of fiction to illuminate the direst of warnings: 2034 is all too close at hand, and this cautionary tale presents the reader a dark yet possible future that we must do all we can to avoid.

Hellenic Army Military Academy (ΣΣΕ) won two awards at the Sandhurst Military Skills Competition at the WestPoint Military Academy: **"Most Lethal Team"** and **"International Trophy"** Placed 6th in the overall ranking.

Bravo

Place	Team	Total points
1	USAFA	1755
2	USMA Gold	1702
3	USMA Black	1665
4	University of North Georgia	1625
5	Brigham Young University	1561
6	Greece	1554
7	Team C3	1499
8	USNA	1335
9	Texas A&M	1333
10	Saint John's University	1327

Squad Leader Raptis Grigorios

- **4year cadets** Psarros P,Mitsioulis D, Nikolaidis P,Farmaki A
- **3year cadets** Dimaridis Th, Vassos D, Arampatzidis Z, Zorba A
- **2year cadets** Kalogeropoulos D, Zaxopoulos K

Opening All Combat Positions in the IDF to Women

By Pnina Sharvit Baruch

Strategic Assessment - A Multidisciplinary Journal on National Security | Volume 25, No. 1, March 202
Source: https://strategicassessment.inss.org.il/en/articles/opening-all-combat-positions-in-the-idf-to-women/

March 2022 – The issue of opening all positions in the IDF to women is currently under debate, following rejections of requests by female conscripts and trainees who dropped out from prestigious courses to try out for combat positions in assault forces, and High Court of Justice petitions submitted on the issue. An IDF committee was appointed to examine the issue. I appeared before the committee as a representative of Forum Dvorah: Women in Foreign Policy and National Security, along with additional representatives of the forum. The purpose of this article is to present a suitable policy for the IDF, while relating to official reports and studies on the issue of integrating women in combat positions in foreign militaries.

The Situation in the IDF

The IDF is one of the only militaries in the world that has mandatory conscription of women. In the first few years of its existence, women served mainly in "traditional" support roles. In 1995 the groundbreaking ruling by the High Court of Justice in the Alice Miller case was issued, which ordered flight courses to be opened to women, and for the first time recognized women's right to equal opportunity in the IDF as a human right, rejecting budgetary and technical arguments. In 2000 the Defense Service Law was revised and article 16a was added, which stated that every woman has a right equal to the right of a man to fill any position in military service, unless required otherwise by the essence and nature of the position. However, the 2007 Segev report, which recommended moving to a model of complete equal opportunity in the IDF while adopting the criterion of "the right person in the right place," has only been partially implemented, and in practice the IDF continues to carry out separate selection and placement processes for men and women (the report was not officially published, but was leaked to the media and is quoted in public reports and publications).

Over the years many more positions opened for women, including combat positions such as pilots, naval officers, and combat soldiers in units deployed mainly along the borders. Today

thousands of female combat soldiers serve in the IDF, constituting 17 percent of the army's fighting force. As of today, 86 percent of positions are open to women. However, "spearhead" units, assault forces, and elite commando units remain closed to women.

The United States Military and NATO Experience

In recent years militaries in the Western world have increasingly opened all positions to women, including combat positions. This trend began in the 1980s, for example in Sweden and Canada, out of values-based considerations of fulfilling women's right to equality and due to operational needs, in light of the benefit of integrating women in these units. In recent years decisions have also been made to open combat positions to women in militaries with more active involvement in combat, such as the United States and the UK.

Until the 1990s, the US military prohibited stationing women in danger zones, but in the 2000s, as part of the campaigns in Afghanistan and Iraq, women were integrated in operational positions in combat zones. In 2013 the Secretary of Defense announced the cancellation of the restriction preventing women from participating in ground combat. The services were asked to implement the directive by January 2016, but were given the opportunity to request keeping certain specific positions closed to women. Studies conducted for the United States Special Operations Command (SOCOM) and the Marines did not find a basis to recommend that any positions be closed to women. Following this, in December 2015 the Secretary of Defense announced that women could fill any military position and serve in any unit, as long as they meet the necessary standards.

Today thousands of female combat soldiers serve in the IDF, constituting **17 percent of the army's fighting force.** As of today, 86 percent of positions are open to women. However, "spearhead" units, assault forces, and elite commando units remain closed to women.

Since then, there has been a slow but steady increase in the number of women integrating in combat positions in the United States Armed Forces. As of October 2019, in the Army there were hundreds of women serving in combat positions and over 1,000 women who had entered combat specializations; women are integrated in combat positions in the Navy, including in submarine staffs; and likewise in the Air Force. However, in the Marines there is still significant opposition to the integration of women, and in the special forces there are no women who have completed training. A report prepared in 2020 at the request of Congress stated that opening positions to women has expanded the potential to find suitable candidates and enhanced unit performance.

In the framework of NATO, in recent years studies and conferences have been held on integrating women in ground combat units, and a summary report was prepared with concrete recommendations.

The Arguments Opposing the Integration of Women in Combat Positions

Two principal sets of arguments against opening combat positions for women are raised: arguments on the protection of women from the dangers of the position; and arguments on the undermined performance of combat units due to the integration of women. In addition, it is argued that there are not enough suitable candidates to justify the investment required.

Protecting Women in the Military

Arguments that focus on protecting women serving in the military relate to three main aspects: protecting women from injury; protecting women from the mental stress involved in combat service; and protecting women from the risks of combat.

Thus, one central claim is that women are injured more than men due to the physical strain involved in combat unit positions and their lesser physiological capabilities. In a symposium held by the US Department of Defense, it was found that the gap in the extent of injuries stems from the gap in levels of fitness, and that when the level of fitness is the same, the risk of injury is the same for women and men. This is also the conclusion of a on the issue. The report recommended implementing preliminary training programs to build up the necessary fitness. Such programs were adopted in Australia, for example.

It was also found that the use of equipment that is not suited to the physiology of women leads to excess injuries. Accordingly, it was recommended to the US Department of Defense to obligate all military services to provide suitable equipment to the enlisted women; a similar recommendation was made to the Australian military. Additional recommendations for reducing injuries include ensuring appropriate nutrition, with an emphasis on iron and calcium, and encouraging the report of injuries at an early stage.

Two principal sets of arguments against opening combat positions for women are raised: arguments on the protection of women from the dangers of the position; and arguments on the undermined performance of combat units due to the integration of women.

Regarding women's potential difficulty in coping with the stress of serving in combat units, and in particular on the battlefield, studies have refuted this concern. A study conducted in the US military found that there is no significant difference in the impacts of stress involved in exposure to battle on the overall health of men and women. On the other hand, a correlation was found between the ability to cope with stress and the level of social support

that the person receives. Therefore, it was determined that it is important to ensure that women receive the support of their commanders and fellow soldiers to the same extent as the men in the unit.

Another more general argument regards protecting women from exposure to the risks of warfare. This is a paternalistic argument that can be rejected outright, as there is no substantive reason to define harm to women as more serious than harm to men. Moreover, on a practical level women have already served in active combat arenas, been taken captive, and been killed. This is the experience of Afghanistan and Iraq, as well as Israel, for example through service in the Border Police.

Protecting Unit Performance

Arguments of the second type, namely, that the integration of women would harm the performance of combat units, include the claims that integrating women would undercut the professional level due to a lowered acceptance threshold for the position; would harm the cohesion of the unit, which is based in part on "the band of brothers"; and that women would not be able to cope with combat situations well thus undermining the performance of the unit in such situations.

The argument that the inclusion of women would undermine the professional level assumes that there would be reduced standards in order to enable their integration in combat units, for example, by setting a lower standard of acceptance into the unit for women. However, this assumption is incorrect. NATO's recommendation is to set uniform physical standards for all candidates for positions, regardless of sex. It was explained that setting the proper standards is also important to help reduce injuries, in that they improve the suitability of those enlisting to the intended position.

At the same time, it was recommended to select tests that have minimal bias but still retain the ability to predict success in particular positions, and avoid tests in which there is a built-in preference for the physiology of men versus that of women, for example tests that focus on arm strength versus flexibility. Similarly, tests should be identified that have been retained for historical and cultural reasons that could lead to the mistaken conclusion that women are not capable of meeting the necessary standards for the position. In this spirit, various militaries have reassessed and adopted up-to-date standards, including the Canadian military in 2014 and the Australian military in 2016.

In order to improve women's chances of passing tests, it was recommended in NATO to hold about half a year of training adapted for women, in order to raise their level of fitness. Indeed, such pre-military training in Australia has been very effective, with 81 percent of women graduates successfully completing their basic training as combat soldiers.

Another argument is that the integration of women in combat units would harm the cohesion and performance of the units. This issue has been examined in depth in several studies. Soldiers in US mixed units who have returned from tours of duty have generally attested that the connection in integrated units was good, and even better than in all-male units. In addition, a study conducted for SOCOM that examined mixed teams operating in an environment parallel to that of teams from special units, such as FBI task forces and elite firefighting units, found that women demonstrated sufficient physical capabilities as well as mental strength and the willingness to take risks, and that their integration did not negatively affect the performance of the team. The report emphasizes the importance of distinguishing between sex and gender, and that positions should not be given or denied to women based on their "femininity," but only based on their capabilities.

Furthermore, the study made clear that mission cohesiveness, which relates to cooperation in carrying out the mission and achieving the objectives, is more important than social cohesion. Social cohesion can sometimes even cause damage when it creates situations of

group pressure or adopting problematic values. The study referred to previous studies which showed that the integration of women did not affect preparedness, cohesion, or morale, in particular in units in which cohesion is high. The team recommended ways to improve unit cohesion while focusing on professionalism and curbing negative dynamics, including harassment, and emphasized the importance of changing the organizational culture, from the highest levels down. The conclusion of the report is that fulfilling these conditions enables the full and effective integration of women in elite units.

Similar conclusions appear in a NATO report that also emphasizes the importance of changing the organizational culture and leadership on the part of commanders, from the most senior level down. The report relates to phenomena caused by the scarcity of women in units, such as excessive criticism and a need to succeed more than others; isolating and highlighting differences from others; adopting masculine behaviors and hiding feminine ones; and receiving positions that are stereotypical for women. The report presents practices adopted in various armies to deal with these phenomena.

Another argument that accompanies the debate in Israel – even if the IDF doesn't raise it explicitly – is that integrating women in combat units would make it difficult for some of the religious soldiers to serve in them. This issue goes beyond the scope of this article. However, in short one can respond that this is a problematic argument. The service of these men and women side by side is regulated by the "shared service" directive. Imposing additional restrictions on women, in the name of the need to keep them away from the company of religious soldiers, is unacceptable and a violation of women's fundamental rights, while preferring sectorial considerations. The concern regarding contact between religious male soldiers and female soldiers needs to be resolved vis-à-vis the male soldiers through established norms through education and means to train and work with women in a shared environment, and also, when needed, by creating men-only teams within the unit. The religious sensitivity of certain soldiers cannot mandate violating basic rights of other soldiers, in this case, female soldiers.

Another argument holds that women would have difficulty coping with the stress of performing under fire or in combat situations. This concern has been refuted in various studies, based on the practical experience of foreign armies. For example, the NATO report refers to the contribution of women in combat missions in Afghanistan, Iraq, and Syria. The issue is also discussed at length in the of an official American committee that quoted many former soldiers who attested that women functioned excellently in combat situations. General Hertling, commander of United States Army Europe, was quoted as follows: "Having served with women in combat, and having seen their courage and skills, I can personally say I have ZERO concerns about women on the front lines in combat units" (emphasis in the original).

Less Interest among Women in Combat Positions

A common claim is that there is no justification for undertaking the investment necessary for integrating women in combat units, as very few women are interested, and even fewer would succeed in meeting the threshold requirements. The low numbers of women serving in

combat units in armies that have opened all positions to women are presented as proof of this claim.
However, as determined in the Alice Miller case, the economic argument cannot in itself justify violating the basic right to equal opportunity. But beyond the normative argument, conclusions based on the scarcity of women in combat units in foreign militaries – i.e., that in Israel too there would be a negligible number of suitable candidates – should be made with caution.
First, in most militaries combat positions have only been opened to women in the last few years; this is a process that is still in its infancy, and on the rise. Furthermore, militaries that opened such positions decades ago have recognized that the way they were opened in the past was problematic and kept potential female candidates away, and steps are now being taken to improve the situation.
Moreover, most foreign militaries are professional armies that enlist a limited segment of the population, rather than all young men and women in the country. In addition, service, especially in combat units, involves traveling to distant countries and participating in missions that do not relate to direct defense of the homeland. What is more, military service is not central in the experience of most of these countries and is not a significant stepping stone toward advancement in the civilian world. Therefore, a military career is not especially attractive in the eyes of successful women. In contrast, in Israel there is mandatory service for women, such that high-quality women are obligated to enlist and enter the army; service is seen as meaningful and important for defending the homeland; it does not require traveling to distant places; and it has considerable impact on opportunities after discharge. Consequently, in Israel there is greater potential to identify high-quality female personnel that are suitable for combat units, in contrast with the situation in other countries.
Furthermore, in foreign militaries one of the central challenges in convincing suitable women to enlist and stay in the army is the serious phenomenon of sexual harassment, sexual assault, and rape. In the IDF the occurrence of sexual harassment, while not nonexistent, is much less spread than elsewhere, and incidents of sexual assault and rape are relatively rare. Therefore, these concerns would not keep women enlisting in the IDF from serving in combat units, especially given that in any case they are integrated in mixed units.

The Significance of Opening Combat Positions in the IDF to Women

Denying opportunities to women to serve in combat units has implications that go beyond the loss of opportunity to fulfill combat roles. First, it obviates the potential for suitable women to fill positions that are at the core of IDF activity and are considered positions of the utmost significance. Second, in the IDF it is accepted that central senior staff positions, particularly in operational fields, are given only to graduates of combat units. Thus, women are blocked from reaching these positions and rising up the ranks. Suffice it to see the scarcity of women at ranks of colonel and up, and even then, generally only in positions that are not operational, and the fact that to this day there have been only three woman at the rank of major general, two of them in the advocate general and court units (i.e., in professional disciplines, and not at the core of the military's operational activity).
Third, military service has considerable influence on the opportunities that open up after discharge and is a professional stepping-stone to integration in the employment world in Israel, particularly for high-ranking personnel, who advance to the business and political elite. Limiting the opportunities of women to reach senior positions in the IDF means undermining their opportunities for advancement in civilian life as well. Fourth, given that operational experience is often seen as essential for expressing professional opinions on matters of national security, there are scarcely any women in the decision-making circles in these areas.
Fifth, military service affects the shaping of personal identity at a decisive stage of maturation and development. When the message is that women are capable of less, this incorrect conception can also accompany them later in their lives.
Consequently, blocking the possibility of trying out for combat positions means constructing a thick, unbreakable glass ceiling above the heads of all female soldiers and officers in the IDF, both during their service and afterwards.
Beyond these considerations, opening all positions to women also benefits the IDF. The Segev report discussed better utilization of resources that would enable the IDF to exploit the full potential inherent in women, who are half of the population. This is also the conception that guides the foreign militaries working to increase the number of women serving in all positions.

Implementation and Recommendations for the IDF

The right to equal opportunity as part of military service is a moral and ethical obligation, in particular given that the IDF is the people's army and service is mandatory for men and women. According to the law, positions can only be closed to women when this is necessary "due to the nature and essence of the position." As shown in the comparative analysis, most Western militaries, after carrying out in-depth studies, have concluded that there are no positions whose essence and nature "require" closing them to women. There is no reason for this conclusion not to also apply to positions in the IDF.

Just as it is unthinkable that women would be denied the opportunity to apply for a certain position in civilian life because of their sex, this should also be the case in the IDF. The right to apply for a position means that whoever is not suitable, male or female, will not be accepted. Denying women the opportunity to even try out for certain positions just because of their sex offends the dignity of female soldiers. Consequently, it is necessary to cease the practice of selections and placements according to a person's sex, based on the model already defined in 2007 in the Segev Report as "archaic," and to adopt, as recommended there, a model of "the right person in the right place" – as is done in most Western forces.

Physical differences between the average man and the average woman do not justify blocking the placement of suitable women in all positions. This does not mean that the standards for acceptance to a position should be lowered, rather, that they should be reexamined in order to ensure that there suit the requirements of the position. In addition, tests should be adopted that preserve the ability to predict success in the position with minimal gender bias.

Even if only few women succeed in meeting the standards, they should not be denied the basic right to equal opportunities just because women, on average, do not meet these requirements. Furthermore, conclusions should not be drawn based on gender assumptions, for example, that women are by definition more delicate than men. It is also important to refrain from the tendency to treat a certain woman as representative of all women, such that her lack of success is evidence of the limitations of women in general, just as the failure of a man is not seen as representing the inability of all men. Each person should be judged individually.

Of course, injuries of IDF soldiers should be reduced as much as possible. However, the fear of injuries does not justify preventing the enlistment of women in combat units, just as it does not impede recruiting men for these units. Certainly women should be protected from unnecessary harm and injury, and the physiological differences between men and women should not be ignored. However, as a rule, women deserve the same level of protection as male soldiers deserve – no more, no less.

In order to reduce injuries, preliminary training should be encouraged, both in pre-military frameworks and in private frameworks, in order to reach a suitable level of fitness; the military equipment of female combat soldiers should be adapted to the bodies and needs of women; suitable nutrition should be ensured; and reports on injuries should be encouraged along with professional monitoring of the issue.

The experience of other militaries shows that women function well in combat situations. Moreover, because women already serve in positions that expose them to the dangers of terrorism and combat, it seems that the IDF has already crossed the Rubicon on this issue. Nor is there justification for treating the death or capture of a female soldier as more serious than the death or capture of a male soldier. Differential treatment of these situations reflects outdated conceptions that ignore the right of women to decide and fend for themselves.

Most Western militaries, after carrying out in-depth studies, have concluded that there are no positions whose essence and nature "require" closing them to women. There is no reason for this conclusion not to also apply to positions in the IDF.

Successfully coping with the mental stress involved in combat situations requires social support, and it is necessary to ensure that women receive this support. The key is in the hands of unit commanders, and senior commanders have responsibility for imparting these approaches. An appropriate environment and organizational culture that encourages the integration of women in units must be guaranteed. In addition, the IDF must ensure zero tolerance for incidents of sexual harassment and sexual assault, and deal harshly with such incidents. On this issue the IDF is a leader compared to other militaries, and it should continue to be a "light unto the nations" in this respect.

Presumably at first only a few women will succeed in being accepted into combat units, but any social change involves a prolonged process. It is necessary to overcome social conceptions that are instilled at a young age and devise ways to cope with a challenging masculine environment. This was the norm in every new area where women advanced – from secretaries to managers, from nurses to doctors, and so on. Therefore, a small number of candidates cannot justify completely preventing the acceptance of women, and the necessary adaptations should be made in order to enable the placement and service of women. Otherwise, a vicious circle will develop that perpetuates the continued exclusion of

women from these positions. As time passes, more women will try out for combat positions, and more women will succeed in completing the training. In order for this process to succeed, it is recommended that at first these positions only be opened to women who are interested in them. Only later might the compulsory placement of women in such positions be considered.
Any attempt to present the advancement of women in the IDF as clashing with the advancement of "victory" should be rejected. There is no doubt that the purpose of the IDF is to protect the security of the country. Blocking the path of women to combat units misses an opportunity to integrate high-quality and highly motivated personnel in these units. The integration of suitable and outstanding women in all positions, including the opportunities inherent in this process – enabling senior female officers to integrate afterwards in the decision-making forums of the IDF – will improve the IDF's capabilities both on the operational and strategic levels, and will increase the prospects of success in important missions. The integration of women in the decision-making circle is not only justified because women are half of the population, but also because studies
that the integration of women improves decision making processes and their results. Consequently, there is no clash between the value of equality and success in the IDF missions – on the contrary, the integration of women in all of the IDF's units will advance both equality and the pursuit of victory.

Pnina Sharvit Baruch - Col. (ret.) Adv. Pnina Sharvit Baruch is a senior research associate and head of the Law and National Security Program at INSS. She was formerly head of the IDF's International Law Department where she provided legal counsel to senior IDF personnel and the Israeli government relating to the laws of armed conflict and the occupation of territory, and other aspects of international law relevant to IDF activity.

EDITOR'S COMMENT: This is a good model for Greece facing the continuous Turkish bullying! But very difficult to implement given the mentality of modern Greeks even though Greek Armed Forces is for many years the most reliable entity in the country.

A Leader's quote

"Mes amis, si j'avance, suivez-moi! Si je recule, tuez-moi! Si je meurs, vengez-moi!"

(literal translation: "Friends, if I advance, follow me! If I retreat, kill me! If I die, avenge me!")

Henri du Vergier[3]

Pope Says NATO Might Have Provoked Russian Invasion of Ukraine

Source: https://www.wsj.com/livecoverage/russia-ukraine-latest-news-2022-05-03/card/pope-says-nato-may-have-provoked-russian-invasion-of-ukraine-E7VAcqXGK8xNoHxJPQFs

May 03 — Pope Francis said that the "barking of NATO at the door of Russia" might have led to the invasion of Ukraine and that he didn't know whether other countries should supply Ukraine with more arms. The pope at the same time deplored the brutality of the war and criticized the leader of the Russian Orthodox Church for defending the invasion in religious terms, warning that Patriarch Kirill of Moscow "cannot turn himself into Putin's altar boy."
Pope Francis made his remarks in an interview with Italian daily Corriere Della Sera. He described Russia's attitude to Ukraine as "an anger that I don't know whether it was provoked but was perhaps facilitated" by the presence in nearby countries of the North Atlantic Treaty Organization.
Meanwhile, Patriarch Kirill of Moscow delivered a sermon Tuesday at the Kremlin's Cathedral of the Archangel, falsely claiming that Russia never attacked another country.

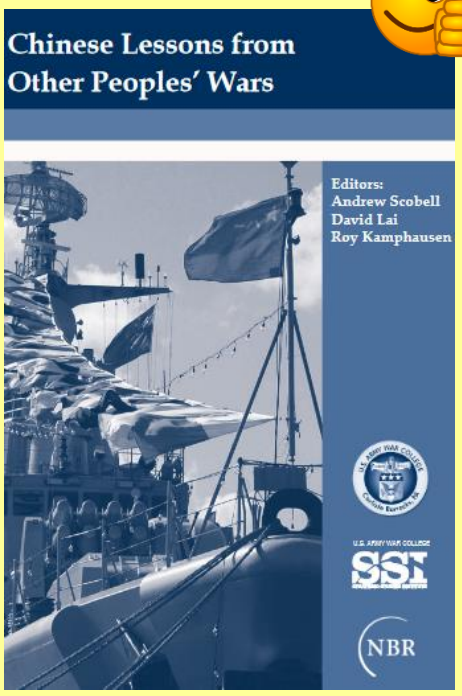
[3] French Henri du Vergier, comte de la Rochejaquelein (30 August 1772 – 28 January 1794) was the youngest general of the Royalist Vendéan insurrection during the French Revolution. At the age of 21, he served as commander-in-chief of the Catholic and Royal Army.

"We don't want to go to war with anyone, Russia has never attacked anyone," he said, in remarks carried by the Interfax news agency.
"It's amazing that a great and powerful country never attacked anyone," he added. "It only defended its borders."
Since February, Pope Francis has deplored the suffering of Ukrainians and denounced the invasion but refrained from explicitly naming Russia as the aggressor, reflecting both a Vatican tradition of neutrality and his own agenda of better relations with the Russian Orthodox Church, as well as a reluctance to align the Vatican with U.S. foreign policy.
"In Ukraine, it was other states that created the conflict," Pope Francis said in the interview, without identifying which states. He likened the war to other conflicts that he said were fomented by international interests: "Syria, Yemen, Iraq, one war after another in Africa."
"I don't know how to answer—I am too far away—whether it is right to supply the Ukrainians" with weapons, the pope said. "What's clear is that in this land arms are being tested… Wars are fought for this: to test the arms we have made."
In the past, Ukrainians have criticized the pope for describing their conflicts with Russia as "fratricidal," which they have said plays down Moscow's aggression.
The pope said that he was ready to travel to Moscow to meet with President Vladimir Putin to appeal for peace, but that the Kremlin hadn't responded to the offer. He said he told the Russian ambassador to the Vatican at the start of the war: "Please stop."

EDITOR'S COMMENT: This is a logical assumption that all people have in mind if not fanatic Westerners (whatever this is).

Beijing's Ukrainian Battle Lab

By David Finkelstein
Source: https://warontherocks.com/2022/05/beijings-ukrainian-battle-lab/



May 02 – Among those observing the Russian military's ongoing operations in Ukraine, few will be watching and assessing its performance more intensely than those in the Chinese People's Liberation Army (PLA). Analyzing the wars of other countries▶ continues to play an important role in Beijing's decision-making about military modernization, along with the PLA's own field experiments and its increasing use of big data, AI, and simulations. In the first phase of the Ukraine conflict, PLA analysts — who have traditionally held the Russian military in high regard — will undoubtedly find Russian operations wanting.
The People's Republic of China views the military element of national power, and natural resources, as Moscow's strong suits in its post-Soviet incarnation. Consequently, the success or failure of this operation will certainly color Beijing's views about the "comprehensive national power" of the Russian Federation in general and the state of the Russian armed forces in particular.
Second, assessing Russian operational performance may have very direct implications for the PLA's own recent and future reform and modernization choices. In 2016, the PLA underwent the most sweeping reorganization in its history in an attempt to better position itself to be able to fight modern information-age warfare. Some key aspects of that reorganization were based on what it learned from the United States. However, the PLA also incorporated lessons learned from Russia's New Look military reforms, which began in late 2008. The PLA's professional military journals often contain articles discussing the latest developments in Russian military affairs, as well as those taking place in the U.S. joint force. And of course, the Chinese and Russian militaries are close institutionally, conducting general staff talks and attending each other's schools of professional military education. In November 2021, the two signed a "roadmap for closer military cooperation, 2021-2025," which, among other things, aims to normalize combined naval and air patrols such as the one they conducted a month earlier, through the Tsugaru Strait north of Japan. Therefore, assessing Russian operational performance will be a high-priority task for PLA analysts as they move closer to their Russian counterparts.
Third, the Chinese and Russian armed forces have been conducting combined exercises with each other for many years. Russia's performance in Ukraine will provide the PLA with

a sense of the difference between training and actual combat. This issue is of great importance for the PLA, which is all too aware of the fact that it has not seen large-scale combat since it invaded Vietnam in 1979. However, the PLA views the Russian military as having significant combat experience, and comparatively speaking they are right. Since the fall of the Soviet Union, the Russian military has fought in Chechnya, Georgia, Crimea, eastern Ukraine, Syria, and now all of Ukraine. Therefore, PLA operations research analysts will be leaning into their computer terminals following and assessing how Moscow is faring in its latest deployment. One lesson they may draw is that even for militaries with extensive experience, war remains a difficult business.

Fourth, the technical performance of Russian weapons systems — their strengths and vulnerabilities — will be of particular interest. Although Beijing has a significant indigenous defense manufacturing sector, the PLA still has in its inventory Russian-manufactured or Russian-inspired weapons, systems, and platforms.

At this point, it is too early to state with high confidence what military professionals in China think they are learning from Russia's operations. Like others around the world, the PLA's analysts presumably are accruing data and trying to absorb what is unfolding in real-time, which is never easy. Moreover, the war in Ukraine is entering a new phase as the Russian military regroups and refocuses its operations in the east and southeast. More than likely, the PLA's best analyses will be done months from now. Nevertheless, we can engage in some modest but informed speculation about what we suspect will animate PLA attention at the operational and strategic levels of conflict.

At the operational level, PLA analysts will notice that Russian operations to date seem to be violating some of the PLA's time-honored "Basic Campaign Principles" (基本战役原则). Four in particular seem to have gone by the wayside. First, the Russian military has clearly underestimated the "enemy" while apparently overestimating its own capabilities, a significant shortcoming. The operative PLA campaign principle is "know the enemy and know yourself" (知彼知己). Next, based on the seemingly disjointed Russian operations conducted in the northern, eastern, and southern parts of Ukraine at the inception of hostilities, Moscow's operations will likely be judged to have violated the PLA campaign principle of "unified coordination" (协调一致). Third, apparent Russian problems with logistics and other combat service support functions will suggest to PLA analysts that Russia failed to follow the principle of "comprehensive support" (全面保障). Finally, from the very beginning, Moscow's military planners failed to adhere to, nor seemingly even attempted to achieve, the universal principle of war: "surprise," which the PLA's campaign principles state as "take the enemy by surprise" (出敌不意). Moscow's problems in this regard have been compounded by Washington's public deployment of intelligence, which should suggest to observers in Beijing the increasing difficulty in this day and age of achieving strategic-level surprise.

As long-time students of Russian doctrine, the PLA will likely be wondering, if not incredulous, about the apparent lack of "jointness" in Russian operations. Moscow's Ukraine campaign looks very much like ground-force-centric combined arms warfare — the very type of warfare that the PLA is trying to move beyond for major operations. In November 2020, after 20 years of experimentation, the PLA totally revamped its doctrine for joint operations. The new PLA paradigm for joint operations, known as "Integrated Joint Operations" (一体化联合作战), calls for unity of effort and integration among the services across land, sea, air, and key high-tech battlespace domains such as cyberspace, outer space, and the electromagnetic spectrum — all under a unified command and control structure. Moreover, the PLA intends to push joint operations down to the tactical level, whereas previously joint operations were reserved for large-scale campaigns. The Integrated Joint Operations concept is driving multiple dimensions of PLA activity — national and theater-level organizational structure, command-and-control authorities and architectures, the development of capabilities, training, as well as professional military education. Instead of demonstrating elegant 21st-century joint operations with high-tech assets — as the U.S. military does and the PLA aspires to be able to do — Russia, the PLA will observe, seems to be reverting to ground, air, and missile attacks employed as blunt instruments. These Russian operations do not exemplify the "operational art" that the PLA hopes to be able to implement. And because the PLA has been an ardent student, if not admirer, of Russian doctrine for decades, PLA strategists and planners can only be wondering, "why?"

Next, as the PLA is the "armed wing of the Chinese Communist Party," it is a political force as well as a military force. The PLA has a corps of political officers to enforce discipline, strengthen the link between the military and the party, attend to civil-military dynamics, and deal with the personnel aspects of warfare. As such, the PLA will pay close attention to reports about the human and cognitive dimensions of the war. PLA analysts will read reports about poor morale among Russian troops, alleged desertions, lack of tactical communications discipline, indiscriminate attacks against Ukrainian noncombatants, and accusations of war crimes. They will also pay attention to stories about protests in Russia by citizens who are opposed to "Putin's war" and Moscow's repressive responses. At the same time, PLA political officers and others will likely marvel at how well Ukrainian President Volodymyr Zelensky has wielded information warfare and strategic communications as a force multiplier. Indeed, Zelensky and the Ukrainian military are in fact practicing what the PLA refers to as the "Three Warfares" (三

种战法) — public opinion warfare, psychological warfare, and legal warfare. Reading these stories will undoubtedly vindicate for the PLA their continuing emphasis on "political work" (政治工作) among the troops and the local populace and will justify the PLA's new joint doctrine addressing both political work and national mobilization. These stories from the battlefields of Ukraine will also likely provide additional data points underscoring for political officers and others why the PLA must remain a political force. They will also raise questions about the efficacy of the post-Soviet iteration of the political commissar system in the Russian armed forces.

Beyond the operational and tactical, Russia's invasion of Ukraine and the international responses it catalyzed is likely generating discussions about larger order strategic-level issues, such as the implications of strong international economic sanctions for the future of Chinese national security, the ability of liberal democracies across regions to present a united front in the face of a common galvanizing threat, the inherent power of alliances, and the rapid return of the United States to a global leadership role. And while the government in Beijing denies any political parallels between the situation in Ukraine with that of Taiwan, the PLA and others may find both operational and strategic lessons from the Russo-Ukrainian war to be relevant to that scenario.

Among the weightiest strategic-level issues generated by the Russo-Ukrainian war will be the issue of nuclear deterrence. One can imagine that PLA analysts and others in the Chinese national security community will study the role that Russia's possession of a serious nuclear deterrent is playing in shaping the choices of the United States and NATO in their responses to Moscow's operations, including the early decision not to intervene militarily. Doing so will likely validate Beijing's decisions, made long before the Ukraine war, to increase the size and survivability of its nuclear arsenal. At the same time, it could also raise questions about the future efficacy of China's long-standing "no first use" nuclear doctrine. One suspects the nuclear issue will be looked at long and hard by Beijing's military and civilian strategists.

Overall, then, we should assume the PLA will devote considerable resources during and after this conflict to absorbing the lessons of Russia's invasion of Ukraine. If the past serves as prologue, there will be no rush to judgment. There will be symposia, conferences, debates, articles, and books dissecting all dimensions of the war. At the operational and tactical levels of war, those lessons will either validate or result in adjustments to issues such as doctrine, including tactics, techniques, and procedures, the optimal employment of systems, and even political work. Strategically, such lessons may even affect future nuclear doctrine and impact Beijing's calculus for the potential use of force. Officials in Beijing continue to state that this conflict is not something they wished to see. We should take that statement at face value. Nevertheless, the Russian military campaign is providing the PLA with another "battle lab" from which it will continue to learn as it studies the wars of other countries.

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Addressing the health challenges in immigration detention, and alternatives to detention: A Country Implementation Guide

Source: https://reliefweb.int/report/world/addressing-health-challenges-immigration-detention-and-alternatives-detention-country

- ✓ **Immigration detention is harmful to health - alternatives to detention should be used**
- ✓ **WHO/Europe calls for a more humane approach and for Member States to use alternatives to immigration detention**

May 04 – A new report by the WHO Regional Office for Europe finds that immigration detention can have a severe impact on migrants' health, especially mental health, during and after release from detention. International law clearly states that immigration detention should only be used as a last resort, and never for children, yet immigration detention remains widely practised across the WHO European Region.

Dr Hans Henri P Kluge, Regional Director for the WHO European Region, says: "My vision of 'leave no one behind' applies to everyone, including refugees and migrants because the right to health must be protected for all, regardless of status.

Over the last few years immigration detention has increasingly been used as a tool to manage migration flows in the WHO European Region. To protect the health of refugees and migrants, alternatives to detention should always be prioritized over detention measures, which can be akin to prison. Evidence suggests migrants in detention have the same or worse mental health outcomes as people living in prison."

About the report

The report was developed by the Migration and Health Programme of the WHO Regional Office for Europe in collaboration with the newly established WHO Collaborating Centre on Migration and Health Data and Evidence at Uppsala University in Sweden. Anders Hagfeldt, Vice-chancellor of Uppsala University, says: "Refugee and migrant health is an important aspect of an inclusive public health approach and sustainable societies. Uppsala University is proud to have partnered with the WHO Regional Office for Europe to develop this important publication to address the health challenges among one of the most vulnerable groups among migrants. The report serves as a guide for authorities on how to protect the health rights of refugees and migrants in relation to immigration detention and promote use of alternatives to detention."

EDITOR'S COMMENT: Two additional proposals: (1) Illegal immigrants could stay in their countries or follow the legal pathways if they are willing to come and WORK in Europe; and (2) Immigrants from detention facilities can be sent directly to Uppsala, Sweden because people there know how to treat them without adverse mental health outcomes. I will be not surprised if a future report concludes that detention centers at so-called Europe's Gates are responsible for the immigrant behavior in Sweeden.

Turkey's Defense Minister accuses Greece of instigating tensions

Source: https://www.keeptalkinggreece.com/2022/05/04/turkeys-defense-minister-accuses-greece-of-instigating-tensions/

May 04 – Turkish Defense Minister Hulusi Akar has accused Greece of instigating tensions in the Aegean Sea and the Eastern Mediterranean, adding that the country's naval forces are equipped to defend against perceived external threats.

"Greece, with provocations and actions during military exercises, is attempting to establish a de facto presence. We will not allow it," Akar said during a speech to military officials.

"We will definitely demonstrate our reaction to any action taken against us," he said.

"Our Air Force has exhibited the necessary reaction to [Greek] violations. Our Navy is already on alert. It is doing whatever is necessary to protect [Turkey's] maritime jurisdictions," he said.

Last week Turkish fighter jets pilots conducted a record of **168 violations of Greek airspace and dozens of overflights also over big inhabited islands** on a single day. Athens reacted with several protest notes and briefing the NATO and European partners on the issue.

How can I connect with a Ukrainian refugee?

Language is a "way to build empathy and connection with people around the world, and you can do this whether you know one word or 100," Duolingo, a free language-learning platform, writes on its "Essential phrases for helping Ukrainian refugees" blog.

No milk – really?

By the Editor

Along with much of the globe, US consumers are reeling from a cost of living and supply-chain crisis. One example is a shortage of baby formula caused by a constellation of factors, from rampant inflation to a massive recall over safety concerns (Abbott Nutrition contamination with the lethal *Cronobacter sakazakii*).

Russia is the world's largest exporter of natural gas and fertilizers and the second largest exporter of crude oil. Together with Ukraine, they account for about 1/3 of world wheat exports, 1/5 of maize exports, and 4/5 of sunflower oil exports.[4] Thus, the possibility of a prolonged war (as well as additional sanctions in Russia) may further exacerbate the supply side and derail energy and agricultural commodity prices. More specifically, the reduction in the production/supply of nitrogen fertilizers, based on natural gas, can be a blow to agricultural production. Rising prices for feed, fertilizers, and energy inputs are expected to increase production costs, reducing supply and increasing final commodity prices. Already, the increase in feed supply costs has translated into very high meat prices. On the other hand, a possible non-sowing in Ukraine could pose a risk of grain shortages, affecting, at least in the short term, the wider African region. At the same time, the drought in India, and the possible reduction in grain exports, may exacerbate the problem of grain availability. The declining food supply is expected to affect, at an initial level, those areas of the planet that are experiencing nutritional fragility.

On top of these problems, world military spending rises to almost $2 trillion in 2020.

Imagine how many of the above could have been solved or predicted if several countries focus on simple things like food, clean water, waste management, protection of the environment (recent brutal heatwave in India), and a few more instead of manufacturing weapons to sell to those envisioning empires and global dominance. Other countries that for a strange reason do not have heavy industries but still have excellent weather conditions favoring agriculture prefer to import almost everything from cucumbers to flowers. Many claims that humans are the most intelligent creatures on this planet. I am not sure anymore!

Non-Western US Allies on Ukraine: It's a Problem, but not Our Problem

By Jonathan Spyer

Source: https://www.meforum.org/63227/non-western-us-allies-on-ukraine-it-a-problem-but

May 11 – A noteworthy element of the war in Ukraine has been the contrast in response to it by the United States and key Western European countries on the one hand, and several U.S.-allied states located outside of the Western cultural and geographical core on the other.

Public discussion in the United States, Britain and other countries has primarily depicted the conflict in moral and historical terms. For example, U.S. political scientist and former senior official Eliot Cohen, writing in *The Atlantic* in April, contended, "For those of us born after World War II, this is the most consequential war of our lifetime. Upon its outcome rests the future of European stability and prosperity."

[4] Russia expects grain harvest to reach 130 million tonnes in 2022, including 87 million tonnes of grain, Putin said at a meeting of top economic officials in Moscow. In 2020, production reached 133.5 million tonnes of cereals, including 85.9 million tonnes of wheat. In 2021 the harvest was a little smaller.

In March, an article in *Foreign Affairs* suggested that the response to the Ukraine invasion could "consolidate a global alliance that unites democracies against Russia and China and thereby secures the free world for a generation to come."
Such language has not been limited to pundits and the media. In a speech delivered in Poland in late March, U.S. President Joe Biden drew parallels to World War II and the fall of the Berlin Wall.
This rhetoric has, unsurprisingly, not been entirely reflected in policy. The main countries of Western Europe are not unified in their response to the Ukrainian crisis. France, and particularly Germany, have been wary of adopting a confrontational stance toward Moscow. Germany is reluctant to absorb the enormous costs of an embargo on Russian gas. France has sought to mediate rather than choose sides and confront Russia.
Despite soaring rhetoric, the United States and Britain have made clear that they will not be sending their forces to challenge the invaders. At the same time, U.S. and British assistance to the Ukrainian military in the post-2014 period appears to have played a decisive role in enabling the impressive performance of the Ukrainian forces in the war, including, crucially, the frustration of Russian ambitions around Kyiv.
Washington and London also appear serious in their determination to increase arms supplies to the Ukrainians and enable them to continue resistance in the next phase of the war, that is expected to be focused in eastern Ukraine.
But the divisions among Western countries, and the gaps between rhetoric and action, even among the most determined elements, pale into insignificance compared with the gaps between the West and non-Western allied countries.
For example, India and U.S.-aligned Arab states have been notable for their sharp departure from Washington's position and marked unwillingness to commit to the Ukrainian cause. Israel's position, meanwhile, is interesting in that it stands somewhere at the midway point between the U.S./U.K. and E.U. position and that of non-Western U.S. allies.
India has consistently maintained a stance of non-alignment on Ukraine. This derives partially from the traditionally close defense relations between Moscow and New Delhi. Russia still accounts for 50% of Indian defense imports, though the levels of cooperation are in decline, while cooperation with the United States is increasing.
Despite public criticism from senior U.S. officials and a warning that the consequences of a "more explicit strategic alignment" with Moscow would be "significant and long-term," India has not budged from its stance. It abstained in the U.N. Security Council vote condemning the invasion. New Delhi has avoided public criticism of Moscow, sufficing with generalized comments regarding the need to respect the sovereignty of all states. However, India has called for an independent investigation into the killings in Bucha, Ukraine.
India's neutral stance on Ukraine is particularly notable given its increasing cooperation with the United States and the convergence of U.S. and Indian interests vis a vis the challenge of China and the Indo-Pacific. India is a member of the Quad, along with the United States, Japan and Australia, which Russia has criticized as a forum directed against China.
Given the country's importance and the limited aid it could provide Ukraine, India's stance on the Ukraine war appears unlikely to affect the growing closeness of U.S.-India relations. A virtual summit meeting between Biden and Indian Prime Minister Narendra Modi on April 12 appeared to confirm that while no change in the Indian stance on Ukraine was apparent, this would not have ramifications for the separate but equally vital arena of cooperation in the Indo-Pacific.
An Indian commentator, in conversation with the author, expressed the opinion that for India, the war between Russia and Ukraine constitutes a conflict between two European countries and lacked clear and immediate relevance for India. This seems to be a fair summation of the core Indian stance regarding this issue.

The United Arab Emirates and Saudi Arabia's stances have been similarly noncommittal. According to a report in *The Wall Street Journal*, in the early stages of the crisis, the leaders of both countries declined to take phone calls from Biden, who wanted to ask them to increase oil production to lower oil prices in European markets and reduce the harm that sanctions on Russia were causing.
Washington's requests came after a series of moves by the U.S. administration which disappointed and concerned Gulf states. These included a U.S. freeze of the UAE purchase of **F-35 fighter** aircraft and the failure to adequately respond to attacks by Iran-supported Houthis on Emirati and Saudi targets.
This comes within the context of ongoing negotiations with Iran, which are themselves a matter of concern for Saudi Arabia and the UAE. Further, the Biden administration continues the cold-shouldering of Saudi Crown Prince Mohammed bin Salman because of the killing of journalist Jamal Khashoggi.

In addition, Saudi Arabia and the UAE have billions of dollars in trade with Russia. Saudi Arabia signed a military cooperation agreement with Moscow in August 2021, and several procurement deals were subsequently signed.

The responses of the Gulf states appear to be a message to the United States that Washington should not take their support for granted. In recent years, a truism has emerged that a decline in Washington's need for Gulf oil has made the Gulf states less important in U.S. global strategy. The Ukraine crisis has demonstrated that this is not so.

The United States needs the Gulf states to act to maximize the efficacy of sanctions against Russia. The UAE and Saudi Arabia appear to be balancing between Washington and Russia.

Non-Western U.S.-aligned countries are not inclined to regard the Ukraine invasion as a historical watershed in global affairs. This also applies to Bahrain and Qatar, and further afield, to Brazil and Mexico. They have declined to participate in sanctions against Russia.

In a more complex and partial way, it also applies to Israel. Israel has taken a more proactive stance in supporting Ukraine than any non-Western U.S. allies. It has voted to support Russia's expulsion from the U.N. Human Rights Council and provided a haven for around 12,000 non-Jewish Ukrainian refugees.

Jerusalem has, however, stopped short of active participation in sanctions against Moscow. This is the critical issue that could trigger Russian countermeasures such as decreasing cooperation regarding Israeli actions in Syrian airspace.

Israel regards the prevention of further Iranian advancement in Syria as a key strategic goal. Russian acquiescence is an essential and possibly crucial factor in this. Unsurprisingly, this perceived core strategic interest accounts for Israel's stance regarding the Ukraine war.

The stances of Western-aligned Middle Eastern and Asian countries about the Ukrainian invasion reflect significant geopolitical changes. In the case of India's position, one may detect a self-confidence deriving from a sense that the crucial contest for the United States in the period ahead is that with China, which will be conducted in Asia. From this point of view, New Delhi is aware that it is likely to pay little or no penalty for its equivocal stance on Ukraine simply because the stakes for the United States in Asia are too high.

Former Indian National Security Adviser Shivshankar Menon wrote in *Foreign Affairs*, "From an Asian perspective, the war in Ukraine doesn't augur shifts to come so much as it underlines a shift that has already taken place ... Today, the center of gravity of the world economy has moved from the Atlantic to the east of the Urals. Geopolitical disputes and security dilemmas that could affect the global order are concentrated in maritime Asia."

From the corresponding Middle Eastern point of view, the sense of partial U.S. disengagement from a focus on the Middle East brings the urgent need for Western allies to develop their regional-level structures of strategic cooperation. This process is revealed by the growing levels of cooperation between Israel and key Western-aligned Arab states such as the UAE and Egypt.

For such mid-level regional powers, avoiding non-essential friction with a major power like Russia is seen as an imperative, particularly in a situation where consistent support from their U.S. patron is by no means a given. The urgent common threat they face is from Iran, not Russia. Their response to the Ukraine situation is perhaps analogous to that of European countries regarding the Iranian project for domination of the Middle East. This may be summed up with a degree of cynicism: it's undoubtedly a problem, but it's not my problem. Thus, at least as of now, the responses of non-European Western allies to the Ukraine war seem to suggest a more fragmented and localized global strategic picture rather than a return to a Cold War-style international contest between democracies and their allies and a rival alliance of Russia and China, as predicted by many Western observers.

This more localized reality should not be seen simplistically. The alliance with the United States will remain a fundamental element linking the countries mentioned above. In the Middle Eastern context, the involvement of CENTCOM as the U.S. military structure with responsibility for the Middle East is serving to facilitate improved bilateral relations between regional states.

Yet, the lighter U.S. footprint in the region is set to afford greater independence and freedom of action for allied countries. For example, this is demonstrated by Israel's determined prosecution of its campaign against Iran, even during ongoing U.S. efforts to conclude a renewed nuclear agreement. This greater independence of action, coupled with reduced U.S. guarantees, appears to be the new norm. Unlike in the period of the Cold War, neither Russia nor China today constitute closed autarkic blocs. A situation of two closed camps, each trading only within its camp and armed exclusively by its superpower patron, does not appear to be emerging and is unlikely to occur. This means that the notion of U.S.-aligned countries forming a united front against a closed alliance of Russian and Chinese allied countries is unlikely to be realized—a more complex, interlocking strategic reality beckons. The responses of U.S.-aligned countries to the Ukraine war provide an example of things to come.

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Sheikh Mohamed bin Zayed elected President of the UAE

Source: https://www.thenationalnews.com/uae/government/2022/05/14/sheikh-mohamed-bin-zayed-elected-president-of-the-uae/

May 14 – Sheikh Mohamed bin Zayed, Ruler of Abu Dhabi, has been elected the country's president.
The official announcement followed a meeting in Abu Dhabi of the rulers of the Emirates.
He becomes the third president in the UAE's history, following the death of Sheikh Khalifa on Friday.
State news agency Wam reported the decision by the Federal Supreme Council, which comprises the rulers of which comprises the rulers of the seven emirates.
The President, Sheikh Mohamed "expressed his appreciation for the dear trust that his brothers, their highnesses, members of the Federal Supreme Council, have entrusted him with, praying that Almighty God helps him succeed, helps him in taking on this great responsibility and meeting it in serving the UAE and its loyal people", in comments published by Wam.
Sheikh Mohammed bin Rashid, Vice President and Ruler of Dubai, offered his congratulations.
"Today, the Federal Supreme Council elected my brother, His Highness Sheikh Mohamed bin Zayed Al Nahyan, as President of the State," he wrote on Twitter.
"We congratulate him and we pledge allegiance to him, and our people pledge allegiance to him."
The council held a meeting at Mushrif Palace, Abu Dhabi, chaired by Sheikh Mohammed.
Present were Sheikh Mohamed bin Zayed, Sheikh Dr Sultan bin Muhammad Al Qasimi, Ruler of Sharjah, Sheikh Humaid bin Rashid Al Nuaimi, Ruler of Ajman, Sheikh Hamad bin Mohammed Al Sharqi, Ruler of Fujairah, Sheikh Saud bin Rashid Al Mualla, Ruler of Umm Al Quwain and Sheikh Saud bin Saqr Al Qasimi, Ruler of Ras Al Khaimah.
Sheikh Dr Sultan, Ruler of Sharjah, said: "As he has witnessed the UAE's renaissance from a young age, accompanied by the late Sheikh Zayed bin Sultan Al Nahyan, Sheikh Khalifa bin Zayed Al Nahyan, and the Founding Leaders, President His Highness Sheikh Mohamed bin Zayed Al Nahyan has significantly contributed to UAE's development and achievements due to his wise vision, constant support and direct guidance. "We congratulate President His Highness Sheikh Mohamed bin Zayed Al Nahyan, and ask Allah Almighty to grant him success and prosperity. "We affirm our permanent solidarity in serving the nation and preserving its union under his wise leadership."
A statement by the Ministry of Presidential Affairs said that, according to Article 51 of the Constitution, Sheikh Mohamed bin Zayed was elected unanimously. On Saturday, Sheikh Mohamed is receiving condolences over the death of his brother Sheikh Khalifa from the rulers and senior Emirati officials. Foreign diplomats and leaders are expected to visit to pay their respects and meet the new president in the coming days. Dr Anwar Gargash, diplomatic adviser to the President, said: "The smooth transition of power in the UAE reflects the strength of institutional work and the advanced standards of governance and stability. "We thank God for the blessing of the UAE and pledge allegiance to Sheikh Mohamed bin Zayed. May God protect him as President and leader."

EDITOR'S COMMENT: I read this in an article – a small sample of leader quality material: "*In the early 1990s, Mohamed bin Zayed told Richard Clarke, then an assistant secretary of state, that he wanted to buy the F-16 fighter jet. Clarke replied that he must mean the F-16A, the model the Pentagon sold to American allies. Mohamed said that instead, he wanted a newer model he had read about in Aviation Week, with an advanced radar-and-weapons system. Clarke told him that that model did not exist yet; the military had not done the necessary research and development. Mohamed said the UAE would pay for the research and development. The subsequent negotiations went on for years, and according to Clarke "he ended up with a better F-16 than the U.S. Air Force had".*

Must read

Encouragements à Monsieur Jacques Myard

- ✓ Source (in French): https://ripostelaique.com/encouragements-a-monsieur-jacques-myard.html
- ✓ Source (in Greek): https://www.militaire.gr/o-pragmatikos-logos-toy-polemoy-metaxy-ipa-nato-kai-rosias-stin-oykrania-i-apopsi-enos-galloy-axiomatikoy/

Why Israel Needs Prepositioned U.S. Materiel

By Seth J. Frantzman

Source: https://www.meforum.org/63233/why-israel-needs-prepositioned-us-materiel

May 12 – The U.S. is rushing billions of dollars in military assistance to Ukraine as Kyiv struggles to contain a Russia invasion and push Moscow back. The total bill could come to $33 billion over the next few years, the White House has indicated. This is unprecedented, and it comes with a snag: The supply pipeline for weapons that Ukraine needs is already breaking down. Washington may face shortfalls of Stinger missiles, Javelins and other munitions. This highlights how essential it is that other U.S. partners and allies, such as Israel or Taiwan, receive the munitions they need to prepare for potential confrontations with Iran and China, respectively.

Israeli weapons stocks need replenishing with precision-guided munitions, such as these Javelin anti-tank missiles being unloaded in Ukraine in February.

There is an urgent need to plan ahead, in terms of replenishing stockpiles at home and abroad, and to make sure that America's allies have the right weapons before a war breaks out. The reason for this is threefold. First, providing partners with the right weapons helps to deter enemies. If Ukraine had more air defense systems prior to Russia's invasion, it is possible that Moscow would have been deterred. Russia believed it could decapitate Ukraine through a quick dash to Kyiv. That Ukraine prevailed in the first month of the war was not predictable. Most Western governments had moved diplomatic staff out of Kyiv, assuming it would be overrun or contested in battle.

Now Western diplomats and leaders are returning. However, it is too late for millions of Ukrainians driven from their homes by fighting. Now we have to play catch-up, rushing weapons piecemeal to Ukraine, often with Ukrainians not receiving proper training. The rush to find old Soviet-designed tanks and planes to provide Ukraine is also not ideal, and shows that a missed opportunity took place in not arming Ukraine earlier. We neglected to arm Ukraine to deter Russia out of the theory that this might provoke Moscow — but Russia was "provoked" anyway.

In August 2020, the Jewish Institute for National Security of America (JINSA) argued that Israel needed support from Washington to help replenish stockpiles of weapons, such as precision-guided munitions. JINSA said at the time about the stockpile, known as WRSA-I: "For decades, American officials have stated repeatedly how this arms depot, which Israel pays to maintain, helps support Israel in emergencies and ensures its ability to defend itself at acceptable cost — its qualitative military edge — something U.S. law requires the United States help uphold."

The danger of Israel not having the right munitions against a threat from Iran or its proxies is on display with the slow progress of the passage of $1 billion to fund replenishment of interceptors for Iron Dome. Israel needs to be ready to confront not only Hamas and Hezbollah, but also Iraq-based, pro-Iranian militias and new drone threats from Iran. Toward that end, Congress is working on a Stop Iranian Drones Act. However, deterring Iran from acting on these threats requires close work on the weapon systems that could stop Iran. The U.S. and Israel cooperate closely on missile defense, an example of how Washington can work successfully with allies to prepare for growing threats abroad.

Stockpiling the right weapons and deterrence are only two of the benefits of planning ahead and learning from the Ukraine war. A third element is that, by building up the defenses of partners and working more closely with them to deter adversaries, the U.S. can reduce the chances of war breaking out. This would mean that Washington could concentrate on domestic crises, such as inflation, and focus on one conflict at a time.

The world is rapidly changing as near-peer adversaries such as China prepare to challenge the United States. America's enemies want to overturn the world order. U.S. partners and allies express concern that the U.S. no longer is focused enough on their interests in places such as the Middle East. Providing the right defense systems could help to assuage these complaints.

Better to do that than to wait for the next threat to emerge and then try to rush missile interceptors or anti-tank weapons abroad.

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

EDITOR'S COMMENT: This is not an Israeli problem only. All the countries supported by the United States might face the same problem – i.e., Greece, Sweden, Finland, and for a certain country (other than Israel), the need might be crucial

European solidarity …

EUROVISION SONG CONTEST TURIN 2022

Ukrainian song won the 66th Eurovision 2022 song competition (631 votes) mainly because of the Russian invasion.

In 1976, Greece sent a protest song ("*Panagia mou, Panagia mou*" with singer Mariza Koch) with reference to the Turkish invasion of Cyprus that had occurred two years earlier. This resulted in Turkey's disinclination to broadcast the Greek entry, and instead aired a nationalist Turkish (belly dancing) song. At the same time, Durch organizers suggested canceling the appearance on the stage because a sniper was intending to kill the singer while there were hundreds of Turkish protesters demonstrating outside the area of the competition – the singer refused to comply. That year, Greece finished 13th with 20 points (France: 8; Italy 5; Iceland 4; Belgium 2 and Portugal:1).

SWAT Team Members as Amateur Inventors Who Make a Difference

Source: https://www.homelandsecuritynewswire.com/dr20220519-swat-team-members-as-amateur-inventors-who-make-a-difference

May 19 – Special Weapons and Tactics (SWAT) teams routinely enter dangerous situations where they need to make difficult, potentially life-and-death decisions. They're expected to be ready for anything, think outside the box, and problem-solve on the fly. As is often the case, challenging circumstances such as these present a prime opportunity for innovation. It is no wonder these responders are often amateur inventors as well. They have some serious scientific backup when it comes to bringing their creations to the front line.

Developing Do-it-Yourself Solutions

The Science and Technology Directorate (S&T's) says it leverages the power of technology to solve homeland security challenges, and S&T's Research and Prototyping for Tactical Operations (RAPTOR) program is an example of that. Similar to the Response and Defeat Operations Support (REDOPS) program, which supports bomb squads, RAPTOR enhances the safety, efficiency, and effectiveness of our nation's SWAT officers. This happens through evaluation of existing and emerging technologies—many of which are designed by officers themselves, borne out of their personal experiences—in realistic operational environments. RAPTOR held its first operational assessment in late 2019, and the results are now influencing SWAT equipment acquisitions and tactics, techniques, and procedures development.

RAPTOR has grown to support tactical operators in the first responder community more than ever with the introduction of a Micro Research and Development (R&D) program last year. Like the REDOPS Micro R&D program, the RAPTOR initiative provides identification, validation, and publication of "do-it-yourself" tools that meet immediate operational needs. S&T says that thanks to the REDOPS Micro R&D program, which started in 2016, more than 40 tools have been built by more than 200 different bomb squads. It is expected that as RAPTOR Micro R&D continues, there will be a similar or even greater impact compared to what REDOPS has done for bomb squads. There are more than 10 times as many SWAT teams as bomb squads in the United States, but no other federal program is specifically focused on meeting their needs.

"Both RAPTOR and REDOPS leverage commercial-off-the-shelf R&D solutions discovered by real-life responders," explained S&T program manager Byung Hee Kim. "Both programs provide a structure for solving tactical operators' critical issues. S&T fosters these solutions

with the ultimate goal of safeguarding first responders' lives and the lives of those they're sworn to protect."
In December 2021, the first three S&T-validated RAPTOR Micro R&D tools were published to TRIPwire—a secure online portal managed by the Department of Homeland Security. SWAT team members across the country can now log in and view detailed instructions for how to replicate these ingenious devices, outlined below, which were created by their own colleagues.

Responders Sticking with a Clever Contraption

Lieutenant Joshua Collins of the Michigan State Police Department Bomb Squad needed a safe method for looking around corners, through open doorways, and into darkened spaces like attics and crawlspaces. To solve this dilemma, he designed the Thermal Pole Camera—a clever tool based on a modified selfie-stick, of all things. However, instead of capturing social media-ready portraits, it is protecting lives. Until recently, Lieutenant Collins led the bomb squad with the most published inventions in the entire country. In the case of the Thermal Pole Camera, he was inventing a tool to support his SWAT team.

The **Thermal Pole Camera** is designed to plug directly into a smartphone accessory port and allow users to peer into completely dark areas and find concealed persons by heat signature. Free downloadable software lets users adjust the thermal camera and take still photos, record video, and conduct temperature measurements. To reduce physical exposure in potential threat areas, validation teams from other bomb squads experimented with mounting the thermal camera onto different-sized selfie sticks and attaching it to the smartphone with an extension cable so it can be used from a safe distance. This combination of parts proved an effective, low-cost search option for tactical operations.
The device is now regularly used by SWAT teams during search warrants to visually inspect areas of unknown risk prior to sending an officer in to clear the area. It is also used to search structures that technicians cannot easily access and in barricade situations where a suspect's location is unknown. Additional commercial applications could include detection of heat gain or loss from various structures by home contractors. The thermal camera is also useful as a non-contact thermometer to measure hot and cold surfaces and chemical reactions.
"I think as we move forward, we will find the RAPTOR Thermal Pole Camera a valuable addition to our electronic devices that helps us complete our missions effectively as well as safely," said Corporal Clint Collier of the Springfield, Missouri, Police Department Special

Response Team. Collier and his colleagues were part of the original build validation during the publication development process. They found the device to be incredibly useful and have continued to refine it. Recent modifications have allowed responders to attach a phone or tablet to the back side of a ballistic shield, with the camera pointed over the top of the shield for searches.

Opening the Door to New Devices

Fully securing perimeters is a common limitation for tactical teams. Barricade responses to larger homes, with multiple points of egress, pose a significant challenge when seeking to safely secure all sides and prevent the escape of a dangerous subject. To solve this problem, Pete Coletta of the Shelby County, Tennessee, Sheriff SWAT team developed a novel solution for temporarily and effectively securing doors on residential construction.

Historically during barricade responses, personnel would need to keep watch and cover all potential exit doors. Using Coletta's clever **Tactical Door Blocker** (TDB) frees up personnel for other tasks. The device can work on numerous different door types and sizes and is built using common parts available from most hardware stores. Placing the TDB is quick and nearly silent, it does not damage the door, and it is easily removable. The TDB is also useful in preventing persons from inadvertently entering an area, like an apartment hallway, during an explosive breach.

A Bright Idea for Going Dark

Sometimes, during a prolonged response, cover and concealment from streetlights is necessary to protect responders from potential bad actors. The standard operating procedure has historically been to shoot out the lights or disable them with a less-lethal round. This proved to be both difficult and expensive when Anaheim, California, upgraded its streetlights with light-emitting diode (LED) lights.

To solve this problem, Brian Liest of the Anaheim Police Department developed the **Streetlight Cover**—an improvised tool that enables a SWAT operator to quickly mask a streetlight. Blackout curtain fabric and an extension pole comprise the ingenious solution, which completely blocks the illumination of the streetlight without damaging it. Operators can deploy the tool from behind shelter, and at the end of the response, the covers can be quickly removed.

EuroBarometer 2022

EU asked its citizens if they agree with EU financing Ukraine to buy weapons while at the same time EU donates more weapons

	Very satisfied	Rather satisfied	Rather not satisfied	Not at all satisfied	Don't know
EU27	9	45	25	14	7
BE	5	51	21	12	12
BG	3	25	41	24	8
CZ	10	42	27	13	8
DK	20	55	13	5	8
DE	8	41	28	15	8
EE	18	58	12	6	6
IE	17	50	16	13	5
EL	11	20	23	-- 66% -- 43	3
ES	6	44	28	14	8
FR	6	51	24	12	6
HR	6	45	27	11	11
IT	6	48	28	14	4
CY	8	31	27	27	8

LV	13	51	16	9	12
LT	23	46	15	9	6
LU	8	46	18	15	13
HU	19	33	23	16	9
MT	9	39	26	13	13
NL	6	54	22	9	9
AT	7	42	28	15	8
PL	15	43	22	14	6
PT	6	59	23	6	6
RO	16	47	19	11	7
SI	7	32	29	20	12
SK	6	33	29	26	7
FI	22	58	11	3	7
SE	10	50	21	9	10

Final Course Completed for INTERPOL-Project STADIA

Source: https://express.adobe.com/page/hZGa6IRGrYxbR/

International participants of the final Project STADIA course

May 19 – INTERPOL-Project STADIA and NCS⁴ are proud to announce the conclusion of the second round of the Project Stadia Major Event Security Program. Held May 10-13 in Lyon, France, 16 students representing 13 countries completed the sixth and final capacity-building course for police commanders and incident management leaders, covering several

crucial topics relevant to policing and securing major international events. NCS⁴ instructors for this course were Paul Denton and Seaton King.

Like the previous courses in the series, *The Advanced Safety and Security Management for Major International Sporting Events Training Course* is a scenario-based practicum designed by international subject matter experts to allow police commanders and incident management leaders to develop a series of plans for a major international sporting event and test the effectiveness of their plans during a multi-hour incident-response exercise.

The course supports the more comprehensive curriculum content in the six-course series by allowing participants to use a multi-day planning process to develop an event management plan and consider various contingencies for a major international sporting event. The course included an immersive exercise to explore the life-cycle of a major international sporting event through intelligence and information sharing, risk assessment, crowd management and crowd control planning, protective action planning including evacuation and shelter-in-place, event management and incident action planning, and considering transportation and traffic management, mass casualty incident, and crisis communications.

Who cares if Hagia Sophia will not make it to 2050?

Evángelos Odysséas Papathanassíou (1943-2022), known professionally as Vangelis, was a famous Greek musician, composer and producer of electronic, progressive, ambient, and classical orchestral music.
His music accompanied spacecraft Juno travel to moon Ganymede and Jupiter (2021).

Doped up and holed up: Once militants' drugs run out, they'll give up, predicts Russian MP

Source: https://tass.com/politics/1447827

May 06 – Pro-Nazi Ukrainian radicals entrenched in the Azovstal steelmaking complex in Mariupol will lay down their arms once they run out of the powerful narcotic drugs that they are taking, Deputy Chairman of the Russian State Duma (the lower house of parliament) Committee on CIS Affairs, Eurasian Integration and Relations with Compatriots Viktor Vodolatsky told TASS on Friday.
"Every prisoner of war and every dead nationalist that I have seen, had 300 grams or more of special narcotic pills in their backpacks, which is what they use. One pill causes rage while the other numbs the pain. The Azov nationalist battalion has plenty of these narcotics stocked up. They will hold their ground in Azovstal until they run out of these drugs. And once they do, they will start experiencing withdrawal that will drive them to surrender," the senior Russian lawmaker assured.

Meldonium (left), for which athletes were once disqualified, has already been found among the items left by Azov workers in Azovstal. As well as anti-histamine Dimedrol (right) and other prescription drugs.

Mentioning where these drugs came from, Vodolatsky pointed out that they had been provided to Ukraine's military as part of Western aid. According to him, the assistance kit

also contains a third type of tablet that's anti-allergic. "This is how they are 'taking care' of nationalists: they give them that drug so that they don't die too soon from popping all those pills," the lawmaker added.

/ FEATURES, OPINION & ANALYSIS

It's not a Freudian slip, it's guilty conscience

The Herald

23 MAY, 2022 - 00:05 0 COMMENTS 2 IMAGES


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Editor's question

Are the Azof Battalion's fighters trapped inside Azovstal using Captagon[5] pills (or similar)? (source)

Perspectives on Terrorism

Volume XVI (1), 2022
Source: https://www.universiteitleiden.nl/perspectives-on-terrorism/archives/2022#volume-xvi-issue-2

The current issue features one **Article** by *Andreas E. Feldmann* and *Marc Lopez* on 'Repertoires of Terrorism in Mexico's Criminal War'. In addition, it features two **Research Notes**. The first, by *Ely Karmon*, discusses the relationship between India and Israel in the field of counter-terrorism. The second, by four researchers at Harvard University—*Megan McBride, Marley Carroll, Jessa Mellea,* and *Elena Savoia*—is a literature review comparing the phenomena of targeted violence and domestic terrorism in the United States. The **Resources** section features, in its CT-Bookshelf, a number of short reviews by our book reviews editor, *Joshua Sinai*. This is followed by a longer of review of a new book by three authors from Leuven university (Belgium) on 'The Nexus Between Organized Crimes and Terrorism' by *Alex Schmid*. Our information resources editor, *Judith Tinnes*, offers an extensive bibliography on Islamophobia (it will be paralleled by one on Anti-Semitism in a future issue of our journal). *Brody McDonald*, has compiled a clickable list of academic theses on victims of terrorism. *Berto Jongman* contributes another of his wide-ranging surveys of recent online resources on terrorism and related subjects, with special sub-sections on the conflict in the Ukraine. In **Announcements**, *Olivia Kearney* presents her regular "Conference Calendar" which, due to the ongoing COVID-19 pandemic, is still dominated by online meetings. Finally, the **About Perspectives on Terrorism** section lists the people behind the journal and their tasks.
The texts of the current issue of Perspectives on Terrorism have been selected and prepared by *Alex Schmid* and *James Forest*, the journal's principal editors. Editorial Assistant *Jodi Moore* handled proof-reading, while the technical online launch of the April 2022 issue of our journal has been in the hands of our Associate Editor for IT, *Audrey J. Vrolijk* (ISGA, The Hague).

Resources

- Counter-Terrorism Bookshelf: 8 Books on Terrorism & Counter-Terrorism-Related Subjects
  Reviewed by Joshua Sinai
- Book Review: Letizia Paoli, Cyrille Fijnaut and Jan Wouters (Eds.). The Nexus Between Organized Crime and Terrorism. Types and Responses. Cheltenham, UK: Edward Elgar Publishing, 2022
  Reviewed by Alex P. Schmid
- 40+ Full-Text Academic Theses (M.A. and Ph.D.) on Victims of Terrorism, Written in English Between 2003 and 2021
  Compiled and selected by Brody McDonald
- Recent Online Resources for the Analysis of Terrorism and Related Subjects
  Compiled and selected by Berto Jongman

An eye-opening portrait of bin Laden, drawn from his personal files

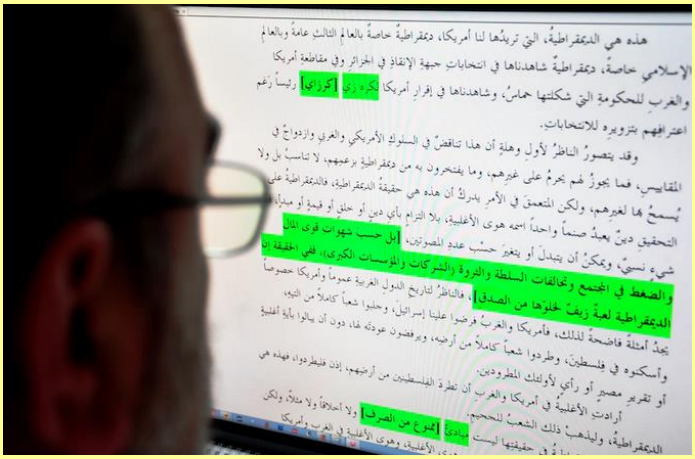
By Karen J. Greenberg
Source: https://www.washingtonpost.com/outlook/2022/04/15/an-eye-opening-portrait-bin-laden-drawn-his-personal-files/

Apr 15 – On May 1, 2011, nearly 10 years after the devastating attacks of Sept. 11, 2001, President Barack Obama and his national security team huddled in the Situation Room, eyes glued to a video screen, as U.S. Navy SEALs in full combat gear entered Osama bin Laden's hideout in Abbottabad, Pakistan. Less than an hour later, bin Laden was dead.

[5] These illicit pills often contain "a mix of amphetamines, caffeine [,] and various fillers", which are sometimes referred to as "captagon with a lowercase C. Fenethylline [a codrug of amphetamine and theophylline] is a popular drug in Western Asia, and is allegedly used by militant and terrorist groups in Syria. It is manufactured locally by a cheap and simple process.

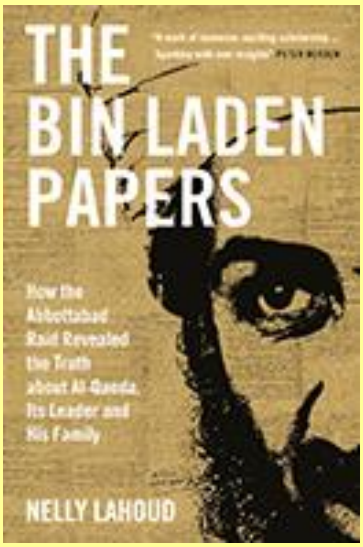
Along with bin Laden's body, the SEALs collected a "treasure trove" of documents. "We not only took out the symbol and operational leader of al-Qaeda," a triumphant Obama reported, "we walked off with his files," a "mountain of intelligence." The vast cache of files ranged from video games to intimate records of family conversations, from lines of poetry penned by bin Laden's third (of five) wives to drafts of bin Laden's speeches and statements, carefully revised and scrupulously edited by his daughters.

After extracting what was deemed "actionable intelligence," the U.S. government began declassifying portions of the archives, releasing 470,000 documents in 2017. Terrorism scholars plunged in. The U.S. Military Academy's Combating Terrorism Center reported on bin Laden's disagreement with the tactics and strategy of regional franchise groups. Terrorism expert Peter Bergen wrote about bin Laden's attempts to micromanage the affairs of al-Qaeda from afar, his frustration with the group's sitting on the sidelines during the Arab Spring and the potent influence of his wives' advice.



A journalist in May 2012 looks at a declassified document that was found by U.S. troops during the raid that killed Osama bin Laden in Pakistan the previous year. After extracting intelligence, U.S. officials eventually would release 470,000 documents recovered during the raid. (Karen Bleier/AFP/Getty Images)

Now Nelly Lahoud, a seasoned expert on the global jihadist movement, has given us "The Bin Laden Papers: How the Abbottabad Raid Revealed the Truth About al-Qaeda, Its Leader and His Family," a comprehensive, meticulously constructed and eye-opening look at bin Laden as husband, father and leader-in-hiding. Unusual and somewhat off-putting, Lahoud relies on first names throughout — "Usama" for bin Laden; "Ayman" for al-Zawahiri, the Egyptian who succeeded bin Laden as head of al-Qaeda; "Abu Musab" for al-Zarqawi, the founder of al-Qaeda in Iraq (AQI). Nonetheless, it is an engaging and persuasive read.



The bin Laden who emerges from these pages surprises. After 9/11, "global jihad was on autopilot," Lahoud tells us, and in her estimation al-Qaeda was experiencing "operational impotence." She disputes al-Qaeda's long-standing reputation as "a Leviathan in the jihadi landscape," an image she acknowledges lasted until bin Laden's death. Instead, she shows us a man in defeat, essentially imprisoned in his hideout in Pakistan, separated from children and wives whom he longed to have by his side, often at odds with new militant groups, and intent on reemerging onto the global stage, a conquering hero at last.

Expanding upon her image of al-Qaeda's powerlessness and ineptitude, Lahoud challenges the mostly unquestioned assumption of the group's role in high-profile strikes such as the July 2005 attack on the London transit system. "Everything in the bin Laden papers," Lahoud writes, "indicates that al-Qaeda could not have been behind the [London] attacks." Similarly for the Madrid bombing in 2004 and the disrupted 2006 plot to use liquid explosives on transatlantic flights. Lahoud finds it "inconceivable" that al-Qaeda "had the wherewithal to mount international attacks."

Along the way, Lahoud's analysis debunks some of the most sacred narratives of terrorism experts. Contrary to the 9/11 Commission report's conclusions, she tells us, Khalid Sheikh Mohammed was not the mastermind of those attacks. Instead, she directs us to bin Laden's notes scribbled on a sheet titled "The Birth of the Idea of September 11," in which he credits another man — Egyptian pilot Gameel al-Batouti — with providing the inspiration for the attacks, albeit posthumously and unintentionally. (Federal officials blamed Batouti for crashing his plane into the Atlantic near Nantucket in 1999, killing 217.)

Lahoud also reinforces some earlier scholarly challenges to common assumptions. She agrees with those who have posited a "a closer relationship" between Mohammad Omar, the head of the Taliban, and bin Laden, reasoning that Omar might have "agreed to let Usama carry out the 9/11 attacks in return for the assassination of [Ahmad Shah] Masoud," the head of Afghanistan's Northern Alliance, the U.S. partner in defeating the Taliban. And she weighs in on debates over the impetus for the 2004 formal merger between al-Qaeda and Zarqawi's AQI, the predecessor to the Islamic State, seeing it as a way of helping bin Laden reassert his group's relevance despite his being in hiding.

Perhaps most consequential for the history books is her dismissal of the generally acknowledged identity of the courier who led the Americans to bin Laden. It was not, she argues, bin Laden's bodyguard but rather a Pakistani businessman who had no idea that he was serving as a middleman.

Lahoud fails to debate, here or elsewhere, whether bin Laden may have intentionally distorted the record at important junctures; all told, however, experts will probably find themselves compelled to revisit many of their assumptions based on her reading of the papers.

Ultimately, "global jihad itself, [bin Laden] came to realize, had been ill-conceived," Lahoud writes. He set out to refocus al-Qaeda's resources on the United States as the primary target of committed jihadists and allied groups. Intent on attacking "the income of every American citizen," bin Laden aimed to "directly affect the security and economy of the American people as a whole." He grew fixated on the 10th anniversary of 9/11, banking on it as the occasion for announcing his new vision. He even planned a public statement outlining "a new phase to correct the mistakes we made." Meanwhile, in meticulous detail, he designed a plot to blow up U.S. oil tankers in hopes of "thrusting America into a severe economic crisis."

But neither the statement nor the plot materialized. Four months before the anniversary, the SEAL team stormed bin Laden's compound. Subsequently, Younis al-Mauritani, the man tasked with leading the attack on the tankers, was apprehended.

When all is said and done, Lahoud leaves us wondering: If bin Laden's "post-9/11 goals did not go beyond empty threats, unexecuted plans, and more than a little wishful thinking," then how are we to understand the persistent, ever-expanding U.S. policy focused on al-Qaeda and its supposed existential threat?

Lahoud contends that the misassessments "diverted valuable resources away from other more threatening jihadi groups," allowing "the Islamic State to eclipse al-Qaeda." Retired four-star general Joseph Votel, formerly head of U.S. Central Command and U.S. Special Operations Command, concludes, "Our involvement in Afghanistan and Pakistan might have been different," noting, "We might have overestimated our foe."

But an even more fundamental concern emerges from Lahoud's analysis, one that deserves as much scrutiny as these archives: Is it possible for the United States to avoid making these miscalculations in the future? If not, how much more blood and treasure might we lose, and how many more unintended consequences may come our way?

Karen J. Greenberg is the director of the Center on National Security at Fordham Law and the author of "Subtle Tools: The Dismantling of American Democracy From the War on Terror to Donald Trump."

Osama bin Laden's second-strike plans against US after 9/11 revealed: Derail trains, blow up oil tankers

Source: https://www.wionews.com/south-asia/osama-bin-ladens-second-strike-plans-against-us-after-911-revealed-derail-trains-blow-up-oil-tankers-473774

Apr 25 – Osama Bin Laden, a global terrorist, had planned a second strike on the United States shortly after the tragic 9/11 terror attack in 2001, which killed over 3,000 people.

After bin Laden's killing in 2011, US Navy SEALs found and declassified documents that indicated how the then-al-Qaeda leader supported the **use of private jets rather than passenger planes** to carry out a follow-up strike after 9/11.

The documents also revealed how bin Laden urged his followers to cut 12 meters off US railroad tracks in order to trigger a dramatic derailment that he thought would kill hundreds of people.

The train derailment plot was first reported in 2011, when it was claimed that bin Laden planned to send a crowded train careening off a bridge into a valley.

Nelly Lahoud, a diligent Al-Qaeda researcher, combed through thousands of Osama Bin Laden's personal letters and notes taken by US Navy SEALs in Pakistan 11 years ago.

According to Nelly, Osama bin Laden was likewise startled by the way the US conducted its attacks in Afghanistan.

According to the released documents, the Al-Qaeda chief believed that American citizens would take to the streets and put pressure on their government to leave the Muslim-majority country.

The records also stated that since the United States was behind him, Osama did not communicate with his associates for three years.

In 2010, Osama planned another attack in the Middle East and Africa, this time targeting many crude oil tankers and significant transportation routes.
He had advised that the operators impersonate fishermen in the port districts. He'd even told his subordinates where to find certain boats that could evade radar.
Following Osama bin Laden's death, Ayman al-Zawahiri, Osama's second-in-command, is in charge of Al-Qaeda.

Editor's Question

What if, in the next major terrorist incident American/Western weapons given to Ukraine are used (e.g. MANPADS)?

Terrorism in prisons

By Tim Dieppe
Source: https://thecritic.co.uk/terrorism-in-prisons/

May 07 – A report published last week by the Independent Reviewer of Terrorism Legislation entitled *Terrorism in Prisons* marks a step forwards in the recognition of this problem.
It makes for some stark reading.
The report, written before the conviction of Ali Harbi Ali for the Islamic motivated murder of Sir David Amess MP, notes that "the last four completed terrorist attacks in Great Britain have been carried out by prisoners serving their sentences in custody … or on licence in the community".
It points out that prisoners' intent on encouraging terrorism "might find it easier to radicalise others if they were imprisoned for breaching their orders" than if they were out in the community. The report cites evidence that there are Islamist gangs in many prisons, adopting a stance "that condones or encourages violence towards non-Muslim prisoners, prison officers and the general public".
These gangs have been found to have "dominated the prisons in numbers and influence". The report states that fear amongst prison staff and prisoners enables "extremist prisoners to exercise significant power and influence within the prison".
Alarmingly, the author notes, "I was told that prison officers sometimes appeal to the wing 'emir' for their assistance in maintaining good order." "Emir" is the Arabic word for "commander" that is generally used to refer to the dominant Muslim prisoner on a prison wing.
Terrorist offenders "occupy positions of influence" in these gangs and are "sought out and promoted".
This gang culture glorifies terrorist behaviour and gives terrorist offenders a "perverse esteem". Prisoners have, for example, shown support for the Manchester Arena bombing. Videos promoting Islamic State propaganda have been found in prisons, and the report states that, "It is highly likely that materials like these are currently being used to influence and reinforce violent views among inmates."
The report notes that encouragement of terrorism is a criminal offence, as is expressing support for terrorist groups. It argues that such offence should be properly dealt with, and the Terrorism Acts amended to ensure that these offences can be prosecuted when carried out in prison. It is "unnecessary to use the ambiguous terms 'extremist' or 'extremism'"; we can refer to these as terrorism related violence or offences.
The report notes that Islamist gangs can seek to control behaviour in the prison through
"the use of sharia courts and punishment (including flogging); undermining the prison Imam at Friday prayers or boycotting official Friday prayers; making insincere allegations of racism and Islamophobia or mistreatment against staff to delegitimise staff authority; acting collectively to intimidate staff when their behaviour is challenged; demanding to wear certain clothes or refusing to participate in work or activities; refusing to be searched by female staff; assaulting other prisoners for faith-based reasons."
Discussion of Islam has become a "no-go area" for prison staff who are afraid of being accused of discriminating against Muslims. This leads to a reluctance to challenge Islamist group behaviour. In some cases, Muslims have sought to "exclude staff from attendance at Friday prayers" or to impose conditions on entry such as staff removing shoes.
Disturbingly, the author notes that he found some prison governors who "took the view that cooperation with police and partners should simply be refused because it was likely to cause too much trouble to the good order and discipline of the prison".

He argues, "Reducing the risk of terrorism in prison and amongst prisoners ought to be a core part of the governing governor's remit." It is actually quite incredible that governors would refuse to cooperate with police, and this means that reducing terrorism and cooperating with the police certainly need to be part of the governor's remit.

The proportion of prisoners who are Muslim has increased from 8 per cent in 2002 to 18 per cent in 2021. That is more than one in six prisoners being Muslim. A 2014 report found that 27 per cent of prisoners in London are Muslim — that is more than a quarter. This compares with Muslims accounting for around four per cent of the general population, and 14 per cent of the London population. As for prison chaplains, as of 2018 there were 61 full-time equivalent Muslim prison "chaplains" (nearly 40 per cent of all chaplains working in prisons), compared with 157 Christian prison chaplains.

This makes the Prison Service one of the largest employers of Muslim religious professionals in the country. One such Imam actually banned a Christian pastor, Pastor Paul Song, from chaplaincy work because he regarded the pastor's evangelical materials, including the well-known Alpha Course, as too radical.

Pastor Song complained about Islamic extremists hijacking his Bible meetings, and praising the killer of Fusilier Lee Rigby. He feared for his own safety in the prison, and warned that Muslim gangs were being allowed to act with impunity and were intimidating inmates to convert to Islam.

The recommendations from the report are helpful so far as they go, but they do not go nearly far enough.

Of course, governors should be formally accountable for reducing the risk of terrorism in prisons. It's quite incredible that they have been able to ignore the problem up to now. **There should be zero tolerance for promoting or glorifying acts of terrorism in prisons.** If the Terrorism Acts need amending to enable this, then let's amend them. It is clear that this is an urgent and growing problem.

I wrote an article in 2020 on How to tackle the Islamisation of prisons. In that article I put forward eight concrete proposals for changing the culture of the prison system. At heart, we must recognise the Islamic motivation of most convicted terrorists. As the report says, "The current terrorist threat in prisons in England and Wales is Islamist terrorism. There is no other comparable threat." This is not a coincidence. I have explained in detail before why Islam is not a peaceful religion. This needs to be recognised, rather than trying to pretend otherwise.

There needs to be a wholesale change of culture whereby prison staff are not afraid to challenge Muslims and even criticise their beliefs.

As I said before, "Prison staff should be given training in how to challenge the claims of Islam when they conflict with British values. They should be encouraged and supported in challenging Islamic ideology, rather than left in fear of being called racist for doing so. Instead of being intimidated they should be emboldened." Also: "Books, pamphlets and other resources which challenge the claims of Islam, from a Christian perspective should be openly provided in all prisons, including testimonies from Muslim converts to Christianity."

What we really need is more chaplains like Paul Song who are willing to go into prisons and see prisoners converted and radically changed. Chaplains like him should be encouraged and promoted rather than banned from prisons. If you know a Christian who works in prison ministry, do encourage them and pray for them.

Let's also pray that the government listens to this report and decides that prison culture has got to change.

Tim Dieppe is Head of Public Policy at Christian Concern. His special interest is in Islamic affairs.

US designation reveals Turkey functions as a hub for ISIS financial lifeline

Source: https://nordicmonitor.com/2022/05/us-designation-of-isis-financier-reveals-turkey-as-a-hub-for-financial-lifeline-for-jihadist-group/

May 11 – The recent designation by the US Treasury of a Turkish-based ISIS financier reveals the failure of a crackdown on terrorist organizations by the Islamist government of President Recep Tayyip Erdoğan.

On Tuesday the Department of the Treasury's Office of Foreign Assets Control (OFAC) designated Muhammad Dandi Adhiguna, (aka Adhiguna Lesmana Dandi), an Indonesian national who lives in

Turkey's central province of Kayseri, as a financial facilitator who helped move funds for ISIS. The designation confirms a pattern in which ISIS has been tapping the financial system in Turkey to fund its network while the authorities shy away from clamping down on ISIS cells.

The information provided by OFAC shows that ISIS is able to finance its militants and operations in the north of Syria, especially in areas where the Turkish Armed Forces (TSK) and its affiliated armed groups exert control. Similar findings were also noted by UN Security Council sanction committee reports which stated that both ISIS and al-Qaeda have managed to raise funds in areas under Turkey's jurisdiction.

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SPECIALLY DESIGNATED NATIONALS LIST UPDATE

The following individuals have been added to OFAC's SDN List:

ADHIGUNA, Muhammad Dandi (a.k.a. ADHIGUNA LESMANA, Dandi; a.k.a. ADHIGUNA, Dandi Muhammad), Kayseri, Turkey; DOB 30 Jul 1996; POB Gresik, East Java, Indonesia; nationality Indonesia; Gender Male; Secondary sanctions risk: section 1(b) of Executive Order 13224, as amended by Executive Order 13886; Passport B 0547698 (Indonesia) (individual) [SDGT] (Linked To: SUSANTI, Dwi Dahlia).

HERYADI, Rudi, Bogor, West Java, Indonesia; DOB 21 Sep 1973; POB Cirebon, West Java, Indonesia; nationality Indonesia; Gender Male; Secondary sanctions risk: section 1(b) of Executive Order 13224, as amended by Executive Order 13886; Passport B 2315612 (Indonesia) issued 15 Nov 2015 (individual) [SDGT] (Linked To: ISLAMIC STATE OF IRAQ AND THE LEVANT).

KARDIAN, Ari, Cempakawarna Rt, Tasikmalaya, West Java, Indonesia; DOB 16 Feb 1990; POB Tasikmalaya, West Java, Indonesia; nationality Indonesia; Gender Male; Secondary sanctions risk: section 1(b) of Executive Order 13224, as amended by Executive Order 13886; Passport A 8799177 (Indonesia) expires 28 Aug 2019 (individual) [SDGT] (Linked To: ISLAMIC STATE OF IRAQ AND THE LEVANT).

RAMADHANI, Dini, Kayseri, Turkey; DOB 10 Mar 1993; nationality Indonesia; Gender Female; Secondary sanctions risk: section 1(b) of Executive Order 13224, as amended by Executive Order 13886; Passport B 4286562 (Indonesia) (individual) [SDGT] (Linked To: SUSANTI, Dwi Dahlia).

SUSANTI, Dwi Dahlia, Idlib, Syria; Kel. Sambonjaya, Kec. Mangkubumi, Tasikmalaya, Indonesia; DOB 28 Jul 1976; nationality Indonesia; Gender Female; Secondary sanctions risk: section 1(b) of Executive Order 13224, as amended by Executive Order 13886; Passport B 3306967 (Indonesia); Identification Number 1976072819980320O1 (Indonesia) (individual) [SDGT] (Linked To: ISLAMIC STATE OF IRAQ AND THE LEVANT).

According to the OFAC designation, Adhiguna, 26, has been working closely with Dwi Dahlia Susanti, an Indonesian woman and ISIS financial facilitator. Adhiguna helped her not only in financial matters but also in operational methods. Within the triangle of Turkey, Indonesia and Syria, the two worked together in delivering cash to ISIS cells to enable family members of ISIS to move into more secure areas in Idlib, Deir ez-Zor and Raqqa as well as to recruit young men to the ranks of ISIS.

US Treasury designation of five individuals on ISIS links

The US move came amid the 16th meeting of the Counter ISIS Finance Group (CIFG) of the Global Coalition to Defeat ISIS, a group of nearly 70 countries and international organizations led by the US, Italy and Saudi Arabia.

"Today, Treasury has taken action to expose and disrupt an international facilitation network that has supported ISIS recruitment, including the recruitment of vulnerable children in Syria," said Under Secretary of the Treasury for Terrorism and Financial Intelligence Brian E. Nelson. "The United States, as part of the Global Coalition to Defeat ISIS, is committed to denying ISIS the ability to raise and move funds across multiple jurisdictions," he added.

ISIS sympathizers in more than 40 countries have sent money to ISIS-linked individuals in Syria in what the US believes to be in support of ISIS's future resurgence. The designation identified the al-Hawl displacement camp in the north of Syria where ISIS members received up to $20,000 per month, with a majority of the funding coming through Turkey. "ISIS is particularly focused on smuggling children out of displaced persons camps for recruitment as fighters," the US noted.

Secretary of State Antony Blinken said Monday that by designating them, the Biden administration aims "to expose and disrupt an international ISIS facilitation network that has financed ISIS recruitment, including of vulnerable children in Syria."

Kayseri, a conservative province in the heart of Turkey where Adhiguna is based, is a stronghold of the ruling Justice and Development Party (AKP), led by President Erdoğan. The province is a hotbed of radicals, from al-Qaeda to ISIS. Many who were detained as suspects in ISIS or al-Qaeda investigations were let go, leaving only a few to be formally arrested and even fewer to be indicted and convicted.

The bulk of successful ISIS convictions, already rare in the lower courts, have been thrown out by senior judges who appear to follow the lenient guidelines of the Erdoğan government when it comes to cracking down on jihadist groups.

The political pressure on judges and prosecutors who were asked to go easy on jihadists began in 2014, when the Erdoğan government started removing judges, prosecutors and police chiefs who were investigating radical groups in Turkey.

The dismissed officials were accused of links to the Gülen movement, led by Turkish Muslim cleric Fethullah Gülen, who has been an outspoken critic of the Erdoğan regime due to pervasive corruption and Turkey's aiding and abetting of jihadist groups in Syria and Libya.

More than 130,000 civil servants have been dismissed by the government with no effective judicial or administrative investigation, 4,560 of whom were judges and prosecutors, and were replaced by pro-Erdoğan, Islamist and neo-nationalist staff. As a result of the massive purge, the Turkish judiciary and law enforcement authorities have become tools in the hands of the Islamist government of President Erdoğan and his allies.

Thousands of militants, both Turkish and foreign, have used Turkish territory to cross into Syria with the help of smugglers in order to fight alongside ISIS groups there. Turkish intelligence agency MIT (Milli İstihbarat Teşkilatı) has facilitated their travel, with Kilis, a border province in Turkey's Southeast, one of the main crossing points into ISIS-held territory. Human smugglers were known to have been active in the border area, although Turkish authorities often overlooked their trips in and out of Syria.

There have been some cases, however, in which ISIS suspects were detained and indicted on terrorism charges. But very few resulted in convictions in the lower courts. The decision of Turkey's Supreme Court of Appeals to overturn rare cases of conviction of suspects on ISIS terrorism charges set an important precedent in Turkey's criminal justice system. The ruling will effectively render to zero the chances of convicting an ISIS member on terrorism charges in the lower courts.

Turkish officials do not disclose the number of successful convictions in ISIS cases and decline to respond to parliamentary questions asking for such information. Instead, they often float figures on the number of detentions and arrests, which in many cases result in release and acquittal.

Erdoğan announced on October 10, 2019 that there were around 5,500 ISIS terrorists in Turkish prisons, of which half were foreign nationals. Yet, on October 25, 2019 then-Justice Minister Abdülhamit Gül stated at a press conference that there were 1,163 ISIS arrestees and convicts in prison.

Responding to a parliamentary question on July 21, 2020, Gül said 1,195 ISIS members were in prison either as convicts or suspects in pretrial detention. Of these, 791 were foreign nationals, he added. He declined to say how many had actually been convicted.

Interior Minister Suleyman Soylu told lawmakers in parliament in November 2021 that law enforcement agencies conducted 1,173 operations against ISIS in 2021, detaining 2,438 suspects. Only 487 of them were formally arrested by courts. He did not give the number of convictions.

Global Coalition Readying 'Holistic' Assault on Islamic State in Africa

By Jeff Seldin (*VOA national security reporter*)

Source: https://www.homelandsecuritynewswire.com/dr20220511-global-coalition-readying-holistic-assault-on-islamic-state-in-africa

May 11 – Overshadowed for months by Russia's war in Ukraine, the ever-present threat from Islamic State is again being thrust onto the global stage, with the United States voicing hope that it is not too late to prevent the terror group from turning yet another continent into a dangerous playground.

Officials from 85 countries and a handful of organizations, including the Arab League, NATO and Interpol, are in Marrakech, Morocco, this week for the Global Coalition to Defeat ISIS' first ministerial in Africa.

Co-hosted by Morocco and the U.S., the meeting will focus on "ways to sustain pressure on ISIS remnants globally," according to a State Department statement issued Tuesday. But U.S. officials who spoke to VOA prior to Wednesday's ministerial said that much of the focus will be on Africa, where the threat from Islamic State, also known to coalition members as ISIS, IS and Daesh, has been percolating.

"It's a very serious threat," said Doug Hoyt, the acting deputy envoy for the Global Coalition to Defeat ISIS. "We're talking thousands [of fighters]."

"Most troubling is the ISIS affiliates that are currently active in the sub-Saharan continent because the numbers are extraordinary, and they have a lot of territory to play around with," he said.

Growing West African Presence

U.S. and Western military and counterterrorism officials have warned for years that the IS banner, if not the group's ideology, has been catching on in parts of Africa, particularly West Africa.

The strongest and largest IS affiliate in Africa, according to many officials and intelligence shared with the United Nations, is IS-West Africa, based in Nigeria.

Having muscled out the area's al-Qaida affiliate, Boko Haram, IS-West Africa is thought to have as many as 5,000 fighters across Nigeria, Cameroon and Niger.

Another affiliate, IS-Greater Sahara, operates with as many as 1,000 fighters in Benin, Ghana and Togo.

And IS-Mozambique, buoyed by as many as 1,200 fighters from the local group known as Ahlu Sunna wal-Jama'a, is also growing, according to information provided to the U.N., building on notoriety from its brief capture of the key port of Mocimboa da Praia in August 2020.
More recently, the U.S. has raised concerns about the ability of IS-Mozambique to access the international financial system through facilitators in South Africa.
Intelligence shared with the U.N. finds that other IS affiliates, while smaller, continue to hold on in countries such as Somalia, where IS fighters number in the low hundreds, and Yemen.
The terror group has also managed to maintain a foothold in Morocco and in Libya, where almost two-thirds of its members are thought to come from eight other African nations. Yet aside from Libya, IS' growth has been fueled by what Western officials describe as a sound and savvy strategy that continues to rely on locals. "Governing in some of these territories is a challenge, and I don't see it turning around," the State Department's Hoyt told VOA. "What we're seeing ISIS do is look at local grievances, start recruiting based on that, and suddenly, they're (the recruits are) part of a greater caliphate," he said.
"They've got the people and the populations to draw on locally," Hoyt added, warning that "the numbers are getting bigger."
The coalition's desire to focus on the terror group's spread across Africa is not new.
Former U.S. Secretary of State Mike Pompeo broached the idea in November 2019.
And last June, the coalition announced the formation of an African task force, noting the need for a "holistic approach" instead of one based primarily on leveraging military force.

Targeting Islamic State

Heading into the ministerial, U.S. officials were adamant that military force alone would not likely be effective. "It's not going to be military hardware, tanks," Hoyt said, emphasizing that the coalition is applying lessons from efforts to defeat and degrade IS in Syria and Iraq. "We're not going to get pulled into any local war or skirmish or anything like that. "We are talking about civilian-led capacity building. That's border security. That's collection of biometric evidence. That's information sharing. That's a focus on the judicial processes," he said. U.S. officials also emphasized that the new efforts to counter IS' growth across Africa will be designed to complement existing efforts by the coalition's European partners and the various African nations themselves, including efforts in Nigeria, Niger and the Democratic Republic of Congo.

Deepening Cooperation

There will also be a focus on growing the coalition. Already, Benin is set to join the coalition's 17 other African members, and others will be welcome even if they choose not to join. "We're looking at observers sometimes, partners that … can't necessarily join the coalition for various reasons but that are key players," said Dexter Ingram, acting director of the State Department's Office of the Special Envoy for the Global Coalition to Defeat ISIS. "Look at a country like Mozambique," Ingram told VOA. "Mozambique, basically, when it came to fatalities last year, it was in the top 10 worldwide when it comes to terrorist attacks. Well, they're not part of the coalition, but we want to make sure that we're talking with them — that they're at our meeting to focus on Africa and have a seat at the table." And the sales pitch, especially in Africa, Ingram said, is that countering IS does not always have to be a heavy lift. Sometimes it just involves making use of capabilities that already exist.
"What we want to do is take information that's low-hanging fruit and connect the dots," he said. "If we get a fingerprint and it connects to a fingerprint off a bomb in Iraq or Mozambique or Mali, and that connects to a taxi driver in the U.K.[Britain] or in Prague, that's a win."

More Mass Shootings Are Happening at Grocery Stores – 13% of Shooters Are Motivated by Racial Hatred, Criminologists Find

By Jillian Peterson and James Densley

Source: https://www.homelandsecuritynewswire.com/dr20220516-more-mass-shootings-are-happening-at-grocery-stores-13-of-shooters-are-motivated-by-racial-hatred-criminologists-find

May 16 – An apparently racially motivated attack at a supermarket in Buffalo, New York, resulted in 10 deaths on May 14, 2022, with the teenage suspect allegedly targeting Black shoppers in a prominently African American neighborhood.

Mass public shootings in which four or more people are killed have become more frequent, and deadly, in the last decade. And the tragedy in Buffalo is the latest in a recent trend of mass public shootings taking place in retail establishments.
We are criminologists who study the life histories of public mass shooters in the United States. Since 2017, we have conducted dozens of interviews with incarcerated perpetrators and people who knew them. We also built a comprehensive database of mass public shootings using public data, with the shooters coded on over 200 different variables, including location and racial profile.

What Do We Know About Supermarket Mass Shootings?
Only one shooting in our database prior to 2019 took place at a supermarket. In 1999, a 23-year-old white male with a history of criminal violence killed four people at a supermarket in Las Vegas. However, there has been a raft of mass shootings at American supermarkets since.
The Buffalo shooting on May 14, 2022, is similar to an August 2019 shooting at a Walmart in El Paso, Texas. On that occasion, the 21-year-old white suspect posted a racist rant on social media before allegedly driving some distance to intentionally target racial and ethnic minority shoppers. He has been charged with killing 23 people.
Another shooting in 2019 took place at a Kosher grocery store in Jersey City, New Jersey. Two perpetrators, a man and woman, both Black and around the age of 50 with a criminal and violent history, murdered four people before being killed in a shootout with police. Social media posts and a note left behind indicated an antisemitic motive.
Then in March 2021, a 21-year-old man of Middle Eastern descent with a history of paranoid and anti-social behavior entered a King Soopers in Boulder, Colorado, and shot dead 10 people. Six months later, in September 2021, a 29-year-old Asian man killed one person and injured 13 others at a Kroger supermarket in Tennessee. The perpetrator, who worked at the store, was asked to leave his job that morning. He died by suicide before the police arrived on the scene.

No one Profile of a Retail Shooter

Mass shootings are socially contagious. Perpetrators study other perpetrators and learn from each other, which may explain the rise in supermarket shootings in the past few years. However, the data shows there is no one profile of a supermarket mass shooter.

Racial hatred is a feature of about 10% of all mass public shootings in our database. Our analysis suggests that when it comes to retail shooters, around 13% are driven by racism – so slightly above the average for all mass shooting events.
Some grocery stores by their nature may be frequented predominantly by one racial group – for example, Asian markets that cater to local Asian communities.
But racial hatred appears to be just one of many motivations cited by retail shooters. Our data points to a range of factors, including the suspect's own economic issues (16%), confrontation with employees or shoppers (22%), or psychosis (31%). But the most common motivation among retail shooters is unknown (34%).
Like the Buffalo shooter (photo), 22% of perpetrators of retail mass shootings left behind something to be found, a "manifesto" or video to share their grievances with the world. And nearly half of them leaked their plans ahead of time, typically on social media.
The lack of a consistent profile doesn't leave us helpless. Our research suggests many strategies to prevent mass shootings – from behavioral threat assessment to restricting access to firearms for high-risk people. And the way to stop the social contagion of mass shootings is to stop providing perpetrators with the fame and notoriety they seek.

Jillian Peterson is a Professor of Criminal Justice @ Hamline University.
James Densley is a Professor of Criminal Justice @ Metropolitan State University.

Ukraine War: Will the Islamic State Benefit?

By Cathrin Schaer (DW journalist)
Source: https://www.homelandsecuritynewswire.com/dr20220518-ukraine-war-will-the-islamic-state-benefit

May 18 – In the middle of last month, the extremist group known as the "Islamic State" issued a threat. The group announced "a blessed campaign to take revenge" after their leader was killed in a US military raid in Syria in February.
At the same time, the extremist group, which controlled around a third of Syria and Iraq at the height of its powers, also called on supporters to take advantage of opportunities presented by the war in Ukraine. While "infidel" Western nations were preoccupied, "Islamic State" supporters could attack, the message suggested.
Meanwhile, a magazine openly supporting al-Qaeda — another similar extremist organization that the IS group distanced itself from in 2013 — proposed that its supporters somehow get hold of weapons being handed out to civilians in Ukraine, then use them against Europeans.
As yet the idea of launching terrorist attacks while the West is distracted by Ukraine does not appear to have caught on in Europe. The IS group has around a dozen affiliate groups in different regions, from Africa to Asia, and most of the violence attributable to it is currently being perpetuated in Africa. But there is another way that war in Ukraine might benefit IS, al-Qaeda and potentially even other extremist organizations, experts have said.

Exploiting Social Unrest
Extremists will try to exploit "a new wave of social unrest resulting from the high cost of living in societies severely affected by the [COVID-19] pandemic and then the repercussions of the crisis in Ukraine," Ezzat Ibrahim Youssef, editor-in-chief of Egyptian weekly, *Al Ahram*, warned recently in a report for the Abu Dhabi think tank, Trends Research.
During this month's Morocco meeting of the international coalition to combat the IS group, the head of the 22-nation Arab League issued a similar alert. The consequences of the war and climate change could be exploited by groups like IS, Ahmed Aboul Gheit, a veteran Egyptian diplomat, cautioned.
Basically, the repercussions of the war in Europe are adding another layer of difficulty in countries with preexisting crises. Grain shortages, rising petrol and food prices, inflation and the fact that some aid organizations are now more focused on Ukraine are among the extra problems that countries like Lebanon, Syria, Tunisia, Libya and Yemen must deal with.
It is quite possible that, as the Ukraine war goes on, things will only get worse in countries already grappling with instability. This is where the so-called "Islamic State" group may benefit. Economic problems and political turmoil could mean that more locals in those countries see joining an extremist group like IS as a viable option.

No Job, No Social Standing
Back in 2015, Tunisians already made up the highest number of foreign fighters joining IS, then at the peak of its powers and attracting people from all around the world to join it.
According to global security consultancy Soufan Group, there were 6,000 Tunisians in the IS that year, compared with 2,500 Russians, 2,400 Saudi Arabians, 1,700 French and 760 Germans, among many other nationalities.
There are a wide range of reasons why so many foreigners joined the "Islamic State" back then. For instance, for many coming to Iraq and Syria from Europe, the marginalization of Muslims back home made the idea of an actual Islamic state attractive. But later, interviews with captured fighters from nearby countries suggested that money was also a significant factor.
"The issues in Tunisia that led so many young men to join IS were economic in nature," explained Anne Speckhard, director of the US-based International Center for the Study of Violent Extremism, or ICSVE, who has interviewed former IS fighters.
Many of the young Tunisian men had no money or jobs and were unable to marry or leave the family home while "the IS group was offering paid jobs, free housing and wives to marry as well as sex slaves," Speckhard told DW.

Anger and Hopelessness
There's already some indications that the IS is exploiting current economic issues in the Middle East in a similar way today. Recent reports from the northern Lebanese city of Tripoli discussed how over 40 young men had "disappeared" earlier this year.
Families only found out where they were when they heard that some of the men had been killed at IS training camps in the Iraqi desert. Lebanon is dealing with a crippling economic

crisis, and local officials told journalists the IS group offered pay of over $500 (around €480) a month.
Similar stories have come from the IS group's anti-Taliban offshoot in Afghanistan, known as ISIS-Khorasan, which is reported to be offering unemployed locals in low-income border districts between $270 (€260) and $450 (€430) a month to join.
"The IS group is still giving vulnerable people financial incentives to join," ICSVE director Speckhard argued. "While the terrorist call may not resonate with deeply impoverished people struggling for basic daily survival, those who have higher education, or food but not jobs, can be angered into joining terrorist groups that they come to believe will govern more justly."
Speckhard referred to the recent mass shooting in Buffalo, New York, where an American teenager killed 10 shoppers in a supermarket. "While white supremacists are not offering jobs, they are offering someone to blame for failures in life, including failures to make it economically," said the psychiatry professor. The IS group uses similar tactics and in both situations, Speckhard said, "economic stressors can fuel recruitment."
Issues like unemployment and rising prices, alongside political issues and pandemic isolation, all "play into a feeling of despair and anger and wish to shift blame to some clear cause," said Speckhard.

A Long-Term Strategy
Political instability and power vacuums, which often arise thanks to economic problems, have also been exploited by the IS group in the past. It will take some time to know whether extremists will benefit from the Ukraine war, added Charlie Winter, an expert on the IS group and research director at ExTrac in the United Kingdom, which uses artificial intelligence for security analysis.
"There may be some second- or third-order impacts further down the line because of the Ukraine war," he told DW. "But it's difficult to draw a direct link between that and the IS group's capabilities, or its ability to mobilize new supporters."
Winter, also an associate fellow at the International Centre for Counter-Terrorism based in the Netherlands, said when the COVID-19 health crisis began, the IS group made very similar comments, saying the pandemic would drain adversaries' resources, divert security spending and provide opportunities for extremists. But they saw this as a long-term plan, the expert explained.
"Things getting worse socially and economically or in terms of general security in places where the IS group already has established networks could serve its purposes," Winter cautioned.

But a number of things would prevent things going much beyond that. For one thing, the IS group is far smaller now, has fewer resources and fighters. For another, it doesn't have a territorial "caliphate" (a major draw in the past) anymore, and ground it does hold in Africa is far harder to get to, Winter said. Additionally, the IS group "has shown its true un-Islamic and corrupt nature to many who would no longer be fooled," Speckhard noted.

"Worst case scenario is that this [the Ukraine war] possibly makes a few more people more inclined to become adherents," Winter concluded. "But I think we'd be very, very unlikely to see a mobilization on anything like the scale that we saw in bygone years."

US Set to Remove 5 Groups From Foreign Terrorism Blacklist

Source: https://www.usnews.com/news/politics/articles/2022-05-15/us-set-to-remove-5-groups-from-foreign-terrorism-blacklist

May 15 — The United States is poised to remove five extremist groups, all believed to be defunct, from its list of foreign terrorist organizations, including several that once posed significant threats, killing hundreds if not thousands of people across Asia, Europe and the Middle East.
Although the groups are inactive, the decision is politically sensitive for the Biden administration and the countries in which the organizations operated, and could draw criticism from victims and their families still dealing with the losses of loved ones.
The organizations are the Basque separatist group ETA , the Japanese cult Aum Shinrikyo, the radical Jewish group Kahane Kach and two Islamic groups that have been active in Israel, the Palestinian territories and Egypt.
The U.S. State Department notified Congress on Friday of the moves, which come at the same time as an increasingly divisive but unrelated debate in Washington and elsewhere about whether Iran's paramilitary Revolutionary Guard should or can be legally removed from the U.S. list as part of efforts to salvage the languishing Iran nuclear deal.
That designation, which was imposed by the Trump administration, was not mentioned in Friday's notifications.
In separate notices to lawmakers, the State Department said the terrorism designations for the five groups will be formally removed when the determinations are published in the Federal Register, which is expected this coming week.
Copies of the notifications, all of which were signed by U.S. Secretary of State Antony Blinken on Wednesday, were obtained by The Associated Press.

The general reason for the removals is identical in each of the cases: Blinken asserting that they were based on an administrative review of the designations, which by law is required every five years.
"Revoking FTO designations ensures our terrorism sanctions remain current and credible and does not reflect any change in policy towards the past activities of any of these the organizations," the State Department said on Sunday.
The reviews take into account whether designated groups are still active, whether they have committed terrorist acts within the previous five years and whether removal from or retention of the list would be in U.S. national security interests. Under the law that created the list, the secretary of state can remove groups that he or she deems no longer to fit the criteria.
"Based on a review of the Administrative Record assembled in this matter and in consultation with the Attorney General and the Secretary of the Treasury, I determine that the circumstances that were the basis for the designation ... have changed in such a manner to warrant revocation of the designation," Blinken wrote in each notice.
Removing the groups from the list has the immediate effect of rescinding a range of sanctions that the designations had entailed. Those include asset freezes and travel bans as well as a prohibition on any Americans providing the groups or their members with any material support. In the past the material support provision has been broadly defined to encompass money or in-kind assistance, in some cases even medical care.
All but one of the five groups was first designated a foreign terrorist organization in 1997 and have remained on the list for the past 25 years.
U.S. officials familiar with the matter said the decisions were made only after consulting lawmakers several months ago about whether the latest five-year reviews should proceed. Before now, only 15 groups have been removed from the list.
The specific reasons for each the removals are included only in classified sections that accompanied the notifications, which are not classified on their own. These sections are labeled "SECRET/NOFORN," which means their contents can only be shared among U.S. officials with proper clearances and not with foreign governments.

The groups to be removed are:

— **Aum Shinrikyo** (AUM), the Japanese "Supreme Truth" cult that carried out the deadly sarin gas attack on the Tokyo subway in 1995 that killed 13 people and sickened hundreds more. The group has been considered largely defunct since the executions of its top echelons, including leader Shoko Asahara, in 2018. It was designated a foreign terrorist organization in 1997.

— **Basque Fatherland and Liberty, or ETA**, which ran a separatist campaign of bombings and assassinations in northern Spain and elsewhere for decades that killed more than 800 people and wounded thousands more, until declaring a cease-fire in 2010 and disbanding after the arrests and trials of its last leaders in 2018. It was designated a foreign terrorist organization in 1997.

— **Kahane Chai, or Kach**. The radical Orthodox Jewish group was founded by ultranationalist Israeli Rabbi Meir Kahane in 1971. He led the group until his assassination in 1990. Members of the group have killed, attacked or otherwise threatened or harassed Arabs, Palestinians and Israeli government officials, but the organization has been dormant since 2005. The group was first designated in 1997.

— **The Mujahidin Shura Council in the Environs of Jerusalem,** an umbrella group of several jihadist organizations based in Gaza that has claimed responsibility for numerous rocket and other attacks on Israel since its founding in 2012. The council was first designated in 2014.

— **Gama'a al-Islamiyya, or Islamic Group–IG**, an Egyptian Sunni Islamist movement that fought to topple Egypt's government during the 1990s. It conducted hundreds of deadly attacks against the police and security forces as well as tourists. The group was first designated in 1997.

The State Department said on Sunday that Blinken was required by law to revoke the designations if the groups no longer met the legal criteria. Speaking of the Kahane Chai group, the department said it had not been linked to a terrorist attack since 2005. It also said the Mujahidin Shura Council has not claimed an attack since 2013. "Neither currently meet the statutory definition of a foreign organization," the department said. It added that both groups would remain on the U.S. list of Specially Designated Global Terrorist entities that will keep in place sanctions against their property and assets in American jurisdictions.

How Strong Is al-Qaeda? A Debate

By Daniel Byman and Asfandyar Mir
Source: https://warontherocks.com/2022/05/how-strong-is-al-qaeda-a-debate/

May 20 – Sept. 11, 2001, was "The Day the World Changed." The 2,977 deaths at the hands of al-Qaeda terrorists led to massive policy changes and dominated U.S. politics for years afterward. The United States went to war in Afghanistan to topple the Taliban, and the

attacks contributed to the U.S. decision to invade Iraq in 2003. America began an array of aggressive counterterrorism programs, including the use of armed drones to kill suspected terrorists, indefinite detention at the naval base in Guantanamo Bay, Cuba, and even torture. At home, the U.S. government detained many American Muslims on flimsy pretexts and implemented controversial programs related to surveillance.

Over 20 years later, the effectiveness of these measures, and the threat al-Qaeda poses, remain hotly debated. Leading terrorism experts like Bruce Hoffman have warned that al-Qaeda remains strong, patiently waiting for opportunities to strike while strengthening its global reach. Other leading analysts are skeptical. Barak Mendelsohn and Colin Clarke contend that "al-Qaeda the organization has failed." In her 2022 threat testimony, Director of National Intelligence Avril Haines struck a middle ground, warning that al-Qaeda still aspires "to conduct attacks in the United States" while also noting that its external attack capabilities are "degraded." With the al-Qaeda threat perhaps in the rearview mirror, President Biden withdrew troops from Afghanistan in 2021 to end the so-called "forever wars" that sprang up in the aftermath of the 9/11 attacks.

This article presents a debate on the al-Qaeda threat today, drawing on a longer article we wrote for *Studies in Conflict & Terrorism*. However, rather than a typical debate where each author makes a case for one side of the argument in separate essays, this article offers a back-and-forth on key arguments in the same essay in order to better engage the arguments. Asfandyar Mir argues that al-Qaeda remains a significant threat, while Daniel Byman is more skeptical. We each present our arguments and then highlight where we agree and disagree. We conclude by detailing the policy implications of our arguments.

Why Al-Qaeda Is a Significant and Enduring Problem: Asfandyar Mir

Al-Qaeda today is led by long-time jihadist Ayman al-Zawahiri, who took the helm after U.S. special operations forces killed Usama bin Laden in 2011. The core itself, mostly based in remote parts of the Afghanistan-Pakistan border regions and Iran, probably has several hundred core members. Far more reside in its affiliate organizations, such as al-Qaeda in the Arabian Peninsula, al-Shabaab in Somalia, and al-Qaeda in the Islamic Maghreb, among others. The group also has ties to a range of other jihadist organizations and has sought to inspire unaffiliated Muslims around the world to strike the United States and otherwise carry out the group's objectives.

Despite being the most hunted organization in the world, al-Qaeda is able to threaten the U.S. homeland, its broader security interests, and regional stability in Africa, the Middle East,

and South Asia. To understand this threat requires careful attention to the group's political trajectory in light of the constraints facing it. Al-Qaeda remains committed in its political ambition of fighting the United States while simultaneously embedding itself in key regional contexts. The enduring focus on America, in particular of the core group led by Ayman al-Zawahiri, is a vital indicator of the threat, as al-Qaeda has faced intense pressure to change direction. Dropping the focus against the United States and rebranding to focus squarely on state-building in select regions or against new geopolitical powers, like China, could have blunted the wide-ranging international consensus against al-Qaeda and eased U.S. counterterrorism pressures. Yet al-Qaeda stuck with the costly choice of maintaining an anti-American platform while calibrating the local, regional, and transnational focus of different parts of the overall network. With such adjustments, the group minimized targeting pressures while retaining its historic anti-American *raison d'etre*.

Al-Qaeda has also managed to stay remarkably cohesive despite poaching pressure from the rival Islamic State group, the absence of regular direction from core leaders, competing regional realities of affiliates, and multinational efforts to divide the group. With the rise of ISIL and the defection of Jabhat al Nusra in Syria in 2016, it was widely assumed that Zawahiri and his top lieutenants had lost control of the global network due to slow communications, and that the al-Qaeda brand was unattractive for some, and even radioactive for other jihadi constituencies. Yet Zawahiri, despite his sclerotic style, managed to retain the loyalty of key top elites based in Iran and the Afghanistan-Pakistan region. He also succeeded in preventing affiliates from breaking away from al-Qaeda's orbit — even after numerous attempts by the Islamic State to woo some of them. Significantly, over the last five years, several affiliates consolidated politically while also growing funds, recruiting more fighters, and developing permissive safe havens.

One such major affiliate is al-Qaeda in the Indian Subcontinent (AQIS) in South Asia. This affiliate has kept Zawahiri — who reportedly remains in the Afghanistan-Pakistan border region, and has a $25 million bounty on his head — alive. Critically, it helped the Afghan Taliban's insurgency against the U.S. military and the deposed Afghan government. Now, AQIS is supporting the Tehreek-e-Taliban Pakistan's expanding campaign of violence in Pakistan while developing its own campaign against India — actively supported by Zawahiri's provocations.

In Somalia, al-Qaeda affiliate al-Shabaab is more politically cohesive and focused on striking U.S. interests in the region and beyond than it was a decade ago. It controls substantial territory and is al-Qaeda's richest and most lethal affiliate. In a sign of al-Shabaab's growing danger, the Biden administration is redeploying troops to fight it. In the Sahel, Jama'at Nusrat al-Islam wal-Muslimin has embedded itself in local communities through coalition-building and popular support — threatening the stability of Mali, Burkina Faso, Niger, and littoral West Africa. Despite the civil war and loss of territory in Yemen, al-Qaeda in the Arabian Peninsula remains a consistent threat as it continues to prepare operations targeting the West. In Syria, after a series of setbacks, al-Qaeda retains an important (even if constrained) presence in the form of Hurras-ud-Din. Other affiliates, like al-Qaeda in the Islamic Maghreb and Nigeria-based Jamaat Ansar al Muslimeen fi Bilad al Sudan, also reaffirm their allegiance to al-Qaeda.

Some analysts and policymakers, including my co-author, recognize the dangerous trajectory of al-Qaeda's affiliates but assume that their growing capabilities are a local problem where the affiliates are based — and therefore the U.S. government can remain indifferent to them. In the past, however, the local capabilities of al-Qaeda and its allies in Pakistan, Somalia, and Yemen have expanded into regional and transnational threats: When al-Qaeda in the Arabian Peninsula, for example, was formed in January 2009, it was considered a local threat. But it plotted attacks against the United States in late 2009 and 2010. The distinction between which capabilities threaten U.S. interests and which ones don't is not always clear or, equally important, predictable.

In addition to affiliates, al-Qaeda's core has key relationships with Iran and the Taliban in Afghanistan, which position it to evade international counterterrorism efforts and generate capability. For example, al-Qaeda is able to leverage Iranian territory to protect its central leadership, who manage the affiliate network while funneling resources to different nodes of the group. Despite immense pressure to do so, the Taliban haven't broken from al-Qaeda. Instead, members of al-Qaeda's core and al-Qaeda's Indian subcontinent affiliate remain in Afghanistan, well positioned to pursue a steady buildup for deniable operations. Additionally, Iranian support can synergize al-Qaeda's Afghanistan presence and boost its overall capability, despite the limits placed on the group by both the Taliban and Tehran.

Al-Qaeda has major opportunities in the years ahead. It is able to boast a "win" from the removal of a U.S.-allied regime and the U.S. military's defeat in Afghanistan as well as growing influence in East and West Africa, all of which position it to build local and transnational operations capabilities in multiple theaters. American counterterrorism — the factor that has most constrained al-Qaeda — is weakening in the regions where both the core and affiliates are present due to diminishing resources, which are being redirected to respond to intensifying strategic competition with China and Russia. Al-Qaeda is also attentive to America's domestic political polarization — and can mount attacks to exploit divisions.

Al-Qaeda Is Less Dangerous Than in the Past: Daniel Byman

The low number of attacks on the United States and its key allies is one reason to be skeptical of the al-Qaeda threat. The core did not carry out a single successful attack on the

United States or Europe in the 2010s — and the last major plot in the United States by the core was Najibullah Zazi's disrupted plan to bomb the New York subway. Although al-Qaeda in the Arabian Peninsula conducted the 2019 shooting attack at Naval Air Station Pensacola, the majority of al-Qaeda affiliates have not attacked the U.S. homeland or Europe. Indeed, al-Qaeda in the Arabian Peninsula itself has been weakened in the last five years through drone strikes, U.A.E. military intervention, and the growing civil war in Yemen.

Another is that al-Qaeda has not succeeded by some of its own metrics. Al-Qaeda has failed to change the regimes of Muslim-majority countries closely allied with the United States. One of al-Qaeda's ambitions — and one that Zawahiri himself long pursued with single-minded devotion before taking the helm of al-Qaeda — is to overthrow supposedly apostate regimes in Muslim-majority countries and establish Islamic governments in their places. The group sees itself as a vanguard supporting Muslim insurgencies through training, funding, and inspiring other groups. Yet in Saudi Arabia, bin Laden's home, the al-Saud dynasty remains entrenched, and the regime led by Mohammad bin Salman is implementing reforms to make the country more secular. In Egypt, where Zawahiri formed his first jihadist cell as a teenager, the Hosni Mubarak dictatorship was replaced by the dictatorship of Abdel Fattah al-Sisi, an even more secular dictator. Indeed, in 2011, when the Arab world exploded with democratic energy, al-Qaeda affiliates were notably absent as major players initially.

My co-author is correct that al-Qaeda's allies have grown stronger in Yemen, parts of sub-Saharan Africa, and other areas. Historically, however, these are areas of limited interest to the United States. Counterterrorism assistance and military training are still appropriate, but these do not need to be policy priorities.

Another al-Qaeda goal is the removal of the United States and other so-called infidel military forces from Muslim-majority countries. In recent years, the United States has deployed roughly 40,000-60,000 troops to the greater Middle East, with a presence not only in pre-9/11 allies like Jordan and Saudi Arabia but also in additional countries like Iraq and Syria. This number is up from just under 30,000 before the 9/11 attacks.

Part of the reason for al-Qaeda's problems are its many organizational weaknesses, including financial problems, leadership disruptions, limited command and control, infighting, and the lack of a geographical haven. Effective counterterrorism exacerbates these weaknesses. Key instruments include drone strikes; military operations; training of allied military forces; extensive intelligence collection and sharing; cooperation with allied security services to disrupt cells globally; better border security; and disrupting terrorist financing. Al-Qaeda has lost leader after leader since 9/11 — "severe losses," according to the U.S. intelligence community — and U.S. counterterrorism strikes have sowed confusion and exacerbated rivalries. And to avoid drone strikes and other attacks, the organization's leaders have limited their communications with the rest of the movement, while fearing spies in their midst.

Without direction from the top, affiliates have increasingly focused on local and regional concerns, changing the nature of the threat they pose to U.S. interests. Al-Qaeda is not prioritizing the United States in practice, despite the rhetoric of figures like Zawahiri. For affiliates and allies, the day-to-day vicissitudes of living and fighting in civil war zones, and the constant pressure from rival groups and the government, lead to choices in favor of the local battlefield over the needs of external operations, about which few local audiences care.

In addition, they are less able to plot elaborate high-casualty attacks on the West. An operation like 9/11, which involved years of planning, operatives working in multiple countries, a haven in Afghanistan in which to plan, train, and recruit, and other advantages — and depended upon the attackers receiving little scrutiny when they arrived in the United States — is much harder to execute today.

Indeed, al-Qaeda's ability to stop infighting in Iraq and Syria and control the jihadist movement there proved the biggest public blow to al-Qaeda and almost led to the core group's undoing by creating its biggest rival: ISIL. Tens of thousands of foreign fighters from at least 110 countries flocked to join ISIL, not al-Qaeda, in Iraq and Syria. And in the United States and Europe, it was usually ISIL that exerted a pull on potential foreign fighters and inspired attackers. ISIL also produced rival affiliates and rejected important parts of al-Qaeda's ideology. The propaganda war between the two is bitter and diminishes them both. Both compete for recruits and fundraising, and they and their affiliates often fight.

Al-Qaeda today lacks a haven comparable to what it enjoyed in the Taliban's Afghanistan before 9/11. In the 1990s, al-Qaeda was able to train thousands of fighters in Afghanistan, elevating their skill levels, giving them a common cause, and directing them when they returned to their home countries. Although al-Qaeda has a presence in many countries, it cannot run the industrial-scale training camps it ran in the past.

As my co-author points out, there are two possible exceptions to this: Afghanistan and Iran. In Afghanistan, the Taliban — and its on-and-off Pakistani ally — have incentives to prevent the group from launching major international terrorist attacks against the United States, Europe, and many key allies, although further limited attacks in South Asia are more likely.

In addition, the United States has some remaining (even if reduced) counterterrorism capacity in the region that will still hinder al-Qaeda in Afghanistan.
The relationship between Iran and al-Qaeda is troubled. There is considerable distrust, and al-Qaeda members have complained they are "captive … in the enemy state of Iran." Counterterrorism operations are still carried out in Iran, such as the 2020 killing of Abu Muhammad al-Masri, a top al-Qaeda official living in Iran, reportedly by Israeli assets operating at the behest of the United States. Furthermore, ties to Iran — a Shiite power loathed by many religious Sunnis — are unpopular and taint al-Qaeda by association.
In addition to having been diminished by effective counterterrorism, jihadists have also struggled to establish a foothold in Muslim communities. Risa Brooks has found that the American Muslim community self-polices, rooting out radicals in its midst, and cooperates regularly with the FBI. Compounding this problem, many of the would-be terrorists in the Western world are not the brightest bulbs in the chandelier. The list of their mistakes is long and at times comical.

How Policy Should Reflect the Threat

Counterterrorism and the struggle against al-Qaeda is no longer the number one policy priority it was in the years after 9/11. Nevertheless, a succession of presidents have maintained high levels of spending and continued many of the homeland security, intelligence, and military programs that sprang up in the wake of the attacks.
Although we end up with different threat assessments, we agree on many aspects of the danger. We share the view that American counterterrorism is a leading constraint on al-Qaeda's ability to attack the United States. We also believe that al-Qaeda does not have to be a strong organization to undertake or promote lethal attacks. Capable groups can often behave strategically and conduct careful, limited attacks, while weak groups can carry out bloody ones, especially in the United States, where there is easy access to assault weapons. Although we disagree on the degree of operational freedom the group enjoys in its Iranian haven and on the risk of terrorism emanating from the Taliban's Afghanistan, we concur that these are important sanctuaries for al-Qaeda and a significant challenge for U.S. counterterrorism.
Yet our disagreements have significant policy implications. Byman's assessment suggests that the tempo and scope of counterterrorism pressure can be reduced, though much of the low-cost, day-to-day efforts like intelligence cooperation and military training should continue. Forever wars can end or, at least, be diminished. More broadly, even though other Salafi-jihadi threats like ISIL endure, a more limited threat by al-Qaeda implies the importance of counterterrorism in the hierarchy of U.S. foreign policy priorities can fall. Any death of an innocent is too many, but if the group is less able to launch major international terrorist attacks on the United States and its key allies, then other policy concerns should come to the fore.
Mir's reading suggests that counterterrorism needs to remain among America's major-national security priorities to manage al-Qaeda and similar threats. America is vulnerable to the second-order effects of al-Qaeda's terrorist activity, such as heightened polarization, divisiveness, and anti-immigrant sentiment. The U.S. government, by itself as well as in conjunction with regional allies, should also maintain strong monitoring and targeting capabilities across Afghanistan, Yemen, the Sahel, Somalia, and Syria. Finally, dramatically scaling back the U.S. government's own counterterrorism resources, as implied by the Biden administration's National Defense Strategy, and reducing investments in bilateral and multilateral counterterrorism efforts due to strategic competition with China and Russia would be a mistake: They are essential to preventing terrorist provocations and remaining focused on strategic competition in the long-run.

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Dr. Asfandyar Mir is a senior expert in the Asia Center at USIP. Previously, Dr. Mir held various fellowships at the Center for International Security and Cooperation at Stanford University. His research interests include the international relations of South Asia, U.S. counterterrorism policy and political violence — with a regional focus on Afghanistan and Pakistan. Dr. Mir's research has appeared in peer-reviewed journals, such as International Security, International Studies Quarterly and Security Studies. He received his doctorate in political science from the University of Chicago and a master's and bachelor's from Stanford University.

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CHEM NEWS

AI Drug Discovery Systems Might Be Repurposed to Make Chemical Weapons, Researchers Warn

By Rebecca Sohn

Source: https://www.scientificamerican.com/article/ai-drug-discovery-systems-might-be-repurposed-to-make-chemical-weapons-researchers-warn/

Apr 21 – In 2020 Collaborations Pharmaceuticals, a company that specializes in looking for new drug candidates for rare and communicable diseases, received an unusual request. The private Raleigh, N.C., firm was asked to make a presentation at an international conference on chemical and biological weapons. The talk dealt with how artificial intelligence software, typically used to develop drugs for treating, say, Pitt-Hopkins syndrome or Chagas disease, might be sidetracked for more nefarious purposes.

In responding to the invitation, Sean Ekins, Collaborations' chief executive, began to brainstorm with Fabio Urbina, a senior scientist at the company. It did not take long for them to come up with an idea: What if, instead of using animal toxicology data to avoid dangerous side effects for a drug, Collaborations put its **AI-based MegaSyn software** to work generating a compendium of toxic molecules that were similar to VX, a notorious nerve agent?

The team ran MegaSyn overnight and came up with 40,000 substances, including not only VX but other known chemical weapons, as well as many completely new potentially toxic substances. All it took was a bit of programming, open-source data, a 2015 Mac computer and less than six hours of machine time. "It just felt a little surreal," Urbina says, remarking on how the software's output was similar to the company's commercial drug-development process. "It wasn't any different from something we had done before—use these generative models to generate hopeful new drugs."

Collaborations presented the work at Spiez CONVERGENCE, a conference in Switzerland that is held every two years to assess new trends in biological and chemical research that might pose threats to national security. Urbina, Ekins and their colleagues even published a peer-reviewed commentary on the company's research in the journal *Nature Machine Intelligence*—and went on to give a briefing on the findings to the White House Office of Science and Technology Policy. "Our sense is that [the research] could form a useful springboard for policy development in this area," says Filippa Lentzos, co-director of the Center for Science and Security Studies at King's College London and a co-author of the paper.

The eerie resemblance to the company's day-to-day routine work was startling. The researchers had previously used MegaSyn to generate molecules with therapeutic potential that have the same molecular target as VX, Urbina says. These drugs, called acetylcholinesterase inhibitors, can help treat neurodegenerative conditions such as Alzheimer's. For their study, the researchers had merely asked the software to generate substances similar to VX without inputting the exact structure of the molecule.

Many drug discovery AIs, including MegaSyn, use artificial neural networks. "Basically, the neural net is telling us which roads to take to lead to a specific destination, which is the biological activity," says Alex MacKerell, director of the Computer-Aided Drug Design Center at the University of Maryland School of Pharmacy, who was not involved in the research. The AI systems "score" a molecule based on certain criteria, such as how well it either inhibits or activates a specific protein. A higher score tells researchers that the substance might be more likely to have the desired effect.

In its study, the company's scoring method revealed that many of the novel molecules MegaSyn generated were predicted to be more toxic than VX, a realization that made both Urbina and Ekins uncomfortable. They wondered if they had already crossed an ethical boundary by even running the program and decided not to do anything further to computationally narrow down the results, much less test the substances in any way.

"I think their ethical intuition was exactly right," says Paul Root Wolpe, a bioethicist and director of the Center for Ethics at Emory University, who was not involved in the research. Wolpe frequently writes and thinks about issues related to emerging technologies such as artificial intelligence. Once the authors felt they could demonstrate that this was a potential threat, he says, "their obligation was not to push it any further."

But some experts say that the research did not suffice to answer important questions about whether using AI software to find toxins could practically lead to the development of an actual biological weapon.

"The development of actual weapons in past weapons programs have shown, time and again, that what seems possible theoretically may not be possible in practice," comments Sonia Ben Ouagrham-Gormley, an associate professor at the Schar School of Policy and Government's biodefense program at George Mason University, who was not involved with the research.

Despite that challenge, the ease with which an AI can rapidly generate a vast quantity of potentially hazardous substances could still speed up the process of creating lethal

bioweapons, says Elana Fertig, associate director of quantitative sciences at the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins University, who was also not involved in the research.
To make it harder for people to misuse these technologies, the authors of the paper propose several ways to monitor and control who can use these technologies and how they are used, including wait lists that would require users to undergo a prescreening process to verify their credentials before they could access models, data or code that could be readily misused.
They also suggest presenting drug discovery AIs to the public through an application programming interface (API), which is an intermediary that lets two pieces of software talk to each other. A user would have to specifically request molecule data from the API. In an e-mail to *Scientific American,* Ekins wrote that an API could be structured to only generate molecules that would minimize potential toxicity and "demand the users [apply] the tools/models in a specific way." The users who would have access to the API could also be limited, and a limit could be set to the number of molecules a user could generate at once. Still, Ben Ouagrham-Gormley contends that without showing that the technology could readily foster bioweapon development, such regulation could be premature.
For their part, Urbina and Ekins view their work as a first step in drawing attention to the issue of misuse of this technology. "We don't want to portray these things as being bad because they actually do have a lot of value," Ekins says. "But there is that dark side to it. There is that note of caution, and I think it is important to consider that."

Rebecca Sohn is a freelance health and science journalist based in New York City. She has written for outlets such as Slate, Spectrum, STAT and Live Science, among others.

EDITOR'S COMMENT: There is no doubt that the military of those who have advanced AI software are already exploring this possibility – and there is nothing we can do about it other than hope that common sense will prevail.

Country Overview: Spain

By Ms. Nora Ljubojevic Lozano
NCT Magazine 5/17
Source: https://nct-magazine.com/nct-magazine-april-2022/country-overview-spain

Spain, a main connecting point between the EU and the Sahel regions, remains a staunch supporter of NATO and EU institutions, with Madrid scheduled as the location for the next NATO summit in June 2022. With its strategically located Canary Islands, the autonomous towns of Ceuta and Melilla, and the Gibraltar Strait, it has traditionally navigated tensions at its borders through diplomatic means and by resorting to the international fora with different degrees of success. Once the 8th largest economy in the world, a key negotiator in Latin America and a very close ally of the US, the country now enjoys a more modest international profile and GDP size (ranking 14th in the GDP global rankings). For instance, the US forces withdrew from their airbase for rapid deployment, located in Moron de la Frontera (Seville), to move to Sigonella (Sicily), with the expectation of basing more military units in the Maghreb area. Nevertheless, Spain oversees the Combined Air Operations Centre Torrejón which controls NATO airspace in the southern half of Europe and contributes a whole range of military capabilities to the Alliance. It also counts on excellent counter terror operations units which developed expertise due to the long-standing threat posed by the terrorist group ETA. Burdened for decades by the extremely painful terror attacks by ETA and other Islamist networks, the Spanish security infrastructure (including the National Intelligence Center – CNI) has learned important lessons on crisis management and preparedness.

The 2021 National Security Strategy lists its current pressing scenarios, featuring the risk of cyberattacks, attacks on critical infrastructure and, the energetic vulnerability (further aggravated by the recent Algerian Moroccan tensions) at the top of this list. In terms of

internal threats with a potential to destabilize the country, the economic crisis caused by the pandemic (GDP 10% decrease in 2020), higher inflation than in the rest of the Eurozone area (9.8% year-on-year rate in March), high unemployment rate (12.6%, double the average of the OECD countries, as well as a 30% youth unemployment rate), recent increases in both corporate taxes and personal income taxes and a record high price of electricity (reaching 545 euros per MWTh) are aspects worth noting, as these elements increase the country's vulnerability in the event of a global recession.
The unemployment rate soared as the Covid-19 pandemic broke out in the country, increasing the number of unemployed citizens by around 800,000. Despite the fact that the number of unemployed people has lowered by almost 700,000 since the beginning of the pandemic, the economic scenario still looks bleak as GDP only increased by 5.1% in 2021 after a shocking 10% contraction in 2020. The precarity of the job market which goes hand in hand with a worrisome inflation rate will also remain a considerable problem in the short and medium term.

CBRNe Foundations
Spain has signed and ratified some relevant international treaties in the domain of CBRN, mostly during the 1990s such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), the Convention on Chemical Weapons, the Biological Weapons Convention, the Comprehensive Nuclear Test Ban Treaty, the Outer Space Treaty, the Anti-Personnel Mine Ban Convention, the Convention on Certain Conventional Weapons, the Convention on for the Suppression of Acts of Nuclear Terrorism, the Partial Test Ban Treaty, and the Treaty on Open Skies and the Seabed Arms Control Treaty. Additionally, it is part of the Australia Group and participates in the Science for Peace and Security (SPS) NATO program. Spain is not part yet of the Treaty on the Prohibition of Nuclear Weapons (TPNW), despite an interim agreement struck in 2018 between the left-wing governmental coalition groups led by Spanish PM Pedro Sanchez and, an 89% citizen support for signing the TPNW, as claimed on a ICAN's January 2021 survey. In fact, the country has consistently voted against an annual UN General Assembly resolution since 2018 that welcomes the adoption of the treaty and calls upon all states to sign, ratify, or accede to it "at the earliest possible date".

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

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Syria (Chemical Weapons): Briefing and Consultations

Source: https://www.securitycouncilreport.org/whatsinblue/2022/04/syria-chemical-weapons-briefing-and-consultations.php

Apr 29 – This morning (29 April) the Security Council is expected to hold an open briefing, followed by closed consultations, on the Syria chemical weapons track. The meeting is the regular monthly meeting on the implementation of resolution 2118, which was adopted unanimously by the Council in 2013 and requires the verification and destruction of Syria's chemical weapons stockpiles. High Representative for Disarmament Affairs Izumi Nakamitsu is the anticipated briefer.
At the time of writing, Council members continued to negotiate a UK-drafted press statement, initially circulated on 27 April, marking today's 25th anniversary of the entry into force of the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction. The draft is under silence until 9:30am, and if agreement is reached, it will likely be issued today.
In today's meeting, Nakamitsu is expected to reiterate, as she has consistently, that gaps, inconsistencies and discrepancies remain in Syria's declaration of its chemical weapons stockpiles to the Organisation for the Prohibition of Chemical Weapons (OPCW).
She is also expected to express her regret that the OPCW Declaration Assessment Team (DAT) has been unable to hold its 25th round of consultations with Syrian authorities in Damascus, which has been delayed for several months because of the unwillingness of the Syrian government to issue a visa to one member of the DAT. According to the OPCW Director-General's 25 April report on progress on the elimination of Syria's chemical weapons programme, the OPCW has proposed a less extensive round of consultations in Lebanon with Syrian authorities; while Syria agreed to such a meeting in an 18 April 2022 note verbale, it has requested that one OPCW expert be excluded from the consultations. Nakamitsu may be able to offer the Council an update on whether and how the OPCW has responded to Syria's note verbale.

As in several past briefings, Nakamitsu is also likely to speak about two chlorine cylinders related to an incident in Douma on 7 April 2018. Syria has said that these cylinders were destroyed in an attack in June 2021 on a declared former chemical weapons production facility. In his 25 April report, the OPCW Director-General noted that in July 2021 the OPCW had requested the Syrian government to "provide all relevant information regarding the unauthorised movement of the two cylinders and any remains of their destruction". To date, Syria has not done so.

The Council's long-standing divisions on the use of chemical weapons in Syria are likely to colour the discussion tomorrow. Over the years, Council members have displayed starkly different views on a range of issues, including who is responsible for the use of chemical weapons in Syria, the credibility of the work of the OPCW and numerous procedural aspects of the OPCW's decision-making bodies. While several members have consistently expressed support for the OPCW's work, maintaining that it is credible and essential, other members, such as China and Russia, maintain that its work is biased and politicised.

The divisions with respect to Ukraine between the US and European members, on the one hand, and Russia, on the other, may be reflected in some of their interventions today. In this regard, at the latest Council meeting on the chemical weapons track in Syria, which took place on 10 March, Albania and the UK accused Russia of disinformation about chemical weapons in Ukraine, while the US stated that Russia's "unjustified war…against Ukraine should make clear…that Russia…cannot be trusted when it talks about chemical weapons use in Syria". Russia, for its part, urged members not to spread misinformation in the Security Council.

Several members believe that the Council should meet less often than monthly on the Syria chemical weapons file, given that there is little new to discuss each month. Brazil, China, and Russia made this argument in during the 10 March meeting. It is possible that some members may again discuss their concerns about the frequency of these meetings today.

Artificial Intelligence and Chemical and Biological Weapons

Source: https://www.homelandsecuritynewswire.com/dr20220429-artificial-intelligence-and-chemical-and-biological-weapons

Apr 29 – Sometimes reality is a cold slap in the face, Paul Rosenzweig writes in *Lawfare*. He suggests that we consider, as a particularly salient example, a recently published article concerning the use of artificial intelligence (AI) in the creation of chemical and biological weapons (the original publication, in *Nature*, is behind a paywall, but this link is a copy of the full paper). "Anyone unfamiliar with recent innovations in the use of AI to model new drugs will be unpleasantly surprised," he writes.

In the modern pharmaceutical industry, the discovery of new drugs is rapidly becoming easier through the use of artificial intelligence/machine learning systems. As the authors of the article describe their work, they have spent decades "building machine learning models for therapeutic and toxic targets to better assist in the design of new molecules for drug discovery."

In other words, computer scientists can use AI systems to model what new beneficial drugs may look like for specifically targeted afflictions and then task the AI to work on discovering possible new drug molecules to use. Those results are then given to the chemists and biologists who synthesize and test the proposed new drugs.

AI gives society a guide to the quicker creation of newer, better pharmaceuticals.

Rosenzweig writes:

> *The benefits of these innovations are clear. Unfortunately, the possibilities for malicious uses are also becoming clear. The paper referenced above is titled "Dual Use of Artificial-Intelligence-Powered Drug Discovery." And the dual use in question is the creation of novel chemical warfare agents.*
>
> *One of the factors investigators use to guide AI systems and narrow down the search for beneficial drugs is a toxicity measure, known as LD50(where LD stands for "lethal dose" and the "50" is an indicator of how large a dose would be necessary to kill half the population). For a drug to be practical, designers need to screen out new compounds that might be toxic to users and, thus, avoid wasting time trying to synthesize them in the real world. And so, drug developers can train and instruct an AI system to work with a very low LD50threshold and have the AI screen out and discard possible new compounds that it predicts would have harmful effects. As the authors put it, the normal process is to use a "generative model [that is, an AI system, which] penalizes predicted toxicity and rewards predicted target activity." When used in this traditional way, the AI system is directed to generate new molecules for investigation that are likely to be safe and effective.*
>
> *But what happens if you reverse the process? What happens if instead of selecting for a low LD50threshold, a generative model is created to preferentially develop molecules with a high LD50threshold?*
>
> *One rediscovers VX gas—one of the most lethal substances known to humans. And one predictively creates many new substances that are even worse than VX.*

Rosenzweig notes that the developers started from scratch and did not artificially jump-start the process by using a training dataset that included known nerve agents. Instead, the investigators simply pointed the AI system in the general direction of looking for effective lethal compounds (with standard definitions of effectiveness and lethality). Their AI program then "discovered" a host of known chemical warfare agents and also proposed thousands of new ones for possible synthesis that were not previously known to humankind.

Rosenzweig concludes:

> *The authors stopped at the theoretical point of their work. They did not, in fact, attempt to synthesize any of the newly discovered toxins. And, to be fair, synthesis is not trivial. But the entire point of AI-driven drug development is to point drug developers in the right direction—toward readily synthesizable, safe and effective new drugs. And while synthesis is not "easy," it is a pathway that is well trod in the market today. There is no reason—none at all—to think that the synthesis path is not equally feasible for lethal toxins.*
>
> *And so, AI opens the possibility of creating new catastrophic biological and chemical weapons. Some commentators condemn new technology as "inherently evil tech." However, the better view is that all new technology is neutral and can be used for good or ill. But that does not mean nothing can be done to avoid the malignant uses of technology. And there is a real risk when technologists run ahead with what is possible, before human systems of control and ethical assessment catch up. Using artificial intelligence to develop toxic biological and chemical weapons would seem to be one of those use-cases where severe problems may lie ahead.*

Threat of Russian Chemical Weapons is 'Wake-up Call' on WMDs

By Greg Hadley

Source: https://www.airforcemag.com/threat-of-russian-chemical-weapons-wake-up-call-wmd/

Apr 01 – Concerns over weapons of mass destruction have surged in recent weeks, as Russia's invasion of Ukraine has turned increasingly brutal and officials warn that Russian President Vladimir Putin may use chemical, biological, or even nuclear weapons. For the Defense Department's counter-WMD leaders, it's a pivotal moment—and potentially a "wake-up call" for the U.S. to realize the importance of the mission, they told a House Armed Services subcommittee on April 1.

"I think the crisis in Ukraine and the blatant threats, really, by Russia of the potential use of chemical and biological weapons is opening everyone's eyes to how much of a problem this is," John Plumb, assistant secretary of Defense for space policy, told the HASC Intelligence and Special Operations subpanel.

For years, officials said, concerns over weapons of mass destruction were focused on their potential use by violent extremist organizations, like ISIS or al-Qaeda, or so-called "rogue states" like North Korea or Iran.

Recently, however, that has changed, as DOD has started to grapple with their potential use by adversaries with far greater capabilities—meaning a shift in priorities.

"From looking at closing the gaps that we have across the WMD spectrum in the investments, the main thing that we are pivoting from is concerns that it would be a non-state actor who would be using this to then really looking at state-based threats and the depth of the science and technology that they have available to them," Deborah G. Rosenblum, assistant secretary of Defense for nuclear, chemical, and biological defense programs, told lawmakers. "And we can get into greater detail in terms of the specificity, but that is a dramatic pivot from a threat perspective."

Russian officials have denied accusations that they have used chemical weapons, but independent observers have reported their use in Syria and Chechnya, as well as in poisonings in the United Kingdom. Now, Russia has accused Ukraine and the U.S. of developing biological and chemical weapons, an argument that Western leaders fear will be used as a pretext for Russia deploying such weapons of their own.

"I can say to you, unequivocally, there are no offensive biological weapons in the Ukraine laboratories that the United States has been involved with," Rosenblum said.

Still, deterring Russia from using any WMDs in Ukraine presents a "challenge" to the U.S., Plumb acknowledged.

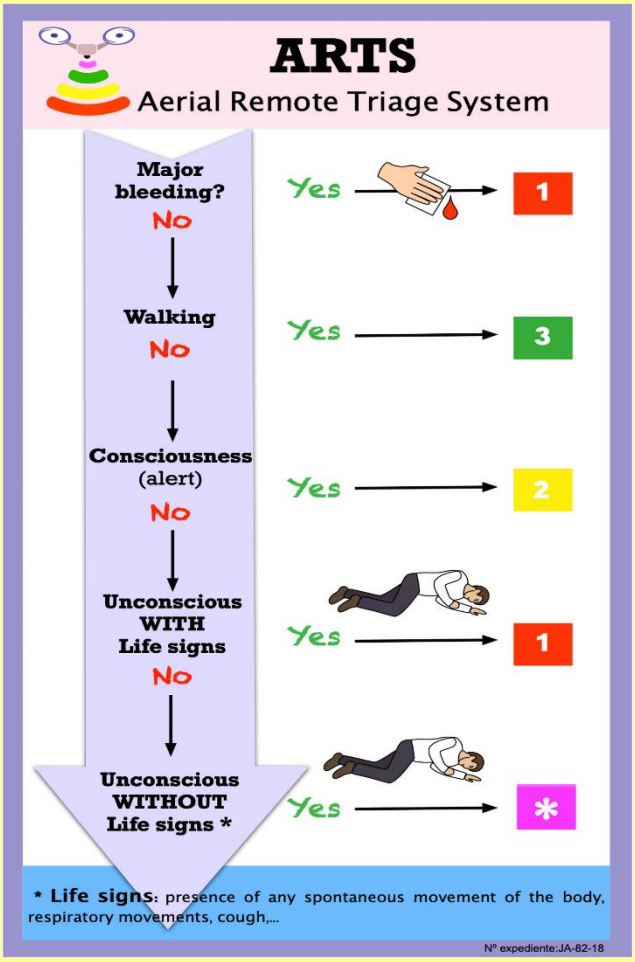
"I think the fact that the White House has used the megaphone of the United States of America to call this out is an important deterrent," Plumb said. "It's not just the administration, it's also working with the Congress too, to rally the entire NATO alliance to kind of align against this. … We have this communication conflict that we really need to work on. On a readiness side, there is some argument to be made that better readiness and better training … helps deter. It's necessary but not sufficient. But

the more ready we are to engage in a zone like that, then perhaps the higher the threshold is for its use."
In order to be prepared should deterrence fail, Defense Secretary Lloyd J. Austin III has directed that DOD integrate counter-WMD operations into "planning, resourcing, modernizing, and then more importantly, training and exercising, holistically," said Vice Adm. Collin Patrick Green, deputy commander of U.S. Special Operations Command.
In 2018, SOCOM took over the lead role in organizing C-WMD efforts across the department. Now, four years later, Green sees the current crisis as a critical moment for the entire department and all of government to realize the urgency of the mission, just as they did after the attacks on Sept. 11, 2001.
"I think this is a wake-up call with regard to C-WMD, much like [counterterrorism] was," Green said. "So I think the coordinating authority and the work that we've done here with my colleagues to recognize this threat, to plan for it, to modernize, and then to train and exercise, frankly, it's a holistic approach."

Greg Hadley is the Congressional editor of Air Force Magazine. A graduate of the University of Notre Dame, he has more than five years of experience in national and local media, working for The State (Columbia, S.C.) and the McClatchy D.C. Bureau.

Development of the Aerial Remote Triage System using drones in mass casualty scenarios: A survey of international experts

By Cristina Alvarez-Garcıal, Sixto Camara-Anguita, Jose Marıa Lopez-Hens, et al.
PLOS ONE | May 11, 2021
Source



Abstract

The use of drones for triage in mass-casualty incidents has recently emerged as a promising technology. However, there is no triage system specifically adapted to a remote usage. Our study aimed to develop a remote triage procedure using drones. The research was performed in three stages: literature review, the development of a remote triage algorithm using drones and evaluation of the algorithm by experts. Qualitative synthesis and the calculation of content validity ratios were done to achieve the Aerial Remote Triage System.
This algorithm assesses (in this order): major bleeding, walking, consciousness and signs of life; and then classify the injured people into several priority categories: priority 1 (red), priority 2 (yellow), priority 3 (green) and priority (violet). It includes the possibility to indicate save-living interventions to injured people and bystanders, like the compression of bleeding injuries or the adoption of the recovery position.
The Aerial Remote Triage [ART] System may be a useful way to perform triage by drone in complex emergencies when it is difficult to access to the scene due to physical, chemical or biological risks.

CBRNE Mass Casualty: Rapid Bedside Ultrasound Triage System Awarded BARDA Investment

Source: https://globalbiodefense.com/2021/10/29/cbrne-mass-casualty-rapid-bedside-ultrasound-triage-system-awarded-barda-investment/

October 2021 – A portable, radiation-free alternative for fracture screening may help reduce the need for limited X-rays resources – the equipment, as well as the physical space and

specially trained personnel required for X-rays – in a mass casualty incident, such as a radiological or nuclear emergency.
BARDA has partnered with **RIVANNA** to develop the Accuro XV toward U.S. market entry. BARDA will support the advanced research and development of the Accuro XV from a benchtop prototype to a fully functional, market ready fracture detection device with decision-assist technology to help advance emergency medicine.

RIVANNA®, developers of imaging-based medical solutions, announced that they have received a contract from the Biomedical Advanced Research and Development Authority (BARDA), a division of the Office of the Assistant Secretary for Preparedness and Response (ASPR) within the U.S. Department of Health and Human Services (HHS), for the design and development of a computer-aided 3D fracture detection and diagnosis product, called Accuro® XV. HHS/ASPR/BARDA will provide $11.6 million over 24 months with options for additional funding for supporting further development up to $65 million.
The Accuro XV is a portable, computer-aided, 3D fracture detection and diagnosis system based on ultrasound imaging. The device is intended for rapid, radiation-free, bedside fracture triage. If development is successful, such a device may help reduce bottlenecks in routine care and mass casualty blast trauma incidents by quickly providing a detailed digital visualization of an injury site and determining whether a fracture is present. This approach may enable emergency departments to fast-track care for the large number of low severity, simple fractures and sprains. In the wake of any chemical, biological, radiological, or nuclear (CBRN) incident, easily deployable triage tools are needed to help save lives and enable a rapid response. Blast-related trauma typically includes multi-system, life-threatening injuries that demand swift triage and treatments either in the field or in the emergency rooms.
Overwhelming numbers of trauma patients are anticipated in the immediate aftermath of a CBRN incident, and it is vital to conserve X-ray resources for the highest priority patients. The Accuro XV helps make that possible by enabling rapid triage of fracture severity. Additionally, the Accuro XV's cart-based device is designed to be portable, which would enable the device to be deployed in multiple environments. These features could help meet the CBRN Burn/Blast Program's objectives of improving care by reducing bottlenecks and of addressing care of fractures and extremity injuries, which account for more than half of all injuries in mass casualty incidents. The advancement of field-deployable equipment aligns with BARDA's commitment to developing medical countermeasures that are fast, accurate, and able to be used in a wide array of settings.

A translational triage research development tool: standardizing prehospital triage decision-making systems in mass casualty incidents

By Amir Khorram-Manesh, Johan Nordling, Eric Carlström, et al.

Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine ***volume 29****, Article number: 119 (2021)*

Source [full text]: https://sjtrem.biomedcentral.com/articles/10.1186/s13049-021-00932-z

There is no global consensus on the use of prehospital triage system in mass casualty incidents. The purpose of this study was to evaluate the most commonly used pre-existing prehospital triage systems for the possibility of creating one universal translational triage tool.

Methods

The Rapid Evidence Review consisted of (1) a systematic literature review (2) merging and content analysis of the studies focusing on similarities and differences between systems and (3) development of a universal system.

Results

There were 17 triage systems described in 31 eligible articles out of 797 identified initially. Seven of the systems met the predesignated criteria and were selected for further analysis. The criteria from the final seven systems were compiled, translated and counted for in means of 1/7's. As a product, a universal system was created of the majority criteria.

Conclusions

This study does not create a new triage system itself but rather identifies the possibility to convert various prehospital triage systems into one by using a triage translational tool. Future research should examine the tool and its different decision-making steps either by using simulations or by experts' evaluation to ensure its feasibility in terms of speed, continuity, simplicity, sensitivity and specificity, before final evaluation at prehospital level.

The Challenge of Triage for CBRNE and Mass Casualty Incidents

By Deborah W Cohen (Biodefense Graduate Certificate Program)

Source: https://pandorareport.org/2021/03/12/the-challenge-of-triage-for-cbrne-and-mass-casualty-incidents/

March 2021 – Imagine you have travelled across the country to attend a professional conference. While attending a presentation, the session is suddenly interrupted by news that other attendees are falling ill from a chlorine leak at the conference center's pool. There are sounds of sirens and chaos outside. The presenter asks everyone to stay calm. They resume their presentation, but about an hour later a handful of individuals in the room begin to fall ill. As you being to wonder if this is connected to the incident outside at the pool, you suddenly become incapacitated and fall off your chair. The last thing you see is first responders wearing hazmat gear entering the room.

This was the initial stage of the scenario for the Tabletop Capstone Exercise on the last day of the U.S. Army's Hospital Management (HM) – Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Incidents training course held in late January 2021. I was assigned to the RED HOSPITAL response team which was comprised of military and civilian members. As the scenario unfolded, we organized a response utilizing the doctrine, tools, and planning concepts of the Hospital Incident Management System (HIMS) taught during the first four days of the course.

Many kinds of emergency incidents happen in our communities. The scenario to which we responded could have been caused by a "conventional" emergency or a terrorist attack involving a chemical agent and a biological agent. The nature of the attack would be determined through an investigation using evidence collected during and after the response. The disaster response, however, must start immediately and be premised on the National Incident Management System (NIMS) guided by the National Response Framework (NRF). The NRF is the national emergency management doctrine formulated by the Office of the Assistant Secretary of Preparedness and Response (ASPR) in the Department of Health and Human Services. The NIMS provides federal support to state and local incident managers and is designed to be scalable, flexible, and adaptable to all types of incidents.

This emergency management system was put in place by Homeland Security Presidential Directive 5 in 2003 which sought to "enhance the ability of the United States to manage domestic incidents by establishing a single, comprehensive national incident management system." The guiding principles of the NIMS are the template for local Incident Command Systems (ICS). By way of background on nomenclature, Incident Management Systems (IMS) are more comprehensive in scope than Incident Command Systems (ICS). IMS also deal with the longer term direct and indirect

effects of an event in a community. ICS can be thought of as aa component of IMS dealing more narrowly with specific urgent actions of getting an incident under control. However, ICS and IMS are designed to be compatible with each other. The ICS operates on the principle of "unity of effort" which provides the multiple organizations responding to an incident a way to coordinate and focus their efforts efficiently by setting aside overlaps and competition across authorities and jurisdictions.Local hospitals are required to prepare for and respond to disasters using the Hospital Incident Command System (HICS) in compliance with NIMS. One of the ways that HICS improves emergency planning, response and recovery is by clearly designating who is responsible for different roles across the response command organization such as incident command, security, medical technology, personnel, finance, supply, logistics, public information, liaison services, and transport. Since compliance with NIMS is a condition for any healthcare facility to receive Federal assistance, the adoption of ICS by first responders and HICS by healthcare organizations enables government and non-government entities to respond cooperatively to an incident.

The week of training provided by the HM-CBRNE course covered the properties of each of the CBRNE threats and their respective hospital management protocols. These threat-response relationships were further illustrated by incident scenarios. In these scenarios, triage was, for me, the main component that best characterized the realities of emergencies. In contrast to the Medical Management of Chemical and Biological Casualties (MCBC) Course that I attended last year, which focused on battlefield triage, this course also included lessons on triage in a civilian community setting.

We learned about three types of triage systems that hospitals use for trauma casualties that are not specifically designed for CBRNE incidents: (1) field triage conducted at the scene of an incident to match available resources with patients; (2) inter-hospital sorting for the transfer of more seriously injured patients to higher level care facilities; and (3) mass-casualty sorting and prioritizing during a disaster. There is also a reverse triage system to sort hospital patients for discharge. These triage systems support the creation and utilization of surge capacity by hospitals to deal with mass casualty incidents, which resonates today with the challenges posed by the COVID-19 pandemic. Triage of casualties caused by a CBRNE incident can be complicated by the unique effects of these weapons as well as by pre-existing conditions among patients and the impact of psychological trauma.

The U.S. Army uses three types of "sorting" systems for triage: medical treatment, decontamination, and evacuation. For medical treatment, there are four categories of triage: Immediate, Delayed, Minimal, and Expectant (IDME). In medical triage, Immediate cases require intervention within a few minutes using the ABCDDs: Airway, Breathing, Circulation, Decontamination, and Drugs. In CBRNE events, immediate intervention can also use the $(MARs)^2$ system: Mask, attention to issues of Massive hemorrhage, Airway, Antidotes,Respirations, and Rapid removal of contaminants. Delayed cases can tolerate a short postponement of medical attention. Minimal patients are those with minor, stable, or resolving injuries that can tolerate a longer delay in treatment. Expectant patients will not survive without the use of scarce resources that could otherwise be used for possible survivors. For a civilian community setting, triage of CBRNE casualties will be handled differently. Four different triage systems for CBRNE casualties, each with their own advantages and limitations, have been developed: (1) Rapid Assessment of Mentation and Pulse (RAMP); (2) Sort Assess Life-saving Treatments Treatment and/or Transport (SALT); (3) Simple Triage and Rapid Treatment (SMART); and (4) Simple Triage and Rapid Treatment (START).

A second triage system developed by the military is for decontamination and it depends on the type of agent and exposure involved. It is typically conducted concurrent with medical triage. For decontamination, the sorting categories are Immediate, Operational, and Thorough. The Assistant Secretary for Preparedness and Response (ASPR) and its partners have developed a protocol for decontamination triage based on a tool called the Primary Response Incident Scene Management (PRISM).

The third triage system is for evacuation which includes Urgent, Priority, and Routine (UPR) sorting categories. Triage for evacuation is based on the determinations of medical triage and time factors. Patients who can be matched with available treatment and are most likely to survive and recover will be evacuated. Patients in the Urgent category are those who need treatment within two hours. Priority triage is for those who need treatment within four hours. Routine triage patients can wait for up to 24 hours for treatment. The Routine group of evacuees will also include terminal patients.

Col. (ret.) James M. Madsen, MD, the Army presenter, explained that while all triage methods are based on on-the-scene determinations of urgency, survivability, and resource availability, mass-casualty and CBRNE triage is different from other kinds of triage in several ways. For triage of victims of a CBRNE incident, the speed of operation is even more critical, personal protective equipment (PPE) is always needed due to the risk of contamination, verbal communication is difficult, hands-on exams may not be possible, and first responders are sorting simultaneously for medical treatment, decontamination, and evacuation. CBRNE triage schemes are very challenging as they must quickly account for the clinical implications of the specific CBRNE agent to which the victims have been exposed. For instance, the length of the latent period before symptoms manifest, the risk of secondary contamination, and the existence of specific antidotes varies among different chemical warfare agents. The most important message about triage for mass casualties and CBRNE incidents is that while there

are many methods under development, there is no consensus about the best option to employ in every case. It was sobering to learn that current triage methods are not adequate for the complex situations, conditions, and circumstances that characterize the evolving landscape of CBRNE and terrorism events.

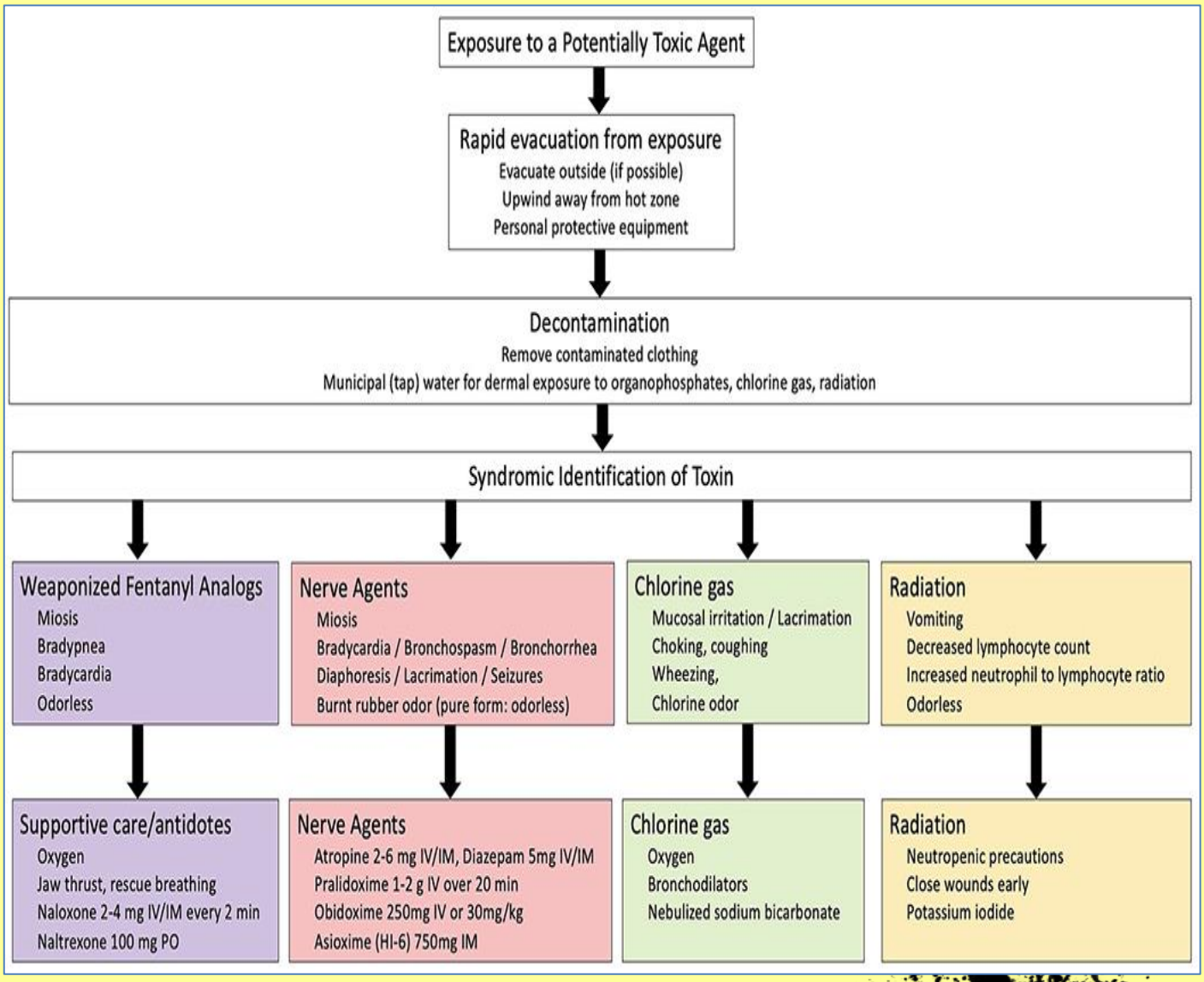
Wartime toxicology: the spectre of chemical and radiological warfare in Ukraine

By P R Chai, Y Berlyand, E Goralnick, et al

Toxicol Commun 2022;6(1):52-58.

Source: https://pubmed.ncbi.nlm.nih.gov/35497376/

The unprovoked invasion of Ukraine by the Russian Federation has resulted in the largest humanitarian crisis in Europe since World War II. As fighting intensifies throughout Ukraine, there is an increasing concern that the Russian Federation may consider the direct use of chemical or radiological weapons against military personnel and civilians in Ukraine. Despite prohibition of chemical weapons from the Chemical Weapons Convention of 1997, recent evidence has demonstrated that state actors will continue to use these agents as weapons of war and terror, despite publicly denying their use. We review chemical weapons produced and used by the Russian Federation (or its allies) to identify plausible risks in the Russian war in Ukraine. We also provide rapid assessment and treatment guidelines to recognize and manage these acute exposures.



Rapid identification and treatment of potential chemical or nuclear weapons of war.

Virtual Program—Biological and chemical weapons security and the war in Ukraine

By Halley Posner | May 6, 2022

Watch biosecurity experts Asha George and Robert Pope in this May 5 program, where they joined Bulletin editor Matt Field to discuss how disinformation about the use of biological weapons in Ukraine weakens global security. **Watch now.**

Halley Posner is the Program Manager for the Bulletin of the Atomic Scientists. She was part of the 2021 cohort of the Nuclear Scholars Initiative at the Center for Strategic Studies' Project on Nuclear Issues and recently was a fellow with N Square Collaborative. Posner holds a BA in history from Bates College, where she was also the editor-in-chief of the student-run newspaper, *The Bates Student.* Academically, she focused on nonproliferation, deterrence, and asymmetric warfare theory. Before joining the Bulletin, she was a research intern at the Center for International Policy where she conducted projects focusing on North Korea and nuclear weapons. Following graduation, she spent the summer in Stuttgart, Germany as an English language instructor.

Assessment of the effectiveness of a course in major chemical incidents for front line health care providers: a pilot study from Saudi Arabia

By Nidaa Bajow, Shahnaz Alkhalil, Nisreen Maghraby, et al.

BMC Medical Education volume 22, Article number: 350 (2022)

Source: https://bmcmededuc.biomedcentral.com/articles/10.1186/s12909-022-03427-2

Mass chemical exposure emergencies are infrequent but can cause injury, illness, or loss of life for large numbers of victims. These emergencies can stretch and challenge the available resources of healthcare systems within the community. Political unrest in the Middle East, including chemical terrorist attacks against civilians in Syria and increasing chemical industry accidents, have highlighted the lack of hospital preparedness for chemical incidents in the region. This study aimed to evaluate the effectiveness of a course designed to empower frontline healthcare providers involved in mass casualty incidents with the basic knowledge and essential operational skills for mass chemical exposure incidents in Saudi Arabia.

Methods

A mixed-methods approach was used to develop a blended learning, simulation enhanced, competency-based course for major chemical incidents for front line healthcare providers. The course was designed by experts from different disciplines (disaster medicine, poisoning / toxicology, and Hazard Material Threat - HAZMAT team) in four stages. The course was piloted over five days at the Officers Club of the Ministry of Interior (Riyadh, Saudi Arabia). The 41 participants were from different government health discipline sectors in the country. Pre- and post-tests were used to assess learner knowledge while debriefing sessions after the decontamination triage session and simulation-enhanced exercises were used for team performance assessment.

Results

The overall knowledge scores were significantly higher in the post-test (69.47%) than the pre-test (46.3%). All four knowledge domains also had significant differences between pre- and post-test results. There were no differences in the pre and post-test scores for healthcare providers from the different health disciplines. A one-year post-event survey demonstrated that participants were satisfied with their knowledge retention. Interestingly, 38.3% had the opportunity to put this knowledge into practice in relation to mass chemical exposure incidents.

Conclusion

Delivering a foundation level competency-based blended learning course with enhanced simulation training in major chemical incidents for front line healthcare providers may improve their knowledge and skills in response to such incidents. This in turn can improve the level of national preparedness and staff availability and make a crucial difference in reducing the health impacts among victims.

Fentanyl Has Transformed The Illicit Drug Trade. A Toxicologist Explains How

By Kavita Babu

Source: https://www.sciencealert.com/fentanyl-has-transformed-illicit-drug-trade-in-the-us-a-toxicologist-explains-how

May 11 – Buying drugs on the street is a game of Russian roulette. From Xanax to cocaine, drugs or counterfeit pills purchased in non-medical settings may contain life-threatening amounts of fentanyl.

Physicians like me have seen a rise in unintentional fentanyl use from people buying prescription opioids and other drugs laced, or adulterated, with fentanyl. Heroin users in my community in Massachusetts came to realize that fentanyl had entered the drug supply when overdose numbers exploded.

In 2016, my colleagues and I found that patients who came to the emergency department reporting a heroin overdose often only had fentanyl present in their drug test results.

As the Chief of Medical Toxicology at UMass Chan Medical School, I have studied fentanyl and its analogs for years. As fentanyl has become ubiquitous across the US, it has transformed the illicit drug market and raised the risk of overdose.

Fentanyl and its analogs

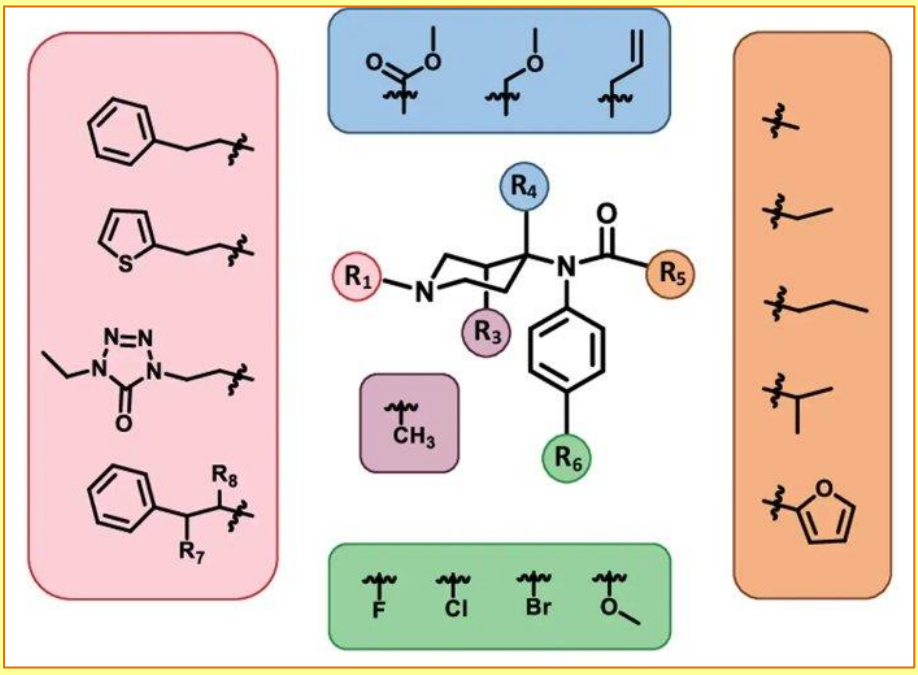
Fentanyl is a synthetic opioid that was originally developed as an analgesic – or painkiller – for surgery. It has a specific chemical structure with multiple areas that can be modified, often illicitly, to form related compounds with marked differences in potency.

For example, carfentanil, a fentanyl analog formed by substituting one chemical group for another, is 100 times more potent than its parent structure. Another analog, acetylfentanyl, is approximately three times less potent than fentanyl, but has still led to clusters of overdoses in several states.

Despite the number and diversity of its analogs, fentanyl itself continues to dominate the illicit opioid supply. Milligram per milligram, fentanyl is roughly 50 times more potent than heroin and 100 times more potent than morphine.

Lacing or replacing drugs with fentanyl

Drug dealers have used fentanyl analogs as an adulterant in illicit drug supplies since 1979, with fentanyl-related overdoses clustered in individual cities.



Fentanyl's chemical backbone (the structure in the center) has multiple areas (the colored circles) that can be substituted with different functional groups (the colored boxes around the edges) to change its potency. *(Christopher Ellis et al., CC BY-NC-ND)*

The modern epidemic of fentanyl adulteration is far broader in its geographic distribution, production, and number of deaths. Overdose deaths roughly quadrupled, going from 8,050 in 1999 to 33,091 in 2015.

From May 2020 to April 2021, more than 100,000 Americans died from a drug overdose, with over 64 percent of these deaths due to synthetic opioids like fentanyl and its analogs.

Illicitly manufactured fentanyl is internationally synthesized in China, Mexico, and India, then exported to the United States as powder or pressed pills.

Additionally, the emergence of the dark web, an encrypted and anonymous corner of the internet that's a haven for criminal activity, has facilitated the sale of fentanyl and other opioids shipped through traditional delivery services, including the US Postal Service.

Fentanyl is both sold alone and often used as an adulterant because its high potency allows dealers to traffic smaller quantities but maintain the drug effects buyers expect.
Manufacturers may also add bulking agents, like flour or baking soda, to fentanyl to increase supply without adding costs. As a result, it is much more profitable to cut a kilogram of fentanyl compared to a kilogram of heroin.
Unfortunately, fentanyl's high potency also means that even just a small amount can prove deadly. If the end user isn't aware that the drug they bought has been adulterated, this could easily lead to an overdose.

Preventing fentanyl deaths
As an emergency physician, I give fentanyl as an analgesic, or painkiller, to relieve severe pain in an acute care setting. My colleagues and I choose fentanyl when patients need immediate pain relief or sedation, such as anesthesia for surgery.
But even in the controlled conditions of a hospital, there is still a risk that using fentanyl can reduce breathing rates to dangerously low levels, the main cause of opioid overdose deaths.
For those taking fentanyl in non-medical settings, there is no medical team available to monitor someone's breathing rate in real time to ensure their safety.
One measure to prevent fentanyl overdose is distributing naloxone to bystanders. Naloxone can reverse an overdose as it occurs by blocking the effects of opioids.
Another measure is increasing the availability of opioid agonists like methadone and buprenorphine that reduce opioid withdrawal symptoms and cravings, helping people stay in treatment and decrease illicit drug use.
Despite the lifesaving track records of these medications, their availability is limited by restrictions on where and how they can be used and inadequate numbers of prescribers.
Other strategies to prevent overdose deaths include lowering the entry barrier to addiction treatment, fentanyl test strips, supervised consumption sites, and even prescription diamorphine (heroin).
Despite the evidence supporting these measures, however, local politics and funding priorities often limit whether communities are able to give them a try. Bold strategies are needed to interrupt the ever-increasing number of fentanyl-related deaths.

Kavita Babu, Professor of Emergency Medicine, UMass Chan Medical School.

How Opioids Were Used as Weapons During the Moscow Theater Hostage Crisis

Source: https://www.history.com/news/opioid-chemical-weapons-moscow-theater-hostage-crisis

May 2018 – In October 2002, after Chechen rebels stormed a Moscow theater and trapped more than 800 people for 57 hours, it seemed like it couldn't get much worse. Then Russian troops released a mysterious gas into the theater. The gas was intended to incapacitate the rebels—which it did—but it also ended up killing more than 120 of the hostages.

That gas contained carfentanil, an opioid 10,000 times more powerful than morphine and 100 times more powerful than fentanyl. Fentanyl has received increased media attention in recent years because of the U.S. opioid crisis, but carfentanil has also been seeping into the American drug market and causing overdose deaths. So yes, carfentanil is a drug that Americans are overdosing on—and it's also a weapon banned by the Chemical Weapons Convention.
As the then-unknown gas filled the theater, hostages and rebels alike passed out or died immediately. Russian officers dragged everyone out and packed both living and dead hostages onto the same buses and cars, says David Satter, a senior fellow at the Hudson Institute and author of *The Less You Know, the Better You Sleep: Russia's Road to Terror and Dictatorship under Yeltsin and Putin*.
"Bodies were piled one on top of another outside the theater entrance, with no attempt to separate the living from the dead," Satter writes in his book. "Alexander Karpov, a well-known

songwriter, died after spending seven hours alive in a bus packed with corpses. In another case, thirty hostages were put in a twelve-seat military microbus, some on the floor. A thirteen-year-old girl was crushed under the bodies and died on the way to a hospital."
Because Russian officials refused to reveal what was in the gas they'd released, medical professionals didn't know how to treat the hundreds of victims. They spent several hours testing antidotes before finding that naloxone, a drug used to treat opioid overdoses, could help counter the effects of the gas. By then, more lives had been lost, and the survivors' health had worsened. Those who lived through the experience continued to suffer from problems that no one knew how to treat, because the gas that'd caused them was still a mystery.

Special forces soldiers carrying out hostages from the Moscow theatre after the three-day stand off. (Credit: Anton Denisov/AFP/Getty Images)

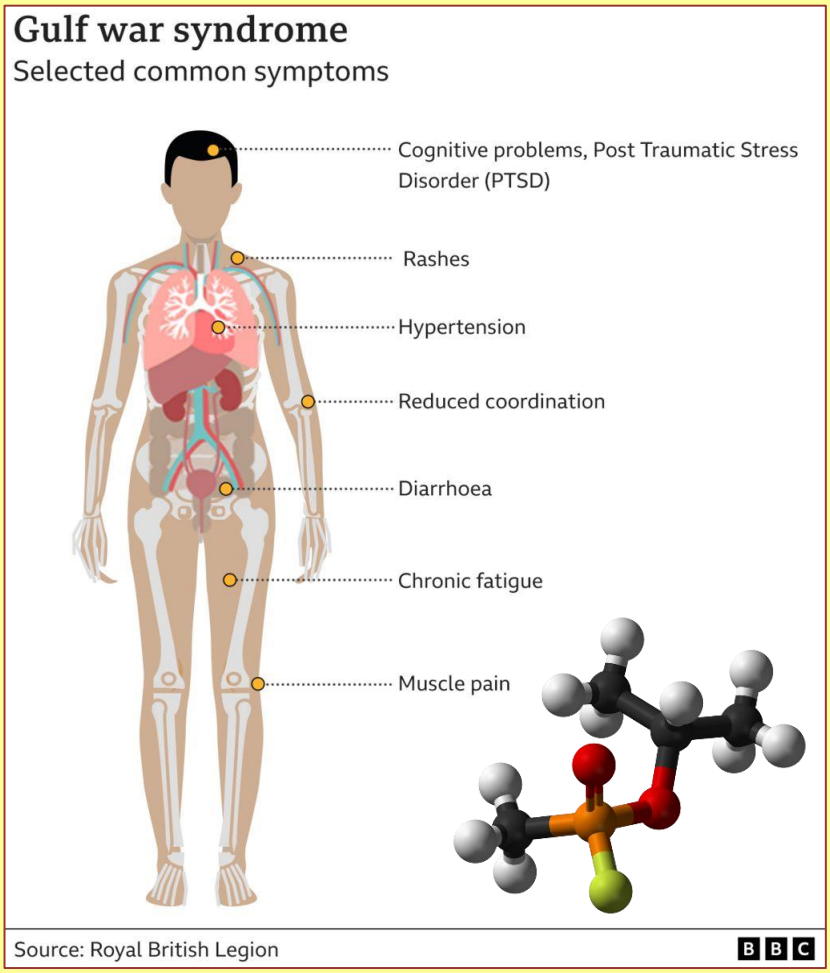
Russia's rationale for using the gas in the crisis was that officers couldn't have safely evacuated the hostages unless the rebels were incapacitated. This was because the rebels had announced they'd strung up bombs and some of them were wearing suicide belts. Later, officials discovered that the bombs were dummies, and that most of the suicide belts were fake. In any case, officers "shot all of the terrorists, including those who were unconscious, so that nobody was in a position to dispute their version of events," Satter says.
Nearly 16 years later, Russia still hasn't admitted what was in the gas, and has only acknowledged that it contained fentanyl-related compounds. But in 2012, a group of British scientists analyzed clothing from two survivors and urine from a third survivor. They determined that the gas contained the extremely potent drug carfentanil.
Out of the more than 64,000 drug overdose deaths in 2016, over 20,000 were related to fentanyl (which is already 50 times more powerful than heroin) and fentanyl analogs. That year, the Drug Enforcement Administration announced in a press release that first responders were starting to see overdoses from carfentanil, which is a fentanyl analog. Recently, federal investigators found enough carfentanil to kill 86,000 people in the home of one San Diego dealer.

A 2016 APinvestigation found that carfentanil is easily available from Chinese dealers, who continue to ship it to the U.S. despite recent collaboration between the countries to limit its export and production. This not only makes it easier for people with opioid addictions to obtain lethal doses, it also makes it easier for terrorists and authoritarian governments to obtain drugs that many countries recognize as chemical weapons. In a 2017 article for the The Cipher Brief, former CIA acting director Michael J. Morell argued that the opioid crisis is a national security threat that we're not paying attention to.
"[C]arfentanil is the perfect terrorist weapon," he wrote. "It is readily available in large quantities. It comes in several forms—including tablets, powder, and spray. It can be absorbed through the skin or through inhalation. It acts quickly … In short, a single terrorist attack using carfentanil could kill thousands of Americans." Despite this, "No one from either the Obama or Trump administrations has spoken publicly about the threat," Morell continued. "It would be a terrible tragedy if foreign terrorists were to use the consequences of our own domestic drug problem against us—particularly when it is so easy to see what might be coming."

Sarin gas blamed for Gulf War syndrome

Source: https://www.bbc.com/news/health-61398886

May 11 – US scientists say they have discovered what caused thousands of soldiers who served in the 1991 Gulf War to fall sick with mysterious symptoms.
They have pinned the blame on the nerve agent sarin, which was released into the air when caches of Iraqi chemical weapons were bombed.
Many veterans have complained of a range of debilitating symptoms which developed after their service.
But for decades the cause of Gulf War Syndrome has remained elusive.
Sarin is usually deadly, but lead researcher Dr Robert Haley said the gas that soldiers were exposed to in Iraq was diluted, and so not fatal.
"But it was enough to make people ill if they were genetically predisposed to illness from it."
Dr Haley said the key to whether somebody fell ill was a gene known as PON1, which plays an important role in breaking down toxic chemicals in the body.
His team found veterans with a less effective version of the PON1 gene were more likely to become sick.
The latest study - largely funded by the US government - involved more than 1,000 randomly-selected American Gulf War veterans.
Dr Haley, of the University of Texas Southwestern Medical Center, said: "This is the most definitive study.
"We believe it will stand up to any criticism. And we hope our findings will lead to treatment that will relieve some of the symptoms."



Many British cases

More than 50,000 British troops served in the war which followed Iraqi President Saddam Hussein's invasion of Kuwait.
The Royal British Legion said research suggests up to 33,000 UK Gulf War veterans could be living with the syndrome, with 1,300 claiming a war pension for conditions connected to their service in the Gulf.

Over the past three decades, the veterans say they have struggled to have their illness taken seriously.
Before the war, Kerry Fuller from Dudley, West Midlands, was a fit 26-year old who loved climbing and went to the gym several times a week. Now it's a daily battle simply to get out of bed.
At the age of 40, he had a stroke. Now 58, he says he has such excruciating muscle and joint pain that he screams so loudly when he moves in the night that he wakes his whole household. He suffers from problems with his balance, memory and speech.
"Even when I was still in the military, I was getting illness after illness, breathing problems, chronic fatigue," he said.
"And when I questioned whether it could be anything to do with my service in the Gulf or what we were exposed to, the military line was 'You're talking nonsense, there's no evidence. Two paracetamol. Crack on'."

No positive answers

The National Gulf Veterans and Families Association, a charity working with British ex-soldiers who are ill, welcomed the study.
"For 30 years they have been disowned, ignored and lied to by consecutive governments, with no positive answers to their questions about exposure to toxic substances and gases and the affect it had on them both physically and mentally," it said in a statement.
"We hope the UK government takes this report on board and will respond by offering Gulf veterans access/opportunity to have the tests.
"This will hopefully lead to more meaningful and proper medical treatment which they have for too long been denied."
The Ministry of Defence said: "We continue to monitor and welcome any new research that is published around the world and financial support is available to veterans whose illness is due to service through the MoD War Pensions and the Armed Forces occupational pension schemes."
But the Royal British Legion said there had been "little meaningful research" on Gulf War Syndrome in the UK.
Professor Randall Parrish, of the University of Portsmouth, published a study last year which ruled out depleted uranium as a cause. He said: "I think this is a great example of an issue that has required a long-term effort to solve, but which only a few scientists have persisted in - others giving up and assuming it is either not a real illness or too complex to solve, and funding agencies not wanting to wade too deeply in the politics of it."

Genetic study confirms sarin nerve gas as the cause of Gulf War illness

Source: https://medicalxpress.com/news/2021-02-gulf-war-illness-depleted-uranium.html

Feb 18 – Dr. Robert Haley, here reviewing brain scans of Gulf War veterans, has been studying the illness for 28 years. Credit: UT Southwestern Medical Center
For three decades, scientists have debated the underlying cause of Gulf War illness (GWI), a collection of unexplained and chronic symptoms affecting veterans of the Persian Gulf War. Now researchers led by Robert Haley, M.D., Professor of Internal Medicine and Director of the Division of Epidemiology at UT Southwestern, have solved the mystery, showing through a detailed genetic study that the nerve gas sarin was largely responsible for the syndrome. The findings were published in *Environmental Health Perspectives*, a peer-reviewed journal supported by the National Institute of Environmental Health Sciences, with an accompanying editorial on the paper by leading environmental epidemiologists.
Dr. Haley's research group not only discovered that veterans with exposure to sarin were more likely to develop GWI, but also found that the risk was modulated by a gene that normally allows some people's bodies to better break down the nerve gas. Gulf War veterans with a weak variant of the gene who were exposed to sarin were more likely to develop symptoms of GWI than other exposed veterans who had the strong form of the gene.
"Quite simply, our findings prove that Gulf War illness was caused by sarin, which was released when we bombed Iraqi chemical weapons storage and production facilities," said Dr. Haley, a medical epidemiologist who has been investigating GWI for 28 years. "There are still more than 100,000 Gulf War veterans who are not getting help for this illness and our hope is that these findings will accelerate the search for better treatment."
In the years immediately following the Gulf War, more than a quarter of the U.S. and coalition veterans who served in the war began reporting a range of chronic symptoms, including fatigue, fever, night sweats, memory and concentration problems, difficulty finding words, diarrhea, sexual dysfunction, and chronic body pain. Since then, both academic researchers and those within the military and Department of Veterans Affairs have studied a list of possible causes of GWI, ranging from stress, vaccinations, and burning oil wells to exposure to pesticides, nerve gas, anti-nerve gas medication, and depleted uranium.

Over the years, these studies have identified statistical associations with several of these, but no cause has been widely accepted. Most recently, Dr. Haley and a colleague reported a large study in *Scientific Reports* testing veterans' urine for depleted uranium that would still be present if it had caused GWI and found none.

"As far back as 1995, when we first defined Gulf War illness, the evidence was pointing toward nerve agent exposure, but it has taken many years to build an irrefutable case," said Dr. Haley, who holds the U.S. Armed Forces Veterans Distinguished Chair for Medical Research, Honoring Robert Haley, M.D., and America's Gulf War Veterans.

Sarin is a toxic man-made nerve agent, first developed as a pesticide, that has been used in chemical warfare; its production was banned in 1997. When people are exposed to either the liquid or gas form, sarin enters the body through the skin or breathing and attacks the nervous system. High-level sarin often results in death, but studies on survivors have revealed that lower-level sarin exposure can lead to long-term impairment of brain function. The U.S. military has confirmed that chemical agents, including sarin, were detected in Iraq during the Gulf War. In particular, satellite imagery documented a large debris cloud rising from an Iraqi chemical weapons storage site bombed by U.S. and coalition aircraft and transiting over U.S. ground troop positions where it set off thousands of nerve gas alarms and was confirmed to contain sarin.

Previous studies have found an association between Gulf War veterans who self-reported exposure to sarin and GWI symptoms. However, critics have raised questions of recall bias, including whether veterans with GWI are simply more likely to remember and report exposure due to their assumption that it may be linked to their illness. "What makes this new study a game-changer is that it links GWI with a very strong gene-environment interaction that cannot be explained away by errors in recalling the environmental exposure or other biases in the data," Dr. Haley said.

In the new paper, Dr. Haley and his colleagues studied 508 deployed veterans with GWI and 508 deployed veterans who did not develop any GWI symptoms, all randomly selected from more than 8,000 representative Gulf War-era veterans who completed the U.S. Military Health Survey. They not only gaged sarin exposure—by asking whether the veterans had heard chemical nerve gas alarms sound during their deployment—but also collected blood and DNA samples from each veteran.

The researchers tested the samples for variants of a gene called PON1. There are two versions of PON1: the Q variant generates a blood enzyme that efficiently breaks down sarin while the R variant helps the body break down other chemicals but is not efficient at destroying sarin. Everyone carries two copies of PON1, giving them either a QQ, RR or QR genotype.

For Gulf War veterans with the QQ genotype, hearing nerve agent alarms—a proxy for chemical exposure—raised their chance of developing GWI by 3.75 times. For those with the QR genotype, the alarms raised their chance of GWI by 4.43 times. And for those with two copies of the R gene, inefficient at breaking down sarin, the chance of GWI increased by 8.91 times. Those soldiers with both the RR genotype and low-level sarin exposure were over seven times more likely to get GWI due to the interaction per se, over and above the increase in risk from both risk factors acting alone. For genetic epidemiologists, this number leads to a high degree of confidence that sarin is a causative agent of GWI.

"Your risk is going up step by step depending on your genotype, because those genes are mediating how well your body inactivates sarin," said Dr. Haley. "It doesn't mean you can't get Gulf War illness if you have the QQ genotype, because even the highest-level genetic protection can be overwhelmed by higher intensity exposure."

This kind of strong gene-environment interaction is considered a gold standard for showing that an illness like GWI was caused by a particular environmental toxic exposure, he added. The research doesn't rule out that other chemical exposures could be responsible for a small number of cases of Gulf War illness. However, Dr. Haley and his team carried out additional genetic analyses on the new data, testing other factors that could be related, and found no other contributing causes.

"There's no other risk factor coming anywhere close to having this level of causal evidence for Gulf War illness," said Dr. Haley.

The team is continuing research on how GWI impacts the body, particularly the immune system, whether any of its effects are reversible, and whether there are biomarkers to detect prior sarin exposure or GWI.

More information: Robert W. Haley et al, Evaluation of a Gene–Environment Interaction of PON1 and Low-Level Nerve Agent Exposure with Gulf War Illness: A Prevalence Case–Control Study Drawn from the U.S. Military Health Survey's National Population Sample, *Environmental Health Perspectives* (2022). DOI: 10.1289/EHP9009

Marc G. Weisskopf et al, Invited Perspective: Causal Implications of Gene by Environment Studies Applied to Gulf War Illness, *Environmental Health Perspectives* (2022). DOI: 10.1289/EHP11057

Randall R. Parrish et al, Resolving whether inhalation of depleted uranium contributed to Gulf War Illness using high-sensitivity mass spectrometry, *Scientific Reports* (2021). DOI: 10.1038/s41598-021-82535-3

Conjugates of human serum butyrylcholinesterase and nerve agents are behaviorally safe in rhesus macaques

By Ashima Saxena, Todd M. Myers and Maurice L. Sipos

Chemico-Biological Interactions | Volume 344, 1 August 2021, 109499

Source: https://www.sciencedirect.com/science/article/abs/pii/S0009279721001356

Exogenously administered human serum butyrylcholinesterase (Hu BChE) affords protection by binding to organophosphorus (OP) nerve agents and pesticides in circulation. The resulting Hu BChE-OP conjugate undergoes 'aging' and the conjugate circulates until cleared from the body. Thus, we evaluated the effects of Hu BChE-OP conjugates on the general health and operant behavior of macaques. Rhesus macaques trained to perform a six-item serial probe recognition (SPR) task were administered 30 mg/kg of Hu BChE-soman conjugate (n = 4) or Hu BChE-VX conjugate (n = 4) by intramuscular injection. Performance on the SPR task was evaluated at 60–90 min after conjugate administration and daily thereafter for the next 4 weeks. Diazepam (3.2 mg/kg), a positive control, was administered 5 weeks after conjugate administration and performance on the SPR task was evaluated as before. Blood collected throughout the study was analyzed for acetylcholinesterase (AChE) and BChE activities. Residual BChE activity of conjugates displayed a similar pharmacokinetic profile as free Hu BChE. Neither of the Hu BChE-OP conjugates produced clear or pronounced degradations in performance on the SPR task. In contrast, diazepam clearly impaired performance on the SPR task on the day of administration in 7 of 8 macaques (and sometimes longer). Taken together, these results suggest that Hu BChE-OP conjugates are safe and provide further support for the development of Hu BChE as a bioscavenger for use in humans.

Post-exposure treatment with the oxime RS194B rapidly reactivates and reverses advanced symptoms of lethal inhaled paraoxon in macaques

By Yvonne J Rosenberg, Jerry Wang, Tara Ooms, et al.

Toxicol Lett 2018 Sep 1;293:229-234.

Source: https://pubmed.ncbi.nlm.nih.gov/29129799/

Abstract

Fatalities from organophosphate (OP) insecticide result from both occupational and deliberate exposure; significantly impacting human health. Like nerve agents, insecticides are neurotoxins which target and inhibit acetylcholinesterases (AChE) in central and peripheral synapses in the cholinergic nervous system. Post-exposure therapeutic countermeasures generally include administration of atropine with a pyridinium aldoxime e.g. pralidoxime, to reactivate the OP-inhibited AChE. However, commonly used oximes inefficiently cross the bloodbrain barrier and are rapidly cleared and their benefit is debated. Recent findings have demonstrated the ability of a novel zwitterionic, centrally acting, brain penetrating oxime (RS194B) to reverse severe symptoms and rapidly reactivate sarin-inhibited AChE in macaques, but it has not been tested following OP pesticide poisoning. In the present study, the symptoms following a lethal dose of inhaled paraoxon (100ug/kg), were shown to mimic those in insecticide poisoned individuals and were also rapidly reversed in macaques by post-exposure IM administration of 80mg/kg of RS194B. This occurred with a concomitant reactivation of AChE to 40-100% in<1hr and BChE (40% in 8h). These findings will be used to develop a macaque model with RS194B as a post-exposure treatment for insecticide poisoning and generate efficacy data for approval under the FDA Animal rule.

Nerve Agent Antidote Nasal Spray

NAANS™ formulation **developed** and **patented** by OshoCorp Global Pvt. Ltd. (Division Healthcare & LifeSciences). As per internal R&D, **NAANS™** is expected to perform exceeding well in battlefield conditions. **NAANS™** as an Antidote for Nerve Agent can be utilised by Ministry of Defence, Govt of India and other armed forces around the world.

Nerve agents, sometimes also called nerve gases, are a class of organic chemicals that disrupt the mechanisms by which nerves transfer messages to organs. The disruption is caused by the blocking of acetylcholinesterase (AChE), an enzyme that catalyzes the breakdown of acetylcholine, a neurotransmitter. Nerve agents are acetylcholinesterase inhibitors used as poison. Poisoning by a nerve agent leads to constriction of pupils, profuse salivation, convulsions, and involuntary urination and defecation, with the first symptoms appearing in seconds after exposure. Death by asphyxiation or cardiac arrest may follow in minutes due to the loss of the body's control over respiratory and other muscles. Some nerve

agents are readily vaporized or aerosolized, and the primary portal of entry into the body is the respiratory system. Nerve agents can also be absorbed through the skin, requiring that those likely to be subjected to such agents wear a full body suit in addition to a respirator. At present to fight nerve gases, auto injectors are available. The use is painful, time consuming & the concerned person/solider may hesitate to use it. Therefore we invented a novel nasal spray formulation to treat nerve gas attack which is user friendly & cost effective. Various organizations, including the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), the U.S. Army Medical Research Institute of Chemical Defence (USAMRICD), and the New York Department of Health (NYDH), have therapeutic guidelines for the treatment of organophosphate exposures. Each agency's guideline varies in the amount of each dose and the timing of dosing. The CDC considers mild to moderate symptoms to include localized sweating, muscle twitching, nausea, vomiting, muscle weakness, and dyspnea. Unconsciousness, convulsions, apnea, and paralysis are classified as severe symptoms by the CDC. USA MRICD provides treatment recommendations to military personnel in the field and to medical personnel in field hospitals. USAMRICD recommends a symptoms-based treatment strategy. Military personnel in the field are issued Antidote AutoInjectors. US have further developed Antidote Treatment – Nerve Agent, Auto-injector (ATNAA).

Nerve Agent Antidote Nasal Spray: A Novel Approach

The patented formulation of **NAANS™** nasal spray contains special formulation of Atropine and Pralidoxime which blocks the acetylecholin receptor preventing its over stimulation. It prevents acetylecholin from binding to the receptors and thus prevents the constant simulation of muscles. This nasal spray will be highly useful, effective and handy for the troops to use.
At present in Nerve Agent Antidote AutoInjectors being used globally by armed forces, both Atropine and Pralidoxime are **stored in separate Autoinjector chambers** and injected, where as in **NAANS™** Antidote Nasal spray, we have made the patented formulation **mixing both Atropine and Pralidoxime** in such a way that **it can give maximum protection.**

Fixation of Dosage for "Nerve Agent Antidote Nasal Spray"

There is no specific dosage of atropine used to treat the symptom brought on by nerve gas. It simply depends on how much gas the patient/solider was exposed to. We have to give initial dose and then administer more doses until the patient's bronchial segregations stops.
Therefore we suggest three dose packages of **NAANS™**
1. Mild – for mild symptoms
2. Moderate – for moderate symptoms
3. Severe – for severe symptoms

With advancement in CWA detection technologies, we expect modern militaries to know about the possible CWA attack minimum 10-15 minutes in advance, keeping this in mind, we suggest, **NAANS™** Mild Dose may be taken about 10-15 minutes before the expected Nerve Agent Attack, as this will create the protection in the soldier. In case military unit are not able to detect the Nerve Agent attack than based on the Symptoms, the soldier will need to decide which dose to take as doses are depended on how much gas is in the environment. As stated above there is no specific dosage of **NAANS™**, used to treat the symptom brought on by nerve gas. It simply depends on how much gas the patient/solider was exposed to. We have to give initial dose and then administer more doses until the patient's bronchial segregations stops. Traditionally, in AutoInjector's, both Atropine and Pralidoxime are stored in separate AutoInjector chambers and used in combination, as an antidote to treat OP poisoning, which interferes with the muscle stimulation. These drugs are to be administered at the same time either through auto injector or through I.M. injections, which is a difficult and painful task as special trainings are needed for injecting a drug. Also if Nerve Gas intake by soldier is high than he may not be physically able to administer the AutoInjector himself and will have to wait for his buddy for support or may loose his life to Nerve Gas attack due to lack of timely support. Osho Healthcare intranasal spray **NAANS™** as Antidote for Nerve Agent will overcome above said problems in AutoInjector and will serve the **purpose with ease**, **without any pain and without any special training**.

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U.S. Meets Milestone in Chemical Weapons Stockpile Destruction

Source: https://www.defense.gov/News/News-Stories/Article/Article/3036463/us-meets-milestone-in-chemical-weapons-stockpile-destruction/

May 19 – The Defense Department's Chemical Demilitarization Program reached a milestone in its effort to eliminate the U.S. chemical weapons stockpile and recovered chemical warfare materiel. **The last M55 rocket containing venomous agent X, or VX nerve agent, was destroyed at the Blue Grass Chemical Agent-Destruction Pilot Plant in Richmond, Kentucky on April 19, 2022.**

With the entire stockpile of VX nerve agent successfully destroyed, the U.S. is on track with treaty compliance and international obligations under the Chemical Weapons Convention to meet the 2023 stockpile elimination deadline. Progress here supports U.S. commitment to arms control.

"When the CWC was signed, it was widely agreed that chemical weapons are one of the most inhumane weapons of mass destruction and that their use and production should be eliminated," said Deborah G. Rosenblum, assistant defense secretary for Nuclear, Chemical, and Biological Defense Programs. "U.S. leadership and commitment against the use of chemical weapons is imperative as countries, such as Syria and Russia, have failed to comply with CWC obligations."

As a leader in the global disarmament community, upholding norms against the possession and use of chemical weapons comes at a crucial time. Concerns persist that Russia may use chemical weapons in their assault on Ukraine, validating a fundamental view that international norms against chemical weapons remain under threat.

The U.S. remains committed to a world free from chemical weapons, and concomitant with that is a resolve to eliminate the use and production of chemical weapons.

Since the establishment of the original chemical weapons destruction deadline, the priority to safely and expeditiously dispose of chemical agents required the advancement of

alternative, non-incineration technologies. According to Rosenblum, "the United States remains committed to safely and effectively eliminating our chemical weapons stockpile in a manner that protects the security, health and safety of local communities."
The U.S. campaign to eliminate its chemical weapons stockpile met delays, and corresponding extensions, from the Organization for the Prohibition of Chemical Weapons as environmental and public health concerns were addressed to ensure the safest possible destruction methods.
While this effort began nearly 40 years ago, this final push represents decades of policy, cooperation and technological advancements.
In September 2017, Russia completed the destruction of its declared chemical weapons stockpile with the Russian destruction program benefiting from technical assistance and funding through DOD's Cooperative Threat Reduction Program. However, as evidenced by the Russian use of the chemical agent Novichok to assassinate Sergei and Yulia Skripal in 2018 and use in the attempt to assassinate Alexei Navalny in August 2020, Russia clearly retains a chemical weapons capacity.
"Chemical weapons have been a scourge to humanity, and we are proud to be party to the Chemical Weapons Convention, which bans this entire class of weapons of mass destruction," said Kingston A. Reif, deputy assistant defense secretary for Threat Reduction and Arms Control. "We are so pleased to have achieved this milestone towards reaching complete chemical weapons disarmament."
The DOD remains on target to the complete destruction of the U.S. chemical weapons stockpile by the Chemical Weapons Convention treaty commitment of September 30, 2023.
Destruction of the VX M55 rockets began at the Blue Grass Army Depot on July 9, 2021. Under the observation of trained operators and international inspectors from the OPCW, nearly 18,000 rockets were disassembled and drained of their chemical agent. The Assembled Chemical Weapons Alternatives is responsible for the safe and environmentally compliant destruction of the remaining U.S. chemical weapons stockpile stored at the U.S. Army Pueblo Chemical Depot in Colorado and the Blue Grass Army Depot in Kentucky. The PEO ACWA continues to focus on destroying the remaining U.S. chemical weapons stockpiles.

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**.

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 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

HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH
Executive and Continuing Professional Education

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

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!

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.

3rd CBRN-E Forensic Course

Dates: 23 September – 02 October 2022
https://www.cbrndefence.com/yazi/3-adli-kbrn-p-kursu

Organized by:
In cooperation with CBRN Defense Policy Development Association & Forensic Scientists Association

●▶ Deadline for registration: September 25, 2022

Recent events including the Iran-Iraq war in the 1980s, the chemical attack on the Tokyo subway, the bioterrorist attacks after the September 11, 2001 attack, the chemical weapons used numerous times in our neighboring Syria, the nuclear power plant accidents, the misuse of radiation in our daily lives, the recent Russian-Ukrainian war where chemical and nuclear danger's been on agenda, and especially the COVID-19 pandemic, which is claimed to be a biological weapon, have shown that "Chemical Biological-Radiological and Nuclear" threat, called CBRN, will, unfortunately, increase in the coming years, perhaps this unseen dangerous agents will be used conflicts like wars and terrorist events. It shows us that it will increase the possibility of using advanced technological weapons insidiously. However, more importantly, the threat of CBRN weapons, which has evidently increased more in the Middle East geography, including our country, has taken its place in the asymmetric war/terror threat. Defense and protection against these events is a situation that not only the security forces react to but also all civilian citizens should know, and that forces us to increase our awareness and consciousness on this issue.

Based on the reasons mentioned above; As the Chemical Biological Radiological Nuclear (CBRN) Defense Policy Development Association (CBRN Defense Platform) together with the Forensic Scientists Association, we will organize an online 3rd CBRN-E Forensic course between September 23-October 02, 2022 to raise awareness of CBRN threat in our country and to increase the awareness of this danger.

The training of the 3rd of the Forensic CBRN-P course whose first two of which were held in the year 2001 with great attention will be delivered at a very sensitive period when our world is talking about CBRN threat. In this training course, our expert academicians' lectures will cover topics including Forensic Sciences, Food Safety, Food Defense and Agroterrorism, Bioterrorism, Chemical Warfare Agents, Weapons of Mass Destruction, CBRN-P Substances Usage Methods, Targets, Dissemination Devices, Bomb / Dirty Bomb, Radioactive threats, Radionuclear Accidents, and Incidents, Suspicious Biological Package, Crime Scene Investigation and Forensic CBRN (Dirty Evidence) Investigation Laboratory in CBRN-P Attacks, Toxic Industrial Chemicals, Emergency, and Disaster Management in CBRN Incidents, CBRN Crime Scene Management. During this course, applications like scenario-based interactive studies of referee/cross-examination and table-top exercises on CBRN event management will also be performed.

The lessons are 60 hours in total and will be held between 09.00-18.00 on weekends and between 18.00-23.00 on weekdays. Attending at least 70 percent of the courses and being successful in the exam is mandatory for certification. It is also mandatory to open the camera during the lesson. Since the course will be given in return for a donation, there is no refund.

Crisis Management in the Healthcare Sector | Athens, Greece | 2-3 December 2022


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BIO NEWS

A new COVID wave — or nothing to worry about? The best- and worst-case scenarios for what comes next

Source: https://news.yahoo.com/a-new-covid-wave-or-nothing-to-worry-about-the-best-and-worst-case-scenarios-for-what-comes-next-191458520.html

Apr 22 – What the heck is happening with COVID right now?

Amid the chaos and controversy that followed a federal judge's decision to strike down the U.S. mask mandate for travel earlier this week — a decision the Department of Justice is now appealing — it was easy to overlook the fact that mask policy wasn't the only thing getting more perplexing by the day.

The pandemic itself has probably never been harder to parse.

On the one hand, cases have climbed in 41 states over the last two weeks, roused from their post-Omicron lows by an even more transmissible subvariant called BA.2.

On the other hand, BA.2 has been dominant in the U.S. for about a month — and cases are rising about one-tenth as fast they were in the first month of Omicron's reign, increasing by 46% between March 20 and April 20 compared with 475% between Dec. 15 and Jan. 15.

Then again, the U.S. is reporting only about 900,000 tests per day, on average — a fraction of the 2.5 million recorded at Omicron's peak. As Americans switch to rapid at-home testing, or don't bother to test at all, we're undercounting infections more than before.

Still, hospitalizations recently bottomed out around 15,000 and have barely budged for weeks, while ICU numbers have plummeted to their lowest level since the start of the pandemic — another sharp contrast with winter, when hospitalizations more than doubled between Dec. 20 and Jan. 20 to an all-time high of 160,000.

This could be a sign, some experts say, that infection- and vaccine-induced immunity are blunting the latest variants' most dire effects, a development they hope will usher in a less dangerous and disruptive phase of the pandemic.

Or, as other experts argue, it could just be the usual lag between cases and hospitalizations.

As we said: a bewildering moment. So rather than predict the future — never a wise move with the SARS-CoV-2 virus — here are three different ways this could play out in the weeks and months ahead.

The worst-case scenario

In recent days it's become clear that BA.2, which has been slowly spreading across the U.S. since December, is no longer the only subvariant in town. It's also not the fittest. Instead, BA.2.12.1 — a subvariant of a subvariant — now appears to be outcompeting its predecessor in bellwether states such as New York and Massachusetts.

According to estimates of variant proportions from the Centers for Disease Control and Prevention, BA.2 has accounted for more than 70% of U.S. infections since the beginning of April. But its growth has plateaued there. Meanwhile, BA.2.12.1 has surged from just 3.3% of infections in late March to 19% as of April 16.

In other words, BA.2.12.1's share of cases has been roughly doubling every week — 2.5 times as fast as BA.2's. This implies a significant "transmission advantage," says Dr. Eric Topol, director of the Scripps Research Translational Institute — one that's "similar in magnitude to the observed advantage of BA.2 over BA.1," according to Trevor Bedford, leading virologist at Seattle's Fred Hutchinson Center. "The BA.2 wave in the United States is … morphing [in]to the BA2.12.1 wave," Topol recently tweeted.

Why? Likely because BA.2.12.1 has an additional spike protein mutation (L452Q) that, in a slightly different form (L452R), "appeared to have an important role in promoting the spread of [the] Delta variant," according to Bedford.

Meanwhile, the similarly mutated BA.4 and BA.5 sublineages are spreading rapidly in South Africa.

"The hypothesis is then that 452R/Q is conferring some additional intrinsic transmission advantage," Bedford has explained. "Looking forward, I expect these 452R/Q sublineages to continue to expand." The question is how much damage they do while they spread.

The main reason BA.2 has moved so much more slowly than Omicron BA.1 in the U.S. is that a huge percentage of the population — as much as half — just had Omicron BA.1, which confers a degree of immunity against reinfection. If BA.2.12.1 (and BA.4, BA.5) can sidestep some of that immunity, it could transform the current ripple of cases into more of a wave. And while vaccines and especially boosters have so far shown an extraordinary ability to shield recipients from severe illness and death, millions of seniors remain unvaccinated and/or unboosted; long COVID looms as a real concern; and it's still unclear how much immunity wanes over time.

The worst-case scenario, then, is that these new sublineages exploit the United States' persistent vulnerabilities — including a steady decline in masking — and trigger more serious illness than BA.2 alone would have.

The best-case scenario

The good news is that there's no sign — yet — of anything in the U.S. approaching the prior waves of hospitalization and death. National numbers (which, again, have hit record lows) aren't particularly useful here because BA.2 and BA.2.12.1 have spiked mostly in the Northeast. But the numbers from New York and Massachusetts (the leading BA.2.12.1 states) may be more illuminating.

Over the past two weeks, case counts have increased by 62% in New York and 51% in Massachusetts. Hospitalizations have increased as well. But crucially, ICU admissions have remained remarkably flat — and low. In New York, in fact, ICU numbers as a share of overall hospitalizations have (at 11%) never been lower. The same goes for Massachusetts (at 8%). Likewise, just 111 (or 29%) of the state's nearly 400 hospitalized patients have been classified as "primarily hospitalized for COVID-19 related illness"; at Omicron's peak, that number was above 50%. Another telling statistic: A full 62% of patients in Massachusetts currently hospitalized with COVID report having been fully vaccinated when they tested positive; before Omicron, that number was consistently closer to one-third.

For now, then, it seems that more patients in bellwether states are testing positive for COVID upon admission to the hospital because more *people* are testing positive for COVID in the surrounding communities — but BA.2 and BA.2.12.1 aren't driving upticks in serious illness, probably thanks to vaccination.

Whether this pattern holds as BA.2.12.1 increases in prevalence remains to be seen. But according to the CDC, the new subvariant already accounts for more than 50% of infections in the New York region — and rates of case growth and test positivity may be starting to level off nonetheless. In Massachusetts, wastewater prevalence and cases both appear to have plateaued; meanwhile, cases in Washington, D.C., may be starting to decline.

Emerging relatively unscathed from a BA.2/BA.2.12.1 bump could be a good sign for the future.

According to Bedford, there are two plausible scenarios for the next year: (1) another "Omicron-like emergence event" in which a "new wildly divergent virus" evades existing immunity and upends society all over again, or (2) "evolution within BA.2" to "further increase intrinsic transmission," causing "lower attack rates," largely "driven by drift + waning [immunity] + seasonality."

Bedford considers the second, steady, flulike scenario "more likely" — and says that the more sublineages like BA.2.12.1 emerge, the more likely it will become.

"The more time that passes, the more confident we can be that another 'Omicron-like' emergence won't occur," he has explained.

If Bedford is right, that suggests future surges would look less like our huge winter Omicron wave than like whatever we're experiencing now. And it would also increase the "likelihood we eventually switch to [a] vax with [an] Omicron backbone," according to former Food and Drug Administration Commissioner Scott Gottlieb — meaning greater stability, predictability and protection against infection in the future.

The likeliest scenario

Possibly somewhere in the middle. BA.2.12.1 accounts for only 20% of current infections in the Massachusetts region; perhaps it takes off and undoes recent progress there. Or perhaps high vaccination and booster rates across the Northeast dull the variant's ultimate impact there — while lower rates leave less COVID-cautious states more vulnerable this spring. Or maybe seasonality and warming weather help shield the South and West the way they did last spring and summer.

On Twitter, a respected COVID modeler who goes by the handle @JPWeiland posted a prediction earlier this week. Based on recent BA.2.12.1 growth rates, the modeler said the variant has "a more significant chance to break through the shift in seasons to create a real wave than BA.2 could muster," but went on to say that because there is not a lot of anticipated immune escape with B.2.12.1, the wave should be inherently limited in size. "We won't see close to the 1M cases/day in January, but we could see 200k. Hard to tell for sure." Indeed it is.

At-Home COVID-19 Tests Expire. Here's What to Know About Yours

Source: https://news.yahoo.com/home-covid-19-tests-expire-155659977.html

Apr 22 – If you stockpiled at-home COVID-19 tests during the great Omicron shortage, you may want to do a little research before using your diagnostics. Like food and medications, rapid COVID-19 tests expire—but figuring out when they go bad isn't always as easy as glancing at the box.

Here's what to know about the expiration dates on at-home COVID-19 tests.

When does my COVID-19 test expire?

The components of COVID-19 test kits can degrade over time, potentially affecting the diagnostic's performance and accuracy, according to the U.S. Food and Drug Administration (FDA). Figuring out exactly how long a product lasts takes time, though. To know if a test performs well after two years, for example, the manufacturer would logically need at least two years of data. Since rapid COVID-19 tests are relatively new products, companies are collecting much of that data in real time—meaning their expiration dates can and do change.

The FDA sets expiration dates conservatively and then adjusts as needed. To start, at-home COVID-19 tests are typically authorized with expiration dates of four to six months after they're made, the FDA says. But the agency can extend that window as new study results are available. That dynamic system means the date stamped on your test's box may not be its current expiration date.

In January, the FDA extended the recommended shelf life of Abbott's BinaxNOW test kits from 12 to 15 months, based on data from the company. CareStart tests distributed through the federal government's free testing program can also be used for three months longer than their marked expiration dates, according to COVID.gov.

The California Department of Public Health went a step further in March, saying that, until further notice, consumers can use any at-home test beyond its expiration date as long as the "control" line shows up normally. (Your test kit should include guidance about the control line.) Officials from Washington State's health department have also acknowledged that using technically expired but functional tests may be necessary in some cases.

To get the latest information about your tests, check the FDA's website for updates about antigen tests and molecular tests. You may have to calculate the new expiration date yourself, using the lot number or date of manufacture stamped on the package.

Can I use a test even if it has expired?

If you're used to ignoring food expiration dates, you may be inclined to do the same with COVID-19 tests. But—even though some people interpret the dates more liberally—the FDA says not to use expired kits. Dr. Ulysses Wu, system director of infectious diseases at Connecticut's Hartford HealthCare, agrees it's best to be cautious, because you may not get accurate results if you use an expired test. "You're more likely to have false negatives rather than false positives, but that false negative could give a false sense of security when you actually are positive for COVID," he says.

Since diagnostic expiration dates are a "moving target," it's possible that your test actually lasts longer than the box suggests. But, Wu says, "I would just follow [the latest] expiration date and if you really have a concern or you don't want to throw it away, you can always call the company."

How should I store my home COVID tests?

Time isn't the only thing that can affect the quality of a COVID-19 test. Moisture and extreme temperatures can also impair its accuracy, Wu says. He recommends keeping medical supplies in a cool, dark place, like a kitchen cabinet, to keep them stable. Despite the name, your bathroom medicine cabinet is not a good place to store drugs and diagnostics because the room often gets hot and humid, Wu adds.

Extreme cold is also something to avoid. When the U.S. government first began distributing free at-home test kits this past winter, some people were concerned that the liquid reagents used in the diagnostic process might freeze during delivery. While the FDA says that's not something to be too worried about, tests are meant to be used in environments kept between 59°F and 86°F. So if yours gets cold in transit, you should allow it to warm up (while in the unopened box) for a couple hours before swabbing.

And though it may be tempting after recent supply-chain issues, Wu discourages keeping a huge stockpile of tests on hand. It's good to have a few around in case someone in your house is exposed to the virus or develops symptoms, but there's no need to buy a lifetime supply at once, he says—both because they may expire before you can use them, and because it makes it harder for others to get the supplies they need.

One Grim Statistic Lays Bare the Truly Relentless Grip of Long COVID

Source: https://www.sciencealert.com/one-grim-statistic-lays-bare-the-truly-relentless-grip-of-long-covid

Apr 25 – Not even one in four people have completely recovered from COVID a full year after being hospitalized with the disease, a UK study indicated Sunday, warning that long COVID could become a common condition.

The study involving more than 2,300 people also found that **women were 33 percent less likely to fully recover than men**.

It also found that obese people were half as likely to fully recover, while those who needed mechanical ventilation were 58 percent less likely.

The study looked at the health of people who were discharged from 39 British hospitals with COVID between March 2020 and April 2021, then assessed the recovery of 807 of them five months and one year later.

Just 26 percent reported a full recovery after five months, and that number rose only slightly to 28.9 percent after a year, according to the study published in *The Lancet Respiratory Medicine* journal.

"The limited recovery from five months to one year after hospitalization in our study across symptoms, mental health, exercise capacity, organ impairment and quality-of-life is striking," said study co-leader Rachel Evans of the National Institute for Health and Care Research.

The most common long-COVID symptoms were fatigue, muscle pain, poor sleep, slowing down physically, and breathlessness.

"Without effective treatments, long COVID could become a highly prevalent new long-term condition," said study co-lead Christopher Brightling of the University of Leicester.

The study, which will be presented at the European Congress of Clinical Microbiology and Infectious Diseases, is ongoing and will continue to monitor the patients' health.

Covid vaccination – Adenovirus

Acute hepatitis – Adenovirus

Covid vaccination – Acute hepatitis ???

Used face masks could find new life in stronger concrete

Source: https://newatlas.com/materials/used-face-masks-stronger-concrete/

Scientists shredded surgical masks into fibers, which were treated with an aqueous graphene oxide solution before being mixed into cement (Washington State University)

Apr 27 – Over the past couple of years, disposable face masks have become a very plentiful form of garbage. There may actually be a use for them, however, as recent research shows that they could strengthen concrete when added to it.

Previous studies have indicated that concrete is less prone to crack when tiny reinforcing fibers are mixed into it before it's poured. With that fact in mind, scientists at Washington State University wondered if the polypropylene or polyester fabric in discarded face masks could be a source *of* those fibers.

In order to find out, the researchers started by removing the metal nose-bridges and cotton ear loops from disposable surgical masks, then shredding the remaining fabric into fibers ranging from 5 to 30 mm in length.

Next, the fibers were treated with a graphene oxide solution. It formed a coating on them, adding extra surface area which helped them bond with commonly used Portland cement paste. They were added to that cement – which is the binding ingredient in concrete – at a volume of 0.1 percent.

A piece of face mask material (right) along with some of the fibers used in the study (Washington State University)

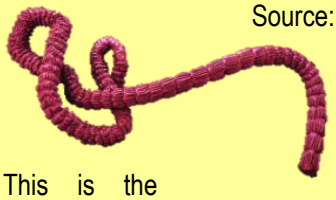
When the fiber-reinforced cement was tested a month after curing, it was found to exhibit 47 percent more splitting tensile strength than untreated Portland cement. It should be noted that the addition of the fibers did produce a slight *decrease* in compressive strength, although it was only 3 percent.

"This work showcases one technology to divert the used masks from the waste stream to a high-value application," said the lead scientist, Prof. Xianming Shi.

Last year, a study conducted at Australia's RMIT University likewise showed that face mask fibers helped strengthen asphalt and underlying road materials.

●▶ A paper on the research was recently published in the journal *Materials Letters*.

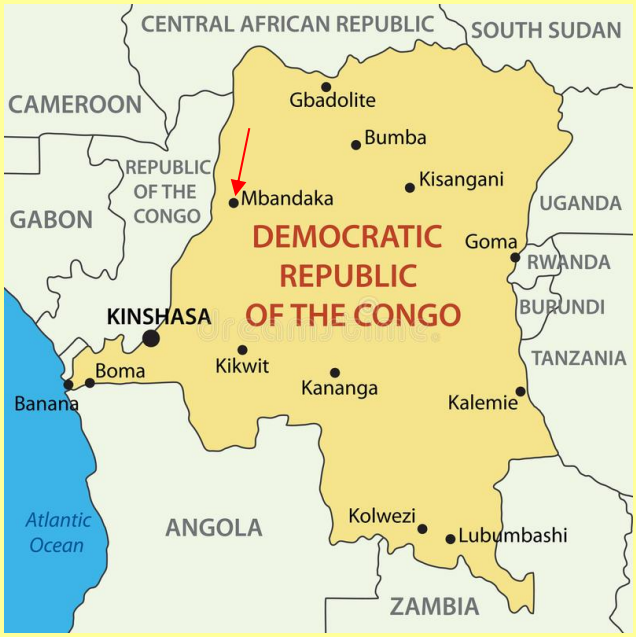
Democratic Republic of Congo declares new Ebola outbreak in Mbandaka



Source: https://www.afro.who.int/countries/democratic-republic-of-congo/news/democratic-republic-congo-declares-new-ebola-outbreak-mbandaka

Apr 23 – The health authorities in the Democratic Republic of the Congo today declared an outbreak of Ebola after a case was confirmed in Mbandaka, a city in the north-western Equateur Province. This is the third outbreak in the province since 2018.

So far, just one case has been confirmed. The patient, a 31-year-old man, began experiencing symptoms on 5 April and after more than a week of care at home, sought treatment at a local health facility. On 21 April, the patient was admitted to an Ebola treatment centre for intensive care but died later that day. Having recognized the symptoms, health workers immediately submitted samples to test for Ebola virus disease. Investigations to determine the source of the outbreak are ongoing.



"Time is not on our side," said Dr Matshidiso Moeti, the World health Organization (WHO) Regional Director for Africa. "The disease has had a two-week head start and we are now playing catch-up. The positive news is that health authorities in the Democratic Republic of the Congo have more experience than anyone else in the world at controlling Ebola outbreaks quickly."

The Democratic Republic of the Congo is experiencing its fourteenth Ebola outbreaks since 1976. The current outbreak is the sixth since 2018 alone – the most frequent occurrence in the country's Ebola history. Previous outbreaks in Equateur Province were in 2020 and 2018, with 130 and 54 recorded cases respectively.

Efforts to stem the current outbreak are already underway. The deceased patient received a safe and dignified burial, which involves modifying traditional funeral ceremonies in a way that minimizes the risk of contagious fluids infecting attendees. Anyone who came in contact with the patient are also being identified and their health will be monitored. The health facility where the patient received care has been decontaminated.

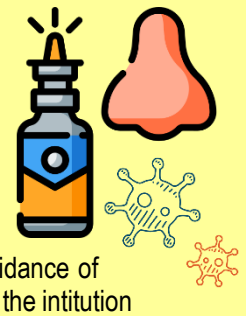
WHO experts based in the Democratic Republic of the Congo are supporting the national authorities to ramp up key outbreak response areas including testing, contact tracing, infection prevention and control, treatment as well as working with communities to support the public health measures to prevent infections.

Vaccination is set to kick off in the coming days. The country already has stockpiles of the rVSV-ZEBOV Ebola vaccine available in the cities of Goma and Kinshasa. Vaccines will be sent to Mbandaka and administered through 'ring vaccination' strategy—where contacts and contacts of contacts are vaccinated to curb the spread of the virus and protect lives.
"Many people in Mbandaka are already vaccinated against Ebola, which should help reduce the impact of the disease," said Dr Moeti. "All those who were vaccinated during the 2020 outbreak will be revaccinated."
Ebola is a severe, often fatal illness affecting humans and other primates. Case fatality rates have varied from 25% to 90% in past outbreaks. There is now effective treatment available and if patients receive treatment early, as well as supportive care, their chances of survival improve significantly.

CoVaCin™ nasal spray

Press release
April 2022

Osho Healthcare & LifeSciences (Healthcare Division of OshoCorp Global Pvt. Ltd), the **DIPP** recongnised **STARTUP**, have initiated an R & D work to identify a drug / formulation for treatment of Covid-19 as a nasal spray. R&D team's deep knowledge in **CBRN defence** (Chem / Bio Warfare Agents) helped in finalising the spray formulation.
CoVaCin™ nasal spray formulation **developed** / **patented**, have perfomed exceeding well during various studies. CoVaCin™ Nasal spray as a treatment of Covid-19 can be utilised by Govt of India / WHO in the efforts for fighting the pandemic and fulfilling **"HEALTHY INDIA"** vision of our Prime Minister.



Formulation Study: Extensive testing on CoVaCin™ formula was done during **Feb – April 2022**, under the guidance of **ICMR** & **Niti Aayog**, Govt of India at Rajiv Gandhi Centre for Biotechnology (**RGCB**), Trivendrum, Kerala. RGCB is the intitution under Ministry of Science & Technology, Dept of Biotechnology, Govt. of India.

Viral Kill Study: This study was conducted for the determination of viral kill by the CoVaCin™ in the lab setting enviornment, strictly adhering to ICMR testing protocols on inactivated viral load for **SARS-CoV-2** (Covid-19) and live **H1N1** (Swine Flu). During **Viral Kill Studies**, CoVaCin™ was able to **kill** Covid-19 virus within **17 Seconds** and H1N1 virus within **15 seconds.**

Human Trial Phase I: Viral Penetration Study (VPS): Encouraged by Viral Kill studies, we have started Viral Penetration Studies on limited no. of Covid patients to determine the blockages rendered by CoVaCin™. The extend of damage to which the binding domains on the viral envelop will be established with VPS. The destruction of the viral coat will increase the susceptibility of the virus to be inactivated by the naturally occurring RNAse enzymes in the secreted body fluids. This will over time completely neutralize the infectivity potential of the virus.We expect to complete Viral Penetration Studies by mid May 2022.

These studies give evidences that CoVaCin™ not only kill Covid-19 Virus varients within 17 seconds, but also can give **PROTECTION** from **RE-INFECTION & FURTHER TRANSMISSION** of virus. As per WHO, the **XE** varient is nearly 40 times more transmissible than **DELTA** varient and nearly 10 times more transmissisable than **OMNICRON** varient, one can be fully protected from such high trasmission of virus by taking CoVaCin™ Nasal spray, as it will immediately kill virus and stop further transmission and give protection to patient from further infection. Govt of India / WHO can also export CoVaCin™ to various countries and protect millions of people suffering from Covid around the world.
As per Wealth Health Orgnisation (**WHO**), "the maximum level of protection from COVID-19 vaccines is not reached until several weeks after full vaccination. If you have a two-dose vaccine, this means that you don't get full immunity until 2 – 4 weeks after the second dose and may still get infected again."
CoVaCin™ when sprayed over nasal mucosa acts as a physical barrier against the virus, preventing it from incubating and spreading to the lungs. CoVaCin™ nasal spray developments have potential to be effective in preventing infection as well as transmission of Covid-19.
CoVaCin™ nasal spray not only have properties that can offer protection against SARS-Cov-2 (Covid-19 or its any variant like Delta, Omicron, XE etc) but also has anti-viral, anti-bacterias, and anti-fungal properties that can offer protection against viruses and other germs that cause common upper respiratory tract illnesses like, cold, sinusitis or flu.

Typically CoVaCin™ spray is designed to kill Covid-19 varients (Delta, Omicron, XE, H1N1 etc) in the Upper airways, preventing it from incubating and spreading to the lungs. In the future, several new mutated viruses may come and attack us. Also, vaccine efficacy is still a major problem around the world. Hence CoVaCin™ formulation could be considered by drug discovery efforts as the properties of its ingredients for prophylactic or therapeutic choice against Covid- 19 are promising but not yet verified.

Through CoVaCin™ nasal spray, we have tried to do the integration of traditional knowledge and practices with new evidence, as to provide treatment for Covid Pandemic. In Covid-19, severity is due to the inflammation in the lung mainly at alveolar tissue and therefore several clinical trials are being conducted to control inflammations and cytokine storms in Covid-19.The pathogen recognition receptors (PRRs) are the primary participants in the pathogenesis of cytokine release storm. The Toll like receptor (TLRs) is the main PRRs involved in the production of pro-inflammatory cytokines and interferons.

Hence CoVaCin™ nasal spray targetting the TLR expression will prevent cytokine strom **thereby ensuring a cure from the Covid-19.**

MECHANISM OF ACTION OF CoVaCin™:

CoVaCin™ nasal spray binds to and inhibit muscarinic acetylcholine receptors, producing a wide range of anticholinergic effects. CoVaCin™ spray is rapidly and well absorbed after intramuscular administration and it disappears rapidly from the blood and distributes throughout the various body tissues and fluids.

CoVaCin™ nasal spray can be given to:

- Children Age group: 5-12 and 12-18 Years (Patient: Mild / Moderate)
- Covid Patients: Adult (Mild / Moderate)
- Persons suffering from other upper respiratory tract infection / rhinorrhea

ACTION OF CoVaCin™ NASAL SPRAY FOR COVID-19 TREATMENT

We expect, CoVaCin™ nasal spray turns off excess fluid production and it is highly effective at reversing bronchorrhea and broncho-constriction. Another internal study revealed that the muscarinic antagonist of one of the main ingredient in CoVaCin™ nasal spray significantly reduces neutrophil influx in the lungs.

The portal entry of Covid-19 virus is through nasal route. The virus enters the respiratory tract travelling through nasopharynx and then to the oropharynx. However other variants of Covid-19, multiplies in the lungs whereas Omicron virus multiples in bronchus. If CoVaCin™ nasal spray is applied through nasal route, it can attain its concentration in the respiratory tract there by checks multiplication of virus in the upper and lower respiratory tract and inturn halts the disease progression resulting in reduced morbidity and mortality due to COVID-19.

CoVaCin™ spray's intranasal application against Covid-19 illness will be more useful as the multiplication of virus takes place in the respiratory tract mainly at alveolar tissue.

CoVaCin™ spray's intranasal application against Covid-19 will reach its desirable therapeutic action in intranasally (local) and systemic (blood). As the mucous membrane are the first line of defence against pathogens, an immune response produced at the site of entry for the virus, will be preventing it from infecting the body further.

Looking Beyond Covid-19

- CoVaCin™ Nasal spray will be helpful on reducing rhinorrhea and upper respiratory tract infection. Local application of main ingredients of CoVaCin™, attenuates the upper airway reaction to cold, dry air. A clinical study on 18 volunteers who were administered at total dose of 0.5 mg of a main ingredient, before provocation with CDA. Main ingredient significantly reduced rhinorrhea, the level of histomine and TAME- esterase activity as well as Osmolality of recovered lavage fluids but had no effect on nasal congestion or albumin.
- The common cold also known as upper respiratory tract infection (URI) is a acute, selflimited viral infection of upper airway that also may involve the lower respiratory tract. The characteristics symptom complex consisting of rhinorrhea nasal congestion and sore or scratchy throat is familiar all adults. Cold are common because some of the causative virus do not produce lasting immunity after infection and some virus have numerous serotypes bacterial phenomenon is an uncommon secondary infection.
- Atleast 50% of the asthma exacerbations are associated with a viral infection. Both covid-19 and the common cold caused by viruses. Covid-19 is caused by SARS-COV-2 while the common cold is most often caused by rhinoceros virus spread. These virus spread in similar way and cause many of the same signs and symptoms. The effect of

CoVaCin™ main ingredient on sputum production was also studied in patient with asthma chronic and bronchiectasis revealed that it had an inhibitory effect on bronchial glad secretion.

- Main ingredient is being used to treat to increase the heart rate to treat heart block
- In **chemical warfare** troops carry auto injector, in case of chemical attack using the nerve gases viz Tabun, Sarin, Soman. Instead of injector used by Armed forces, CoVaCin™ nasal spray would be easier and most comfortable, palliative before atropinization.
- From the above it is clear that the CoVaCin™ nasal spray can be used not only for treatment to COVID-19 patients but also be used for treating rhinorrhea, common cold and many other purposes as stated above.

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Next-Generation Biowarfare: Small in Scale, Sensational in Nature?

By David Gisselsson

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Apr 22 – The character of biological warfare is currently undergoing a substantial change. This change derives from 2 parallel developments: one in society, the other in science. First, biological security threats are moving from the realm of weapons of mass destruction to the domain of information warfare, where small-scale, targeted attacks may still have a massive psychological impact. The COVID-19 pandemic has shown us how effectively fears of infection can close down societies, sow mistrust among allies, and create political turmoil. Future biological wars may use the same dynamics to inflict shock and confusion upon the enemy by the mere threat of mass casualties, thereby circumventing several previous limitations of biological warfare.[1,2] Second, rapid developments in the field of synthetic biology may broaden the repertoire of bioweapons, enabling tactical versatility and more precise attacks. Preparedness to defend against biological attacks must keep pace with these developments, taking into account not only defense against disinformation but also the need to rapidly mobilize resources at the frontline of molecular biology. Better preparedness calls for closer collaboration between frontline civilian scientists and national security establishments to build rapidly scalable networks of expertise and infrastructure for medical intelligence.

From Weapons of Mass Destruction to Weapons of Mass Disruption

In the 21st century, large-scale political conflicts will not be limited to armed struggles but will encompass all of society. Battles of psychological influence will escalate, while isolated kinetic warfare may become a rarity.[3] What is and what is not war will be increasingly difficult to say. What is the place for biological warfare in this future battle of the narratives, often occurring in the gray zone between peace and war?

The COVID-19 pandemic has taught us that the threat of a serious health crisis may have a severe impact on democratic nations.[4] Fears of a health crisis can tip an entire society into turmoil,[5] in turn opening several other vulnerabilities. For example, an outbreak of infectious disease can push people to work and live in the digital sphere where they will be sensitive to cyberattacks and technical breakdowns.[6,7] It is becoming clear that a biological attack, however small, may still reach effects at the strategic level by shifting the target for biological weapons away from military contingents toward the whole of society.[8] To achieve authenticity and deliver a sustained psychological effect, a limited attack may nevertheless require a foundation in real-world events of a shocking nature. Taking this into account, **the strategic success of future biological attacks in gray zone conflicts depends on the extent to which they:**

- Have a linked information war objective, including a broad set of possible aims, such as distracting from the suppression of opposition movements in the attacker's homeland or toppling the government of the target nation
- Trigger worries of massive spread, stressing the importance that the pathogen appears highly contagious, even if that is not the case
- Instigate fear of severe disease or death, suggesting that truly lethal agents may be used or that the young will be targeted in order to maximize fear; fear of infection could also limit in-depth scientific investigations as to the cause, mechanism, and origin of disease
- Prevent traceability back to the attacker, with clouded origins and deniability being used to sow fear for new outbreaks; an unknown origin is also useful for creating a sense of lost control in the target population, while inspiring conspiracy theories directed toward the target nation's institutions
- Maximize the element of surprise, to circumvent any countermeasures from the target nation; the element of surprise may not be limited to the time and location of an outbreak but may also include the use of exotic or synthetic biological agents and unexpected routes of delivery
- Be psychologically impactful, to deliver maximum effect on the media landscape; ways to achieve this may be to target public events with a high degree of media coverage or target public figures
- Be small-scale in factual nature, to avoid spreading pathogens back to the attacker and their allies; this effect may be achieved by counting on effective countermeasures from the target state or using sophisticated biotechnology

Circumventing the Obstacles of Past Biological Warfare

Due to its targeted mode of operation, future biological warfare in the gray zone may circumvent most of the obstacles that prevented bioweapons from reaching strategic-level effects in the past.[1,2,8]

First, large-scale production and deployment of biological agents may no longer be needed. Deployment on a massive scale to reach tactical effect on the battlefield used to require that weaponized agents were environmentally robust. They also had to be paired with a delivery system that could provide large-scale exposure.[1,2] This factor made it challenging to keep bioweapons programs secret and also demanded considerable infrastructure investments. In contrast, because even small outbreaks can now reach effects at the strategic level, future bioweapon production facilities can easily be nested in industrial or academic molecular biology laboratories as long as these facilities are not open to international scrutiny.[9]

Second, the armamentarium of biological warfare will broaden its repertoire of useful biological agents.[10] Most classic programs of biological warfare have been largely restricted to natural pathogens, with the efforts of the Soviet Union near its end a well-known exception.[11] This has limited the range of agents to a handful of pathogens, against which countermeasures could be extensively planned. This limitation, however, is now being offset on a grand scale by ongoing developments in biotechnology.[12] Infectious agents and animal cells can now be built from scratch in research laboratories.[13] Every year, the full genomes of more and more bacteria and viruses are sequenced and published. The biotech toolbox is increasing, not least with help from CRISPR/Cas9 technology, allowing us to change the DNA of living organisms, including pathogens.[14] The increasing capacity to navigate big data via machine learning could also make genetic manipulation of pathogens more effective.[15] The purpose of such manipulation could be wide-ranging and include obvious improvement of weapons capacity such as increased transmission rate and enhanced virulence, toxin production, or resistance to antibiotics or vaccines. However, manipulation may be even more far-reaching and include the introduction of mutations that allow a jump from animal to human host or nucleic acid sequences that code for peptides with subtle, nonlethal effects, such as mimicking common benign but incapacitating diseases. It may even be feasible to construct functions for delayed presentation of symptoms, allowing broad dissemination from the point of transmission, so that victims will seek medical care at an array of dispersed medical facilities. Such a multipronged attack would make quarantine and other efforts for a coordinated crisis response difficult.

Third, self-protection on a large scale may no longer be needed. The use of classic bioweapon pathogens has rested on the condition that they must be treatable or preventable for the troops of the attacker.[1,2] Keeping outbreaks small and targeted may circumvent this issue. Furthermore, using agents with a high lethality and morbidity would typically facilitate limitation because victims will die or be hospitalized in isolation before the pathogen has had time to infect a large number of people. Notably, the shock effect of a highly lethal, but easily containable pathogen can be enhanced by concomitant spread of a more benign and thus more transmissible variant of the same pathogen, from which the need for self-protection is not very high. Recent progress in synthetic biology may also radically facilitate the limitation of an outbreak. While debated as to its feasibility, it cannot be excluded that the increasing availability of data on human genetic variation may allow specific targeting of individuals or specific ethnic groups based on their genotypes.[16] Specific genetic targeting methodology could also be useful for

targeting crops or livestock, which are often nation/culture specific and relatively genetically homogenous. Other ways to limit an outbreak could be by engineering the DNA of a pathogen in ways that would restrict its replication to only a certain number of cycles or to certain environmental conditions.[17] As an additional safety mechanism, an attacker may prepare for large-scale vaccine production against the applied pathogen. The COVID-19 pandemic has shown that vaccines can be produced at a rapid pace. Ironically, if the attacker can escape attribution while providing a timely vaccine to the world, the attacker may also succeed in creating positive publicity for its side in a conflict.

The factors previously listed all contribute to dissolving friction points that previously made biological war difficult to operationalize. However, at least one factor remains that may keep its role as a deterrent against biological attacks: their moral reprehensibility, especially when directed against civilian targets. This deterrent may even be enhanced in a modern battle of the narratives. Pragmatically, this means that if a biological attack is ever planned, it is more important than ever to make sure that someone else, or no one at all, gets the blame. Sowing confusion as to the origin of an instigated disease outbreak could be key to strategic success.[18]

The Thickening Fog of Biological War

Carl von Clausewitz, the father of modern strategic military thinking, used the metaphoric fog of war to characterize the uncertainty and confusion surrounding battle.[19] Nowhere has this confusion been more prominent than in today's conflicts, with an increasing use of nonmilitary means of warfare, often difficult to discern from criminal activity, recreational hacking, or accidental events. Attribution—finding out who is behind biological attack—will probably be challenging in the future.[20] **Some of the main reasons attribution will be challenging:**

- The global financial biotech sector is growing rapidly, with many actors, large and small, having complicated ties to each other, to governments, and to academia.
- While information flows freely online, the trend toward open science makes it mandatory for scientists to deposit more and more data,[21,22] such as genome sequences in open archives, free for any bad actors to grab.
- Setting up new technology platforms is becoming less expensive every year, primarily because the costs of genome sequencing, DNA synthesis, data analysis, and data storage are going down. The capacity to create now lethal strains of pathogens are currently available at most major universities around the world.
- More and more sophisticated delivery systems increase the possibilities for covert action. New possibilities within the fields of nanotechnology and small autonomous vehicles may broaden the repertoire of vectors beyond what is available today.[23,24]
- The community of bad actors is increasing in complexity and is no longer limited to rogue nation states but also includes private security contractors, criminal groups, and terrorist groups, all of which may act in concert or in parallel.

That accountability and attribution can be made difficult by shifting bioweapons production from the government to the private sector is well illustrated by the South African apartheid-era Project Coast, where several private companies were used as cover for the production of biological and chemical agents.[25] Today's global economy, where international biotech companies are becoming increasingly connected with large academic research institutions and with government agencies, provides near-perfect conditions for actors who want to hide biological weapons development under the cover of innocent-looking (dual-use) biomedical research.[10] Notably, one may have to anticipate that future antagonists may be a blend of states and nonstate actors using biological threats to pursue agendas that may not even be political—similar to developments in the field of cybersecurity where bad actors are often nongovernmental and work for profit.

Future Biodefense Requires Increased Civil–Military Synergy

How should democratic societies best prepare for the bleak future outlined in this paper? Further work to improve compliance to the Biological Weapons Convention by better mechanisms for regulation of dual-use technology is laudable.[26] However, societies must look beyond traditional means of biodefense such as bio-surveillance and stockpiling vaccines, drugs, and personal protective equipment. In a future where sophisticated biology will be combined with information warfare, medical intelligence will be critical[27] because (1) high-resolution and updated assessment of the biotechnological capacity among antagonists will be vital to deny attackers the element of surprise and (2) we will need frontline research expertise and infrastructure to produce solid data to counter disinformation. Finally, large-scale datasets on pathogens, such as their genome sequences, will prove vital for rapid production of countermeasures.

As a civilian health professional, I suggest that an updated biosecurity strategy for democratic societies should include at least:

- Information countermeasures that can defend against damaging narratives appearing alongside a biological attack. Considering the inevitable polarity between

freedom of speech and information campaigns, public messaging must be carefully performed, preferably leaning heavily on well-validated and updated medical data.

- Rapid deployment of next-generation sequencing technologies to genetically characterize emerging threats and facilitate attribution.[28] This requires scalable logistics for rapid and extensive sampling of the population, where field investigation teams are linked with first-class molecular biology facilities.
- Rapid postmortem investigations of deaths from suspected new biological threats. The purpose of this is not only to sample potential pathogens, but also to characterize how new agents injure and kill—knowledge that is critical for treating victims that are still alive.[29]
- Secure data transmission and storage, and computational capacity that can rapidly be scaled up to analyze vast amounts of biological data. This should include a rapid and secure system to funnel data to producers of vaccines and other countermeasures.
- A closer collaboration among government, the defense sector, healthcare providers, the commercial biotech sector, and medical research institutions. It would be advantageous to draft plans and financial contracts that regulate this collaboration in peacetime, to be activated later in times of crisis. In the recent launch of the European Health Emergency Preparedness and Response Authority, the civil–military axis in such collaborations is strikingly absent, at least according to open sources.[30]
- A constantly updated pool of expert scientists and healthcare professionals that can be pulled into service when required. This indicates the need for security-cleared civilian experts who are regularly trained to mobilize in times of crisis—essentially a core of academic reservists.

Finally, a word of warning: when entering a new era of increased preparedness, it is essential to maintain a balanced approach. A hypervigilance among government agencies toward biological threats can be a vulnerability in itself, carrying the risk that small natural outbreaks of benign pathogens will trigger massive lockdowns, which hamper other elements of defense, prove financially costly, and risk attenuating the response once a real threat emerges. Finding out fast and with high precision what exactly caused a set of suspicious deaths or a disease outbreak before it becomes clickbait and fuels hysteria will be critical. Ramping up medical intelligence efforts to include frontline methods and top expertise in molecular biology is thus of paramount importance.

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Americans favor mask mandates on planes and trains

By William A. Galston

Source: https://www.brookings.edu/blog/fixgov/2022/04/21/americans-favor-mask-mandates-on-planes-and-trains/

Apr 21 – The recent federal court ruling invalidating the Biden administration's mask mandate for air and train travel was greeted with cheers by some and boos from others. So, what do Americans really think about masks? The data paints a complex and nuanced picture.

To begin with, **Americans are less concerned about Covid than they were a few months ago.** They report declining mask wearing and other precautions in their workplaces, and they are more resigned to living with the disease for the long-term. According to a Monmouth University survey released in late March, 73% of Americans now agree that "it's time we accept that Covid is here to stay, and we just need to get on with our lives." On the other hand, there are areas—including **public transportation—for which they favor continued vigilance**. Surprisingly, the Biden Administrations' challenge to the court's decision may not be the political loser that some pundits assume.

An AP-NORC survey conducted during April 14-18 and released on April 20 lays out the details. Since last August, support for masking in the workplace has fallen by 18 points; in concerts, movie, and sporting events, by 13 points; in restaurants and stores, by 10 points. An Axios-Ipsos poll released on April 12 found that just half of Americans now favor requiring school students, teachers, and administrators to wear masks, down from about 7 in 10 last fall. The only exception is airplanes, trains, and other forms of public transportation, where support for mask mandates has not budged. Today, 56% of Americans continue to favor requiring masking for travelers, compared to only 24% who are opposed, and strong support for this measure is more than twice as high as strong opposition.

Overall, the evidence shows that Americans are carefully monitoring the continued risks of Covid in various aspects of daily life and are weighing these risks against the inconvenience of prolonging the protective measures adopted at the height of the pandemic. And despite ongoing criticisms of public health authorities for shifting directives and unclear messaging, Americans favor adjusting guidelines and mandates in response to changing conditions; only one-third want the government to stick with a single set of fixed policies.

While media coverage of Covid policy has been driven by high-profile controversies in schools and on airplanes, the people's judgment has reflected flexibility, openness to information, and common sense. When policies yield improving conditions, public approval for policymakers rises accordingly. Another example of common sense is the continued public acceptance of airport security measures such as taking off one's shoes, two decades after 9/11. In an era of intense partisan polarization, the impact of Covid on our politics and society, though far from benign, could have been much worse.

William A. Galston holds the Ezra K. Zilkha Chair in the Brookings Institution's Governance Studies Program, where he serves as a Senior Fellow. Prior to January 2006 he was the Saul Stern Professor and Acting Dean at the School of Public Policy, University of Maryland, director of the Institute for Philosophy and Public Policy, founding director of the Center for Information and Research on Civic Learning and Engagement (CIRCLE), and executive director of the National Commission on Civic Renewal, co-chaired by former Secretary of Education William Bennett and former Senator Sam Nunn. A participant in six presidential campaigns, he served from 1993 to 1995 as Deputy Assistant to President Clinton for Domestic Policy. Galston is the author of nine books and more than 100 articles in the fields of political theory, public policy, and American politics. His most recent books are *Anti-Pluralism: The Populist Threat to Liberal Democracy* (Yale, 2018), *Public Matters* (Rowman & Littlefield, 2005), and *The Practice of Liberal Pluralism* (Cambridge, 2004). A winner of the American Political Science Association's Hubert H. Humphrey Award, Galston was elected a Fellow of the American Academy of Arts and Sciences in 2004.

A New Age of Bioterror: Anticipating Exploitation of Tunable Viral Agents

By Stephen Hummel, F. John Burpo, Jeremy Hershfield, Andrew Kick, Kevin J. O'Donovan, and Jason Barnhill

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Source: https://ctc.westpoint.edu/a-new-age-of-bioterror-anticipating-exploitation-of-tunable-viral-agents/

The emergence of the SARS-CoV-2 virus in Wuhan, China, in November 2019 and its subsequent worldwide spread has had tremendously destabilizing effects, which are still being felt more than two years later. Lessons from COVID variants include immediate impacts at the local level (initial variant), global pandemic effects from the Delta variant to include significant and protracted economic impact, and the more sub-lethal, sustained economic, political, and healthcare impacts of the Omicron strain. The global SARS-CoV-2 pandemic has also highlighted the ongoing biological revolution that has resulted in the rapid development and employment of new diagnostic tests, vaccines, and other targeted treatments including monoclonal antibodies and antiviral drugs. Over the past decade, the intersection of technology (e.g., computer science, automation, DNA sequencing) and biology has expanded exponentially, becoming embedded in economies and society. This intersection, along with the demonstrated impacts of SARS-CoV-2, is fraught with opportunities and risks. The tools for curing genetic diseases, reducing the effects of climate change, and generating sustainable food sources are now being developed and tested. Yet, these same gene editing tools could be employed to generate and modify biological weapons, making it important for both the counterterrorism community and scientific community to anticipate how the scientific advances may change the bioterrorism threat landscape.1

In this article, the authors consider the theoretical potential for bioterrorists to select a viral platform and genetically modify viral transmissibility, incubation and infectious time windows, and lethality along with the manner of death, creating what are in essence tunable bioweapons. Such bioweapons could achieve targeted effects tailored to timescale, physical

and psychological effect, with intended tactical, operational, and strategic levels of impact, with the most impactful viral agents producing all three effects.

To anticipate the potential future threat posed by tunable viral agents, the article first examines the advancing biotechnological toolkit that bad actors may be able to exploit. It then delves into the singular threat posed by viral agents compared to other potential forms of weaponized pathogens such as bacteria, with the COVID-19 pandemic underscoring the threat posed by highly transmissible viruses. The next section describes how biotechnology tools allow for the bioterrorist to select a viral "chassis" and then prospectively genetically tune the respective system variables of lethality, transmissibility, and infectious window for tactical, operational, or strategic effects, or, to maximize impact, combinations thereof. The piece then discusses the duality of emerging biotechnology tools for developing and deploying potential bioweapons as well as their countermeasures. The article closes with some concluding observations.

The Advancing Biotechnology Toolkit

While there is a variety of biological gene editing tools, perhaps the most notable is the Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) Cas9 system.[2] This system comes from the adaptive immune response of bacteria to prevent viral infection. During the process of viral invasion, the virus hijacks the host cell to replicate its genetic material to make multiple copies of itself to infect other cells. Bacteria utilize the CRISPR system to identify the invading viral genome and to subsequently cut the viral genetic material using the associated Cas9 protein. The critical capability of the bacterial CRISPR-Cas9 system is the recognition of the pathogen genome using a target sequence that is complementary to a portion of the target viral genome. The CRISPR can then quickly identify a known invader's genetic code and rapidly digest and incapacitate it upon recognition.

The great technological leap of CRISPR is its application to edit plant and animal genomes. With several advancements in biotechnology, including rapid and affordable whole genome sequencing and nucleic acid (DNA and RNA) synthesis, both scientific investigators and prospective bioterrorists with the requisite scientific knowledge and equipment can now with relative ease design and manipulate specific target sequences to modify, insert, or delete portions of the genetic material. The ease of 'copy/cut/paste' modifications of specific genetic sequences has the potential to cause either a loss or gain of biological function. While the potential impact on human diseases can be tremendous, as evidenced by recent news of a patient being possibly cured of HIV infection,[3] so too can the negative consequences. In 2018, Dr. He Jiankui, a Chinese biophysicist, employed CRISPR to delete a portion of the CCR5 gene in embryos with at least one HIV-positive parent. The CCR5 gene "encodes a protein that allows HIV to enter immune cells," and a small deletion (CCR5-delta32) therein had been previously shown to protect cells from HIV infection.[4] This use of CRISPR not only shocked the world but was also undertaken without the consent of the Chinese government. Jiankui was subsequently found guilty of "illegal medical practice" and sentenced to three years in prison, while several of his colleagues received shorter sentences.[5] Even though Jiankui was an established scientist, his employment of CRISPR to edit human embryos less than six years after the 2012 *Science* article by Jennifer Doudna and Emmanuelle Charpentier first reported the programmable nature of CRISPR illustrates its relative ease of use.[6]

The combined lessons of the COVID pandemic, along with an increasing effective biotechnology toolkit, add to a possible playbook for bioterrorists who seek to use viral platforms to achieve effects along a continuum of targeted, local endemic effects all the way through to inducing a global pandemic. This playbook might also be leveraged by state actors or state actors through proxies.

The Singular Threat of Viral Agents

The suite of viral outbreaks in the 21st century, including COVID-19, Ebola, Zika, SARS, MERS, swine flu, and avian flu, readily highlights the dangers of these highly transmissible agents. When factoring in their respective varying lethality, routes of infection, and overall infectivity, viral agents clearly pose a considerable security threat. However, the most well-developed biological warfare agents have historically been bacterial. *Bacillus anthracis*, the etiological agent of anthrax, has been studied extensively and developed both at home and abroad as a potential offensive bioweapon, largely due to the microorganism's ability to exist almost indefinitely as inert spores. There have been multiple instances of the intentional release of anthrax spores and millions of research dollars spent on developing antibiotics to potentially treat inhalational anthrax.[7] Similarly, *Francisella tularensis*, the causative agent of tularemia, sometimes known as "rabbit fever," has been similarly studied extensively for both offensive and defensive purposes.[8]

But bacteria and viruses are completely different. First and foremost, bacteria are a domain of life. Bacteria are microscopic living organisms, normally existing as single cells that contain the essential biomolecules—sugars, proteins, lipids, and nucleic acids—and are fully capable of reproducing according to their respective genetic codes. Viruses, on the other hand, are not living organisms. Rather, they are variably comprised of a nucleic acid, DNA

or RNA, that encodes for a small number of capsid coat proteins and virus-specific enzymes. They are obligate intracellular parasites that are only capable of replicating within other organisms. Viruses are known to infect all types of living organisms, from bacteria through plants to animals, hijacking the machinery of life to read their genetic code and produce proteins that aid in their propagation within an organism and inevitably to the next organism, via infection by many different mechanisms.

Therefore, it is imperative to remember that bacterial threats are not viral threats. They are completely different. Bacteria are several orders of magnitude larger than viruses, incredibly more complex, diverse, and must be provided nutrients to stay alive. Viruses, on the other hand, along with their appropriate host cell must be maintained to survive and propagate. Bacteria that produce spores as evolutionary adaptations to survive in nutrient-poor conditions lend themselves to large-scale production and an ability to infect on a relatively large scale. Otherwise, in a laboratory setting, bacteria are typically stored either in solid or liquid media, wherein they pose little to no harm. Viruses, due to their extraordinarily small size and lack of complexity, are much easier to spread via surface contact or in the air, either intentionally or unintentionally, and depending on the diseases they cause may be appropriately categorized as much more dangerous than bacteria. Common and uncommon bacterial infections are nowhere near as transmissible as most viruses due to their larger size and relative inability to be effectively aerosolized and passed from organism to organism via coughs and sneezes. This is illustrated by the etiology of pneumonia infections where one study showed 46.4 percent were viral, 14.4 percent were bacterial, and 25.4 percent were co-infections of both virus and bacteria.9 By most measures, bacterial infections are localized and commonly transmitted via direct contact, water, insect vectors, or small animals. Viruses, on the other hand, know little of such boundaries.

Finally, drugs developed to treat bacterial infections are known as antibiotics and either stop bacteria from reproducing or outright kill them. Drugs developed to treat viral infections are known as antivirals and typically either disrupt host cell mechanisms or target the hallmark nucleic acids and proteins of the disease-causing viruses. There is also a variety of broad-spectrum antibiotics that can kill a wide range of bacteria, while antivirals typically are targeted to a small number of viral species, at most. Both due to their completely different targets, as well as the fundamental difference that bacteria are living organisms and viruses are non-living replicative units, antibiotics and antivirals are fundamentally not interchangeable. The differences in infectivity and treatment make viruses a logical choice as a starting "chassis" to design a bioterror weapon.

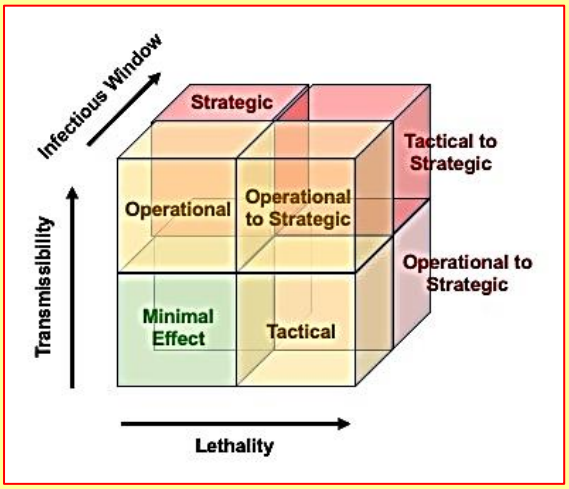

Figure 1: The 3D plot illustrates relationship between desired effects (tactical, operational, and strategic) and tunable factors (X-axis: lethality/death rate, Y-axis: transmissibility, and Z-axis: infectious window). Lethality is the ratio of deaths among infected individuals. Transmissibility is the infectivity of the pathogen or how easy it spreads. The infectious window is the period of time between the point of infection and when the pathogen is reliably detectable, with a short window (a low Z-axis value) meaning fast detection and a long window (a high Z-axis value) entailing slow detection and more severe public health impacts. As previously mentioned, operations are a continuum of three categories: tactical, operational, and strategic. A tactical to strategic effect (right, upper, back box) means a viral agent can be expected to produce an effect end point that is tactical, operational, or strategic with lower-tier outcomes inclusive. By examining the relationship and interconnectivity of the tunable factors, it is possible to determine the desired effects. Conversely, it is possible to identify the levels of the tunable factors to achieve the desired effect level.

Tailoring the Attributes of Viral Agents for Intended Effects

The process for biological design is simple and relies on the genetic sequence of the target pathogen. Within the genetic code of viruses and eukaryotic cells are two distinct regions known as exons and introns. During the transcription process, where the genetic material (DNA or RNA) is converted to messenger RNA, the introns are spliced out and the exons encode for specific proteins. To edit the genetic code, it is critical to understand these regions since editing a non-coding region will have little to no effect on the function of the process. Depending on the pathogen, information about exons and introns may not be known or at the level of detail required. Editing the genetic code also requires understanding the desired effects of the manipulation in terms of gain or loss of function. These desired effects may require the simple deletion of a portion of the genetic code or the slightly more complicated insertion of a genetic sequence. The CRISPR-Cas9 system enables both options and requires the correct configuration guide RNA prior to the actual development of the pathogen.

Biotechnology tools allow for the bioterrorist to select a viral "chassis" and then prospectively genetically tune the respective system variables of lethality, transmissibility, and infectious window (see Figure 1).[10] The availability of these tools reduces many technical hurdles. However, the development of a biological weapon through substantive modification of any sort of virus requires the bioterrorist to have considerable knowledge and awareness about both the virus and the desired outcomes. The relationship between viral genome and desired system variables to achieve bioterror effects may not be clearly understood today, but the rapid development of biotechnology tools and scientific understanding portends the elucidation of these structure-function relationships in an ever-expanding toolkit that could just as easily serve the common good as it could serve purposely nefarious intentions.

Tactical to Strategic Bio-Pathogens

U.S. military operations are a *continuum* of three categories: tactical, operational, and strategic.[11] The tactical level of war can be viewed as battles and engagements at the unit or task organization level such as division or corps.[12] The operational level builds upon the tactical level and is the level of war where campaigns and major operations are planned to achieve strategic objectives, generally occurring at the corps to field army level.[13] These campaigns and operations are generally conducted at the theater level. The strategic level is greater and occurs when a nation employs its national resources to achieve the nation's security objectives. From a military perspective, this can entail a corps to joint force land component commander.[14] At the strategic level, a nation can be part of a multinational coalition.[15]

These definitions of military operations can also be used to describe and understand the effects of a bioterrorist threat. A biological weapon that only produces tactical effects would be one limited to a local or confined area. For example, in 1984, the Rajneeshee cult "contaminated salad bars at 10 restaurants" with Salmonella to sicken the local population of The Dalles, Oregon, in order to influence the county elections. This relatively simple attack led to 751 reported cases of Salmonella poisoning in a county where there are typically fewer than five per year.[16] The 2001 Amerithrax attack could be considered a biological attack with primarily operational and strategic effects. The fact that multiple letters were sent to political leaders and journalists in multiple states created operational effects. Letters sent over a two-month period achieved strategic effects by disrupting the federal government as it endeavored to recover from the September 11th attacks and amid emerging operations in Afghanistan. While it could be argued that the letters did generate tactical outcomes, in terms of isolating buildings and personnel, the detection of Anthrax immediately elevated the issue beyond local control to the state and federal governments.

Along these same lines, the SARS-CoV-2 pandemic is a biological pathogen incident that has been full spectrum, from tactical to strategic effects, with the disruption of whole economies and concomitant political and social unrest (e.g., mask mandates and lockdowns). Specifically, it was reported in July 2021 that the U.S. economy had contracted by nearly 20 percent from the fourth quarter of 2019 to the second quarter of 2020.[17] At a tactical and operational level, the healthcare system was overwhelmed in many areas, forcing assets to be shifted between states and requiring the support of FEMA and the National Guard to set-up field hospitals. Depending on the objective a bioterrorist may have, a virus can be modified to achieve tactical, operational, and strategic end states or combinations thereof. Selecting a virus is perhaps the first critical step. Merely selecting a virus is an academic process and does not mean that the bad actor has access to or the ability to acquire purified quantities of the virus to be modified. Some of the elements to be considered are inherent transmissibility, infectious window, and lethality. The infectious window is the period of time between the point of infection and reliable detection of the pathogen and is often confused with the incubation period, which is the time elapsed between infection and the onset of symptoms.[18] These components may be directly tied to the overall desired tactical, operational, or strategic effects, and selecting one that most closely aligns with the overall objective reduces the amount of modification required. For example, modifying a seasonal influenza virus to achieve the same hemorrhagic fever hallmarks of an Ebola virus would require significant modification to the viral genome that may not produce a viable virus.

After a virus is selected, it would be necessary for the bioterrorist to modify the genome to achieve the desired effects. This design process is not easy and requires an in-depth knowledge of the viral genome and which sequences encode specific proteins. The biochemical process of inserting a gene is easy, but designing the sequence, knowing where to insert the sequence, and ensuring that the sequence does not affect other parts of the genome that encode for proteins is critical.

To imagine this selection and design process, the cube in Figure 1 highlights the relationship between the attributes of the modified pathogens (inherent transmissibility, infectious window, and lethality) and tactical, operational, and strategic effects or, for the most impactful viral agents, a combination of those effects. For example, a virus with low transmissibility, short window before detection, and high lethality rate might be employed as a tactical weapon, and shifting the factors of transmissibility and infectious window would shift a tactical pathogen to a weapon that produces operational or strategic effects or both. Manner of death would also amplify psychological effects, potentially elevating what would otherwise have been merely tactical outcomes to also include operational or even strategic effects, allowing for broader and

longer-lasting effects from local execution of bioterrorist acts. For instance, a dramatic, gruesome public manner of death involving significant blood profusion from bodily orifices would heighten the perception of a threat, compared to victims quietly expiring from low blood oxygenation out of sight in a medical facility.

As previously mentioned, development and implementation of modified pathogen requires sophisticated knowledge and capabilities. An April 2019 *CTC Sentinel* article highlights the relative difficulty for a non-state actor to develop a modified pathogen bioweapon, as illustrated in Figure 2.[19] While a nuclear weapon is the most complex and difficult weapon of mass destruction to develop due to the constraints of acquiring fissile material, biological weapons do not have similar acquisition limitations. Quite literally, bacteria and viruses are everywhere. Transforming relatively benign bacteria and viruses in significant quantities is difficult, as it requires infrastructure, knowledge, and technical skill.[20] Infrastructure relates to controlling the environment for optimal growth and modification. This also includes personal protective equipment, such as gloves, masks, and suits, along with supplied air and hoods as necessary.

While the necessary infrastructure and equipment can be acquired through legitimate and non-legitimate channels, knowledge and technical skill are more difficult. Reading journal articles can provide information about a virus or a method, but it is not the same as knowledge or technical skills that are only achieved through laboratory experience. It is the gap in knowledge and technical skill that drastically increase the complexity of viral and bacterial biological agents (e.g., Smallpox and anthrax, respectively) compared to biological toxins (e.g., ricin),[a] as shown in Figure 2. Compared to the general population, those individuals with said skills and knowledge are relatively few. However, advances in biotechnology, coupled with the democratization of gene editing tools, are slowly but steadily diminishing this barrier.

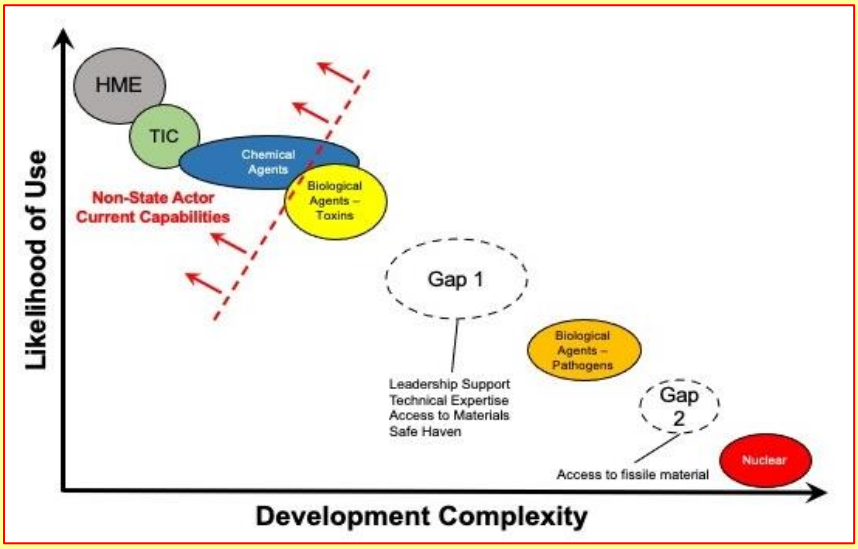

Figure 2: The relative complexity for weaponization and likelihood of use for nuclear, biological, and chemical weapons. The red dotted line and red arrows highlight that space in which non-state actors currently operate. HME refers to homemade explosives and TIC refers to toxic industrial chemicals, such as chlorine.[22] As previously highlighted, biological toxins are chemicals/ compounds that are extracted from biological organisms such as ricin and botulinum. The pathogen biological agents are bacterial and viral requiring greater knowledge, infrastructure, and other materials to develop and deploy. The gaps should be visualized as a continuum. For example, non-state actors have to overcome the elements of gap 1 as well as gap 2 in order to be able to use a nuclear weapon.

Medical Countermeasures

Just as the bioterrorist's ability to potentially tune and tailor viral agents for enhanced lethality and other means of disrupting society continues to increase, so too does the ability to rapidly develop and utilize a scalable defense. Medical countermeasures broadly include three lines of defense: detection via diagnostics, treatment via therapeutics, and prevention through vaccines. More specifically, they are categorized as "medicines and medical supplies that can be used to diagnose, prevent, or treat diseases related to chemical, biological, radiological, or nuclear (CBRN) threats."[21]

The ongoing COVID-19 response has highlighted the U.S. government's capabilities for responding to a novel viral agent. Precision, accuracy, and availability of detection kits continues to be a critical frontline method for identifying infected individuals. Classical medicine itself provides a standard middle barrier. Then, experimental therapeutics, such as convalescent plasma, antibody cocktail treatments, and more traditional small molecule antiviral drugs, have all made their way into popular conversations as a final line of defense against advanced disease progression.

But ultimately, the greatest defense against a novel viral agent continues to be vaccination, and the COVID-19 response has showcased extraordinarily successful private-public partnerships that have yielded multiple FDA-approved vaccines, which have been made widely available to nearly the entire U.S. population in a matter of months.

One can then reasonably conclude that subsequent viral events, possibly of a bioterror nature, will demand an even faster and more impressive response from the whole of U.S. government in terms of diagnostic testing, therapies, and care modalities. This precedent to rapidly develop therapies perhaps began during the response to the Ebola outbreak in 2014-2016[23] and has continued more recently as drugs to treat Ebola have obtained both normal and special FDA approvals through military partnerships.[24] The development of medical countermeasures that are tailored to treat novel viral bioagents, however, will inevitably lag behind the initial deployment of such novel agents. Sustained anticipatory development of broadly applicable countermeasures, especially at the strategic level, is required to react to novel agents.

Conclusions

The sophisticated bioterrorist, using common biotechnology tools, may be able to tune transmissibility, infectious window, and lethality rates to achieve tailorable effects at the tactical through global strategic level. However, such individuals and organizations are currently rare and, based on their scarcity, can be targeted through their support networks, which provide material, information, and infrastructure.[25]

Anticipating threats and the methods used to develop such threats continue to place a premium on the importance of comprehensive and rapid detection and mitigation strategies. Such detection strategies might include massively networked wearable biometric sensors embedded in smart watches and sensor devices such as those under development with the Defense Threat Reduction Agency (DTRA) and Defense Advanced Research Projects agency (DARPA).[26]

Rapidly developable mRNA vaccines and monoclonal antibody therapies offer a starting point for relatively rapid mitigation, but are currently still far too slow to prevent a bioterrorist's desired effects. The SARS-CoV-2 pandemic has highlighted the global impact of one viral pathogen, but the tools to modify and tailor countless other viruses for a specific target and effect currently exist. Efforts must be undertaken to stay ahead of how these threats are applied. This includes using the same technology and knowledge to design rapid medical countermeasures and detection equipment. This effort begins with a comprehensive strategy for not only the U.S. government and the Department of Defense, but also allies of the United States as viruses do not recognize international borders. As preventing the development of biological weapons by non-state actors is increasingly difficult, domestic and international policies, funding, and organizational resourcing must coalesce to match the speed of science.

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

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The Urgent Need for an Overhaul of Global Biorisk Management

By Filippa Lentzos, Gregory D. Koblentz, and Joseph Rodgers

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The origin of COVID-19 is hotly debated and heavily politicized. It is possible that the virus naturally spilled over from animals to humans. Another theory is that the virus escaped from a lab, most likely the Wuhan Institute of Virology, or that scientists were infected when doing fieldwork with bats. There may never be a credible international investigation into the origins of COVID-19.
Yet, regardless of what sparked the pandemic, what is known is that accidents happen and that dangerous viruses can escape from labs around the world. And the risks of this happening are increasing. Ironically, greater efforts to prevent future pandemics and to strengthen biopreparedness—by prospecting for dangerous viruses in animals or engineering viruses in the lab to anticipate and better understand dangerous viruses that could emerge from nature—could actually lead to increased risks of accidental or deliberate pandemics. The answer is simple. The international community needs to strengthen local and global biorisk management. The hard part is making this happen in practice.
This article first examines the evolving biorisk landscape, before evaluating the woefully insufficient international and national efforts at biorisk management. The final section provides recommendations for strengthening global biorisk governance.

Increasing Biological Risks

Globally, there are now around 60 maximum containment laboratories, commonly referred to as biosafety level 4 (BSL-4) labs, that are designed to work safely and securely with pathogens that cause life-threatening diseases and for which there are limited or no vaccines or treatments.a BSL-4 labs work with the most dangerous pathogens such as smallpox, Ebola, Marburg, and Lassa fever. Half of the labs for which dates of establishment are available began operating in the last 10 years.1 They are spread over 23 countries. About half of them are in Europe. Most of them are in big cities. Before the pandemic, China completed two BSL-4 labs, and it has signaled that it intends to follow through with plans to build up to five more.2 Since the beginning of the pandemic, five countries have announced plans to build 19 new BSL-4 labs, including 15 labs in Russia,3 one in the Philippines,4 one in Taiwan,5 one in India,6 and one in the United States.7 While BSL-4 labs take several years to design, build, and commission, one can expect that as these new labs come online, the risk of accidents will increase.
But it is not simply more labs that increase biosafety risks. There is also an upward trend in high-risk research. Creating dangerous viruses has regularly occurred in labs. In 2005, for example, scientists recreated the 1918 influenza virus that had led to the deadliest pandemic of the 20th century.8 In 2011, scientists manipulated the bird flu virus to enable it to transmit between mammals, including humans.9 Before then, the virus had only been transmitted from birds to humans, with a fatality rate of 30-60 percent.[10] In comparison, COVID-19 has a fatality rate of approximately two to three percent.[11] In 2018, scientists announced they had created horsepox, a close cousin of smallpox, from chemically synthesized DNA fragments.[12] This research highlighted some of the dangers of synthetic biology. David Evans, who led the synthetic horsepox project, stated, "Have I increased that risk? I don't know. Maybe yes, but in reality, that risk has always been there."[13]
The COVID-19 pandemic will likely increase the number of laboratories and scientists creating novel, 'chimeric' viruses that combine the genes of two or more strains. The colloquial term used to describe the creation of these engineered viruses is 'gain-of-function' research since the resulting, lab-made strain of the virus may have enhanced virulence or transmissibility compared to the naturally occurring version. This research is used to characterize the potential for newly discovered viruses to cause pandemics by providing a better understanding of how easily these viruses can infect human cells, which is indicative of the potential for the virus to jump from animals to humans and to spread human-to-human.[14] There was a significant increase in this type of research by influenza virologists following the 2005 H5N1 and 2009 H1N1 outbreaks.[15] There has been a dramatic surge in scientific publications about SARS-CoV-2, the virus that causes COVID-19, and related coronaviruses over the last two years.[16] It also appears that a lab in the United States has been interested in adding genetic material from the original SARS virus, which first emerged in 2003, to the COVID-19 strain to create an aggressive chimeric virus of the two strains.[17]
Research activities outside of labs are also increasing biosafety risks. The current pandemic will likely increase large-scale viral prospecting, which involves collecting biomedical samples from wild animals to identify potential pandemic pathogens.[18] For example, in 2021, USAID announced a five-year, $125 million viral characterization program called Discovery & Exploration of Emerging Pathogens – Viral Zoonoses (DEEP VZN), which is expected to identify 8,000-12,000 new viruses and characterize the risk they pose of causing a pandemic.[19] Chinese researchers have also

called for more field research to improve their ability to predict the risk of zoonotic spillover events.[20] The emergence of SARS, MERS, and SARS-CoV-2 has already demonstrated that such viruses are currently circulating in animals and can jump to humans and spread internationally under the right conditions. Actively searching for these viruses will increase the risk of infection in the field by a novel and potentially pandemic-capable virus. Yet, standards for field biosafety are much less developed than for laboratory biosafety. Neither the United States nor China, for example, have national field biosafety standards, and there is no international guidance available on this subject. Similarly, the increasing use of mobile laboratories, while very helpful in containing outbreaks, may also increase the risk of accidental or deliberate contamination. Many of these labs were constructed and deployed by the international community to respond to the 2014-2016 Ebola epidemics in Africa.[21] While these labs are largely for diagnostic purposes, projects such as the European Mobile Laboratory Project work with risk group 4 pathogens in mobile lab conditions.[22] This diagnostic capability is important when responding to emerging biological threats, but the trade-off between safety and mobility also introduces new areas of risk that need to be examined in greater detail.

Increasing Concerns over Security and Dual-Use

The increase in laboratories and scientists working on dangerous pathogens has created more opportunities for these agents to be stolen, particularly by insiders. Historically, laboratories and culture collections have been the preferred source of pathogens for terrorists and criminals. There is no evidence that any terrorist or criminal group has successfully acquired a pathogenic microorganism from nature.b Aum Shinrikyo, for example, was only able to acquire a harmless vaccine strain of anthrax.[23] The increased number of individuals with expertise in and access to dangerous pathogens also poses increased security risks. According to the Federal Bureau of Investigation, Bruce Ivins, a scientist at the U.S. Army Military Research Institute of Infectious Diseases (USAMRIID), the U.S. military's premier biodefense facility, was the sole perpetrator of the 2001 anthrax letter attacks in the United States that sickened 17 and killed five.[24]

A different type of security risk is that the knowledge and methods used to understand and manipulate the biological and epidemiological properties of pathogens for public health purposes is repurposed to cause harm. Advances in science have the potential to provide new knowledge and tools to national militaries, international terrorist networks, criminal groups, religious extremists, disgruntled or mentally ill scientists, or even ill-intentioned 'biohackers'—do-it-yourself biologists who are not necessarily motivated by politics or religion, but possibly by curiosity, revenge, greed, or boredom. Biodefense research on dangerous pathogens is especially susceptible to this 'dual-use dilemma' since it is frequently focused on studying characteristics such as infectivity (ability of a microorganism to infect a host), pathogenicity (ability of a microorganism to cause disease), virulence (severity of the disease caused by the organism), and transmissibility (ability of the pathogen to spread from person to person).

The biosecurity landscape has also been altered by changes in how scientific research is disseminated. The emergence of pre-print servers, where scientists can post their findings before going through the peer review process, has removed one of the layers of review that could be used to check for dual-use research of concern before the dissemination of the research. The urgency of responding to the pandemic led to a dramatic rise in the use of pre-print servers. During the first nine months of the pandemic, half of all scientific publications on SARS-CoV-2 were posted to pre-print servers.[25] In contrast, during previous outbreaks, only five percent of scientific research was disseminated this way.[26] In addition, the rise of the open science movement, which seeks to make protocols, datasets, and computational tools as widely available as possible, has introduced new potential risks of misuse.[27] For example, the publication of a detailed protocol for how to synthesize SARS-CoV-2, the virus responsible for COVID-19, has raised concerns that such protocols have lowered the barrier to creating engineered versions of the virus.[28]

Important developments taking place in fields of the life sciences other than microbiology and molecular biology, such as immunology, population genomics, gene therapy, viral vectors, genome editing, gene drives, synthetic biology, and neuroscience, are not covered by existing biosecurity and dual-use research policies.[29] These policies also do not sufficiently take into account how security and dual-use risks can be generated by the convergence of multiple disciplines within the life sciences or by the application of emerging technologies, such as machine learning, artificial intelligence, data analytics, and nanotechnology, to the life sciences.[30] Overall, these scientific and technical advances have created new potential attack vectors and the means for rapidly identifying novel ones. Many of these new attack vectors do not involve actual pathogens, but instead relate to genetic constructs and associated means of delivery such as viral vectors and lipid nanoparticles.[31] For example, the National Academies of Science has identified dual-use risks posed by the manipulation of the human immune system and microbiome, which can be accomplished with CRISPR genome editors delivered by viral vectors.[32]

High-risk pathogen research congruently poses challenges to peace and international security. While biodefense activities such as the development of protective gear, medical countermeasures, and detection and diagnostic systems are justifiable, the proliferation of laboratories and research institutions handling dangerous pathogens may instill a fear of the

weaponization of biology among the public or policymakers. In turn, this heightened perception that biological weapons are an increasing threat may provide the justification for a country to initiate or expand an offensive biological warfare program.[33] One particularly sensitive research area is related to threat assessment, which involves research on pathogens to characterize their potential utility as biological weapons. While such research can be used to inform the development of medical countermeasures and other biodefenses, it can also generate knowledge potentially useful for offensive biological weapons applications.[34]

Special airlock doors are seen in front of a security level 3 laboratory in a building of the Friedrich-Loeffler-Institute on the island of Riems, Germany, on July 2, 2020. (Jens Büttner/picture alliance via Getty Images)

Insufficient Biorisk Management

Traditionally, biosafety, which is designed to prevent the accidental release of a pathogen from a lab, has gained more attention than biosecurity, which is designed to prevent the malicious misuse of pathogens and biotechnology, and dual-use research, but all must be better governed. The umbrella term 'biorisk management' is an overarching framework to discuss the full spectrum of risks associated with the life sciences enterprise. A biorisk is a risk that a biological event—such as a naturally occurring disease, an accidental infection, an unexpected discovery, an unauthorized access, loss, theft, misuse, diversion, or intentional release of a biological agent or biological material—adversely affects the health of humans, non-human animals, or the environment. Approaching the domains of biosafety, biosecurity, and oversight of dual-use research collectively under the rubric of biorisk management has the advantage of recognizing and capitalizing on how they are interconnected without sacrificing the specific demands, challenges, and risks that each presents. Yet biorisk management has significant gaps and weaknesses globally.[35]

A 2021 survey of biorisk management policies around the world found that most countries do not have comprehensive, or 'whole-of-government,' systems for biosafety and biosecurity, and that virtually none have national policies regulating dual-use life science research.[36] Only six countries, or one-quarter of the 23 countries with maximum containment laboratories, were scored as having high levels of biosafety and biosecurity. Only five of these 23 countries had policies on dual-use research. This means that a large majority of countries with BSL-4 labs do not have specific oversight of 'gain-of-function' research on potential pandemic pathogens that has been a central feature in the debate on COVID-19's origin.[37]

Even countries such as the United States that scored high on biosecurity and biosafety have demonstrated less than stellar implementation of those policies in practice, as exemplified by questionable oversight of 'gain-of-function' research funded by the National Institutes of Health (NIH).[38] As revealed by documents obtained through FOIA requests, NIH did not submit proposed research that could be reasonably anticipated to enhance the virulence or transmissibility of a potential pandemic pathogen for review by the Department of Health and Human Services (HHS) as required under HHS' 2017 Potential Pandemic Pathogen Care and Oversight (P3CO) policy.[39] NIH reportedly funded at least eight projects since 2017 that appear to have involved 'gain of function' research, but only forwarded three of these projects to HHS for review under the P3CO policy.[40]

Among the few countries that do have biosecurity and dual-use oversight policies, they are usually focused on the potential misuse of a short list of specific pathogens such as those that cause anthrax, plague, Ebola, and smallpox. Aside from the microbiology and molecular biology communities that work with these listed pathogens, called 'select agents' in the United States, awareness of biorisk management principles and practices in the wider scientific community is limited.[41] And, each of these areas—biosafety, biosecurity, and dual-use research—is typically stove-piped within multiple government agencies, which results in fragmented oversight. In some countries, such as the United States, oversight of dual-use research is almost entirely limited to institutions and individuals in receipt of government funds and conducting experiments on select agents. A private company that does not receive federal funding for life sciences research can modify a select agent (with a few minor exceptions), or other pathogens not included in that list, with no obligation to review the research for potential dual-use implications or seek approval from a government agency before conducting the research. This means that almost all dual-use research based on non-government sources of funding—such as from corporations, foundations, wealthy individuals, and crowdfunding sites, which is increasingly driving the innovation process in the life sciences—is not covered. For the first time, federal funding in

the United States accounted for less than 50 percent of national spending on scientific research in 2013.[42] In 2015, more Ph.D. researchers in the United States were employed in the private sector than in academia, including 40 percent of those in the life sciences.[43] The risks posed by privately funded research is illustrated by the aforementioned synthesis of the horsepox virus, which was financed by an American biotech company for only $100,000.[44] In 2021, synthetic biology companies raised nearly $18 billion, almost as much as the total investment that the industry had received since 2009.[45] Given the increasing size of the global bioeconomy and the growing commercialization of products generated with synthetic biology and genome editing tools, the exclusion of almost all of the work of the private sector from dual-use research oversight is an increasingly large loophole.

At the international level, there is no body that standardizes principles for biosafety, biosecurity, and dual-use research oversight and monitors compliance with these standards. As the spread of the original SARS-CoV-2 virus and its subsequent variants has demonstrated, global health is only as strong as its weakest link. A failure in biosafety or biosecurity anywhere in the world could have repercussions around the globe.

Recommendations for Strengthening Global Biorisk Governance

Given the increasing number of countries developing dual-use biotechnologies and conducting risky research with pathogens, the transnational nature of modern life sciences research, and the potential global impact of an accidental or deliberate release of a pandemic-capable pathogen, international mechanisms for ensuring that this research is being conducted safely, securely, and responsibly are crucial.

At the lab-level, institutions must work to cultivate a culture of biosafety, biosecurity, and responsible research with high-risk pathogens. This does not just apply to BSL-4 labs; lower-containment level labs should also be nurturing a culture of safe, secure, and responsible working practices. This should encompass all levels, from students and technicians to principal investigators to laboratory directors. It is also important to stress that developing a culture of safe, secure, and responsible working practices is not a one-off event, but a continual effort.[46]

At the national level, all countries, but particularly countries where high-risk pathogen work is conducted, should have laws and regulations in place that maintain oversight of BSL-4 labs, and that require comprehensive risk assessments of proposed research for safety, security, and dual-use activities with significant potential to be repurposed to cause harm. In addition to laws and regulations, countries and the BSL-4 labs within them should also implement and share best practices, and participate in peer reviews of practices in other BSL-4 labs. Countries with experience in designing and operating high-containment laboratories should share their expertise in building risk-based laboratory infrastructure that is fit for purpose, is safe and secure, and can be maintained over the long-term. Countries with BSL-4 facilities must also provide complete, regular, and transparent reporting under the annual confidence-building measures of the Biological Weapons Convention and under U.N. Security Council Resolution 1540. While most countries with BSL-4 facilities generally submit these documents, there is no international requirement mandating this information. The information should also be made publicly available by all countries. So far, for example, only nine of the 22 countries that report their BSL-4 labs under the confidence-building measures of the BWC make these reports public. Only 55 percent of the BSL-4 labs in operation provide links to their publications on their institutional websites.[47] Making BWC and 1540 reporting publicly available should not be a difficult task since the existence of these facilities is not secret and nearly every BSL-4 laboratory has a website. This measure would strengthen international transparency and confidence, and would assist in further research to strengthen global biological lab governance.

At the international level, frameworks establishing values and principles for biorisk management and guidelines for developing and implementing governance tools and mechanisms should be developed. In addition, an authoritative international institution with a mandate to systematically register and track maximum containment facilities and to oversee extremely high-risk research should be put in place to ensure all such research is being conducted safely, securely, and responsibly. One relatively easy way to do this would be for all BSL-4 labs and those engaged in gain-of-function research with potentially pandemic pathogens to adopt the ISO 35001 standard on "biorisk management for laboratories and other related organisations." Created by the International Organization for Standardization (ISO) in 2019, ISO 35001 is an international standard for a biorisk management system. The system is ready for use by laboratories and provides recommendations for laboratory leadership, planning, support, operation, performance evaluation, and how to implement improvement in an iterative manner.[48] The system could also be used by lower-containment level labs to strengthen their culture of biosafety and security. The standard uses third-party validation, and to maximize the potential of ISO 35001, there needs to be an international structure to ensure compliance. While national regulators could act as the third-party, this would have limited credibility internationally, especially for jurisdictions without proven track records for transparency and accountability. One alternative would be to build out the current International Experts Group of Biosafety and Biosecurity Regulators to take on the role.[49] Another would be to mandate the World

Health Organization to make it directly responsible, in much the same way that it conducts biennial biosafety and biosecurity inspections of the variola virus depositories in the United States and Russia.[50] Lastly, while these structural and policy steps should be taken to reduce biological risks, it is crucial that the life sciences continue to develop and maintain a culture of biosafety, biosecurity, and responsible conduct. To support this process, the World Health Organization should establish regional collaborating centers on biorisk management to conduct education and training, provide forums for exchanging best practices, and support organizations and activities that foster cultures of safety, security, and responsibility within the life sciences. The development of medical countermeasures in record time to prevent and treat COVID-19, which built on decades of studying coronaviruses and developing advanced biotechnologies, demonstrated the importance of a robust biomedical research enterprise for pandemic response. While the benefits of such research are undeniable, it is also clear that this research poses safety, security, and dual-use risks. In a worst-case scenario, research intended to prevent the next pandemic could cause one by accident or through reckless or malicious misuse of biotechnology. Unfortunately, the current national and international systems to ensure that life sciences research is conducted safely, securely, and responsibly is already inadequate. A major overhaul of global biorisk management is needed to ensure that humanity's efforts to limit the scourge of infectious disease do not inadvertently make the problem worse.

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

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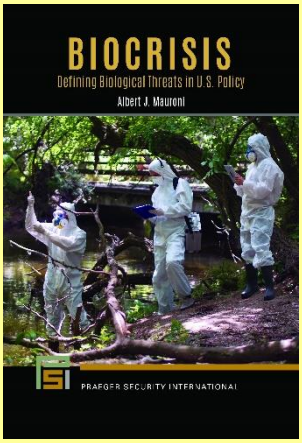
Biosecurity in an age of open science

By James Andrew Smith and Jonas B. Sandbrink
PLOS BIOLOGY
Source: https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3001600

Open science practice	Possible risks	Mitigation	Opportunity
Open code, data, and materials	• Datasets with dangerous information more accessible • Access to computational methods which may be misused, including to interpret datasets • Increased access to and misuse of research methods and tools	• Access control for code, data, or materials • Code-only access to worrying datasets • Application programming interfaces to allow widespread and controlled access to data and computational models • Reject posting of material that has dual-use potential	• Differential sharing of material based on risk • Create or identify access-controlled repositories suitable for sharing protocols • Improve adherence to FAIR principles for research outputs through curated repositories
Preprint publication	• Removes gatekeeper role that journals may play • Increases accessibility to research	• Oversight earlier in research process than publishing stage • Reject posting of material that has dual-use potential	• Research on existing policies and dynamics of preprint vs. journal publication needed • Possible coordination among preprint servers for screening research
Preregistration	• Minimal risk	• N/A	• Oversight and risk assessment earlier in research lifecycle • Advisory peer review in registered report-like format • Pilot new exploratory preregistration formats in high-risk areas

Apr 11 – The risk of accidental or deliberate misuse of biological research is increasing as biotechnology advances. As open science becomes widespread, we must consider its impact on those risks and develop solutions that ensure security while facilitating scientific

progress. Here, we examine the interaction between open science practices and biosecurity and biosafety to identify risks and opportunities for risk mitigation. Increasing the availability of computational tools, datasets, and protocols could increase risks from research with misuse potential. For instance, in the context of viral engineering, open code, data, and materials may increase the risk of release of enhanced pathogens. For this dangerous subset of research, both open science and biosecurity goals may be achieved by using access-controlled repositories or application programming interfaces. While preprints accelerate dissemination of findings, their increased use could challenge strategies for risk mitigation at the publication stage. This highlights the importance of oversight earlier in the research lifecycle. Preregistration of research, a practice promoted by the open science community, provides an opportunity for achieving biosecurity risk assessment at the conception of research. Open science and biosecurity experts have an important role to play in enabling responsible research with maximal societal benefit.

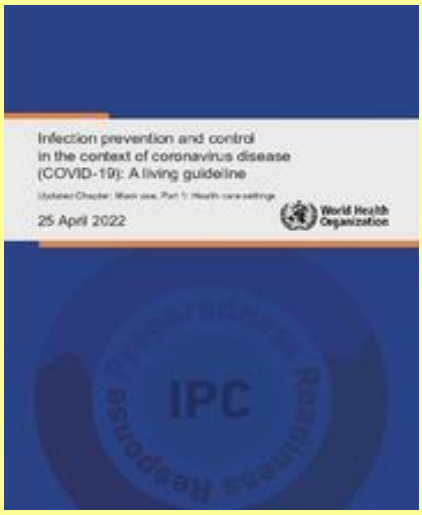


Biocrisis: Defining Biological Threats in U.S. Policy

Praeger Security International
Hardcover – April 8, 2022
By Albert J. Mauroni (Author)
Source: https://www.amazon.com/Biocrisis-Defining-Biological-Security-International/dp/1440878870

Over the last 20 years, the national security community has engaged with disease-related issues that have traditionally been the scope of public health agencies. The federal government's response has been to create a single national biodefense strategy, which has been largely ineffective in improving conditions due to poor terminology, a lack of leadership, and a failure to assess government programs. Applying a public policy framework, Albert J. Mauroni examines how the government addresses biological threats—including disease prevention, bioterrorism response, military biodefense, biosurety, and agricultural biosecurity and food safety. He proposes a new approach to countering biological threats, arguing that lead agencies should focus on implementing discrete portfolios with annual assessments against clear and achievable objectives.

Infection prevention and control in the context of coronavirus disease (COVID-19): a living guideline, 25 April 2022: updated chapter: mask use, part 1: health care settings



Source: https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-IPC_Masks-Health_Workers-Omicron_variant-2021.1

This document provides updated interim recommendations on the use of masks by health workers providing care to patients with suspected or confirmed COVID-19. This update is prompted by new evidence around mask use and COVID-19 transmission, as well as the emergence of variants of concern including Omicron. Masks continue to be a critical tool to prevent the spread of COVID-19. These interim guidelines supersede the recommendations provided in the WHO recommendations on mask use by health workers, in light of the Omicron variant of concern published on 22 December 2022. WHO continually evaluates the emerging evidence and will review these interim recommendations within two months and issue new guidance as needed.

Chinese Omicron-specific mRNA COVID vaccine candidate to be trialed in UAE

Source: https://www.qatarday.com/chinese-omicron-specific-mrna-covid-vaccine-candidate-to-be-trialed-in-uae

Apr 30 – China's **Suzhou Abogen Biosciences Co** said its COVID-19 vaccine candidate using the messenger RNA (mRNA) technology and targeting the Omicron variant has obtained clinical trial approval in the United Arab Emirates. With Friday's announcement, Abogen joins Pfizer/BioNTech and Moderna in trialing candidates modified specifically

against Omicron, a highly transmissible variant with increased resistance to antibodies elicited by existing shots. Mainland China has vaccinated over 88% of its 1.4 billion people against COVID with non-mRNA shots. It has not approved any foreign vaccines, although real-world data indicated the two most used Chinese products, manufactured by Sinopharm and Sinovac, have lower effectiveness against COVID infection than mRNA shots from Pfizer/BioNTech and Moderna. Besides the UAE, Abogen was communicating with regulators in China and other countries on potential clinical trials for the Omicron-specific candidate, it said in a statement. An mRNA candidate based on an older coronavirus strain without major mutations, which Abogen co-developed with Walvax Biotechnology (300142.SZ) and a Chinese military-backed research institution, is being tested in a Phase III trial in China, Mexico and Indonesia. Walvax is also partnering with Shanghai-based startup RNACure to develop a variants-targeting mRNA vaccine candidate, with design different from Abogen's. Two Omicron-specific vaccine candidates from Sinopharm and one from Sinovac, containing inactivated or "killed" coronavirus, have been cleared for clinical trials in Hong Kong and mainland China. The UAE regulator has approved clinical trials for a third Omicron-specific candidate from Sinopharm, based on protein, as well as for the firm's two inactivated Omicron-specific candidates, Sinopharm subsidiary China National Biotec Group said on Friday.

Canadian General Trevor Kadier Captured While Trying To Escape From Azovstal

Source: https://forum.waploaded.com/forum/536531/canadian-general-trevor-kadier

May 03 – A Canadian high-ranking officer tried to escape from the territory of the Azovstal metallurgical plant in Mariupol.

General Trevor Kadier was arrested by Russian military personnel, media reported. According to information, the general led the First Biolab, where 18 people worked on the creation of a deadly virus.

The general has already been taken to Moscow, media reports.

In social networks, they suggest testing new medications on the Canadian general as punishment.

Everything happened after the messages that on metallurgical plant was foreign general in contact with Zelensky.

Earlier, information appeared in the Western media that General Trevor Kadier was accused of sexual harassment and harassment in Canada, and is now on the territory of Ukraine.

Measles Cases Jump 79% in 2022 After COVID Hit Vaccination Campaigns

Source: https://www.medscape.com/viewarticle/972803

Apr 28 – Measles cases jumped by 79% in the first two months of this year compared to 2021, after COVID-19 and lockdowns disrupted child vaccination campaigns around the world, according to data from UNICEF and the World Health Organization (WHO).

In January and February, there were 17,338 measles cases reported worldwide, up from 9,665 in the same period last year.

Measles is a very contagious disease that can be particularly dangerous for young children and babies. It spreads more quickly than Ebola, flu or COVID-19.

UNICEF executive director Catherine Russell described the immunisation gaps combined with a return to social mixing in the wake of the pandemic as a "perfect storm".

"Measles is more than a dangerous and potentially deadly disease. It is also an early indication that there are gaps in our global immunisation coverage, gaps vulnerable children cannot afford."

The five countries with the largest measles outbreaks in the last 12 months were Somalia, Liberia, Yemen, Afghanistan and Ivory Coast. There have been 21 major outbreaks during that period.

Child immunisation campaigns were knocked off course around the world during the coronavirus pandemic, and things have not fully recovered.

At the start of April, 58 campaigns in 43 countries were still postponed, impacting 212 million people - mostly children. Nineteen of those campaigns are for measles, putting 73 million children at risk, UNICEF and WHO said in a press release.
Immunisation campaigns for diseases like typhoid and polio were also disrupted. Last month, Malawi reported its first polio case in decades while Pakistan, one of only two countries where polio remains endemic, recorded its first case for more than a year this month. The WHO and UNICEF said it was imperative to get the vaccination drives back on track.

Israel opens world's most protected blood bank, rocket-proof and underground

Source: https://www.timesofisrael.com/israel-opens-worlds-most-protected-blood-bank-rocket-proof-and-underground/

The world's most protected blood bank, newly opened in Israel (courtesy of American Friends of Magen David Adam)

M ay 02 – The world's most secure national blood bank opened in Israel on Monday, the most important parts shielded in an underground structure — from terrorism, chemical and biological attacks, and earthquakes.
Magen David Adom's $135 million Marcus National Blood Services Center has taken four years and some 11,000 tons of steel to complete. The guiding principle is that the country's blood supply is a "strategic asset" that may save many lives in emergency scenarios, and as such should be protected.
"We visited many blood banks around the world when planning, and found that there is simply no other country with a facility like this, with such a high level of protection for the national blood supply," Moshe Noyovich, the engineer who oversaw the project and a senior official at American Friends of Magen David Adom, which funded it, told The Times of Israel.
"We have built something that's a new standard in protecting blood, which is important as it's a strategic asset," he said.
President Isaac Herzog, Health Minister Nitzan Horowitz, and other dignitaries attended the inauguration ceremony at the facility in Ramla, central Israel, on Monday. It will process and store almost all of Israel's blood donations, for both civilians and the military, when it becomes fully functional in the summer.

The complex will replace the current beleaguered facility in Ramat Gan, which was built in the 1980s and no longer has space for the quantity of donations needed for Israel's growing population.

Its lack of fortification meant that during rocket attacks, Magen David Adom had to stop processing blood and move the blood reserves into a bomb shelter — despite the fact that blood processing is needed more than ever in times of war.

"The current facility is aboveground, not secured against rockets, which can reach the facility from both north and south, and not protected against earthquakes and other threats," Prof. Eilat Shinar, head of blood services at Magen David Adom, said.

Noyovich emphasized that the facility also has advanced protection against cyberattacks.

The center is named in honor of Bernie Marcus, the founder of the American home improvement chain Home Depot, and his wife, Billi, who donated $35 million to the project. Other contributors include Miriam and the late Sheldon Adelson, The Leona M. & Harry B. Helmsley Charitable Trust, and Bloomberg Philanthropies, Michael R. Bloomberg's charitable organization. The State of Israel provided the land, via a 2016 government decree.

The building is made from non-combustible steel and concrete. There are three levels of protection, with varying security zones. Three floors are aboveground, each with its own shelters. The ground floor has training facilities, an auditorium, a dining area, and a blood donation wing for the public; the second floor houses the Human Milk Bank, where mothers' milk is collected for premature and ill infants, and more training facilities.

The three underground floors are protected by extra-thick concrete walls, blast doors, and airlocks, as well as shielding from biological and chemical attacks.

The highest underground floor houses shielded blood bank laboratories, a transportation center, and secure fleet parking for loading blood into ambulances.

The second underground floor houses the Cord Blood Inventory, an R&D molecular lab, and a chemical and biological warfare air-filtration system that enables staff throughout the building to continue working and processing blood in the event of a chemical or biological attack.

On the deepest level is the Blood Storage Vault, a 300-square-meter safe room shielded against the most severe missile threats. Every critical system has a secondary system, including two ramps leading into the underground floors, four sets of elevators, and four generators.
"Israel lives in a dangerous neighborhood, yet we know that, thanks to this maximum-security facility, Israel's national emergency medical service can preserve life in the hardest of conditions, and for decades to come," said Catherine Reed, CEO of American Friends of Magen David Adom.
The center bears the name of Bernie Marcus, the founder of Home Depot, and his wife, Billi. The American philanthropists donated $35 million to the project. Other prominent donors include Miriam and the late Sheldon Adelson, The Leona M. & Harry B. Helmsley Charitable Trust, and Bloomberg Philanthropies, Michael R. Bloomberg's charitable organization.

Лабораторию НАТО в Мариуполе сожгли в день начала военной операции России на Украине (видео)

NATO laboratory in Mariupol burned on the day of the start of the Russian military operation in Ukraine (video)

Source (**+video**): https://www.defencenet.ru/defencenet-tv/laboratoriiu-nato-v-mariupole-sozhgli-v-den-nachala-voennoi-operatsii-rossii-na-ukraine-video/19205/

May 03 – The NATO laboratory in Mariupol was burned on the day of the start of the Russian military operation in Ukraine.
This was reported to the wargonzo project by sources from the DPR special services who are in control of the situation related to the investigation into the activities of the "Donetsk Regional Laboratory Center", located in Mariupol and formally under the jurisdiction of the Ministry of Health of Ukraine.

The building was set on fire by the Ukrainian security forces on February 24 (the day the SVO began), before that they removed a large number of samples and materials from the biological laboratory.
That is, they acted on the principle that this facility was a military, security facility and data of increased secrecy was stored on it.
Earlier, an **incident** was reported that occurred in Mariupol three days ago: a Ukrainian sabotage group, under the cover of snipers, tried to penetrate the captured NATO laboratory, which was located in a building subordinate to the Ministry of Health of Ukraine. According to the special correspondent of the project, Semyon Pegov, Ukrainian saboteurs attempted to penetrate the territory of the laboratory under the cover of snipers who used foreign rifles of 308 mm caliber.
The object is located in the rear under the protection of the NM DPR.

Increased emergency cardiovascular events among under-40 population in Israel during vaccine rollout and third COVID-19 wave

By Christopher L. F. Sun, Eli Jaffe and Retsef Levi
NATURE Scientific Reports | (2022) 12:6978
Source: https://www.nature.com/articles/s41598-022-10928-z.pdf

Cardiovascular adverse conditions are caused by coronavirus disease 2019 (COVID-19) infections and reported as side-effects of the COVID-19 vaccines. Enriching current vaccine safety surveillance systems with additional data sources may improve the understanding of COVID-19 vaccine safety. Using a unique dataset from Israel National Emergency Medical Services (EMS) from 2019 to 2021, the study aims to evaluate the association between the volume of cardiac arrest and acute coronary syndrome EMS calls in the 16–39-year-old population with potential factors

including COVID-19 infection and vaccination rates. An increase of over 25% was detected in both call types during January–May 2021, compared with the years 2019–2020. Using Negative Binomial regression models, the weekly emergency call counts were significantly associated with the rates of 1st and 2nd vaccine doses administered to this age group but were not with COVID-19 infection rates. While not establishing causal relationships, the findings raise concerns regarding vaccine-induced undetected severe cardiovascular side-effects and underscore the already established causal relationship between vaccines and myocarditis, a frequent cause of unexpected cardiac arrest in young individuals. Surveillance of potential vaccine side-effects and COVID-19 outcomes should incorporate EMS and other health data to identify public health trends (e.g., increased in EMS calls), and promptly investigate potential underlying causes.

Russia's Claims of Ukrainian Biological Weapons: A Propaganda Ploy?

By Roman Goncharenko

Source: https://www.homelandsecuritynewswire.com/dr20220503-russias-claims-of-ukrainian-biological-weapons-a-propaganda-ploy

May 03 – Is Kyiv developing biological weapons in secret laboratories with US support, or is this claim simply a pretext for Russia's war in Ukraine? In late April, Russian President Vladimir Putin cited a "network of Western bioweapons labs" in Ukraine as one of the threats facing Moscow and one it wanted to fight through its invasion of the country.

The Russian Defense Ministry, meanwhile, says it has proof that Kyiv is developing biological weapons "with the direct involvement of the Pentagon." Kyiv and Washington deny the claims.

The Biological Weapons Convention (BWC), which entered into force in 1975, prohibits the development, production, acquisition, transfer, stockpiling and use of biological and toxin weapons. But there's a fine line between military and civilian research and development, experts tell DW, which can be easily exploited for propaganda purposes.

The Russian allegations center around pathogens that cause plague, anthrax and diphtheria. Richard Guthrie, a British expert on chemical and biological warfare, believes such allegations are a common element of contemporary propaganda because rumors of biological weapons have such a powerful psychological effect.

The main purpose of biological weapons is not necessarily to make a large number of people sick, he says, but to spread fear — "so that people don't want to go to a certain food or water source," for example.

A number of German biological weapons experts who have analyzed the Russian claims on behalf of the Institute for Peace Research and Security Policy at the University of Hamburg agree that stoking public fear is the main objective, and allude to Russian "misinformation." **"There are bioweapons labs in Ukraine which are supported by the US and also Germany, but the research conducted there is not covert but extremely transparent,"** says Gunnar Jeremias, an expert on biological arms control.

'Deliberate Lies'

"These are deliberate lies or twisting of facts," says John Gilbert, a former US nuclear, biological and chemical (NBC) weapons inspector who worked in the former Soviet republics, including in Ukraine, and now works for the Center for Arms Control and Non-Proliferation in Washington DC.

In the early 1990s, the US government worked with bio labs in former Soviet states, he explained, as part of the Nunn-Lugar Cooperative Threat Reduction program, designed to dismantle weapons of mass destruction and decommission nuclear, biological and chemical weapon stockpiles.

"The US did fund a number of projects through that program that dealt with research into pathogens like bacteria and viruses … to figure out what the pathogens were and what the ring of spread was," says Gilbert. "Russia is well aware of all of this."

Then, as Richard Guthrie explains, Kyiv and Washington signed a treaty in 2005, after the 2001 anthrax attacks in the US and the international SARS epidemic in 2003 resurrected fears of biological weapons. Washington boosted cooperation with bio labs around the world that were then partly financed by the US Department of Defense.

German Involvement

Russian diplomats have also accused Germany of running a "military biological program" in Ukraine. This is in fact the German Biosecurity Program launched by the Foreign Ministry in 2013. It aims to implement biosafety and biosecurity projects primarily in countries in Africa,

Central Asia and Eastern Europe designed to "tackle biological threats, such as the intentional misuse of biological pathogens and toxins or outbreaks of highly pathogenic disease and pandemics."
Within the program's framework, **the Bundeswehr Institute of Microbiology (IMB) has been collaborating with the Institute of Experimental and Clinical Veterinary Medicine in Kharkiv since 2016, as confirmed by the German Defense Ministry** in response to a DW inquiry. The IMB has conducted studies on pathogens that cause anthrax, brucellosis, leptospirosis and African swine flu — infectious diseases that can affect humans.
Director of the IMB, Roman Wölfel says the Russian claims that Ukraine is developing biological weapons are "plucked out of thin air." Wölfel has visited the laboratory in Kharkiv and met colleagues whose work is focused on farm animal diseases. His institute, he explains, is active there on a consultancy and research level.
"We have trained young people to use applied methods of molecular diagnostics," says Wölfel. He explains that Bundeswehr researchers were involved in a civilian project because of their background in training in rapid response to outbreaks of diseases.

'Ethnic Weapons' Still Unrealistic
Another accusation that Russia has leveled at Ukraine is that Kyiv is helping Washington develop so-called "**ethnic bioweapons**." These are hypothetical bioweapons which could target people of specific ethnicities, such as Russians — a claim made by, among others, General Igor Kirillov, chief of the Russian Radiation, Chemical and Biological Protection Force.
The experts unanimously agree that these weapons do not so far exist. "The idea of developing a biological weapon that can target one ethnic group and not another is completely unrealistic," says Roman Wölfel.
British expert Richard Guthrie points out that similar plans were proposed during the apartheid era in South Africa but never implemented. "People have been talking about this since the 1970s," he says. "But we're a long way away from that."

Taking Georgia's Cue
Guthrie believes that Russia is instrumentalizing rumors of bioweapons labs in Ukraine as a propaganda ploy "very effectively" but points out that while Russia raised the issue with the UN Security Council, it has yet to cite Article 6 of the Biological Weapons Convention (BWC), which allows a country to lodge a complaint with the United Nations Security Council if it suspects a breach of treaty obligations by another state.
Not long ago, Russia made similar accusations against Georgia. **The Lugar Research Center in Tiflis was originally co-financed by the US government.** Russia alleged that the center was involved in developing biological weapons for the United States. In 2018, the Georgian government invited international experts to visit the center, including from Russia. Moscow declined the invitation. After their visit, the experts confirmed that work at the center was transparent and safe, and abided by BWC rules.
Experts today say Ukraine could try a similar approach of inviting specialists to inspect their laboratories. For that to happen, the Russian-led war in Ukraine first needs to end.

Roman Goncharenko is Senior editor, reporter @ DeutscheWelle.

Cognitive impact of severe COVID equal to 20 years of brain aging

Source: https://newatlas.com/health-wellbeing/cognitive-impact-severe-covid-equal-20-years-brain-aging/

May 03 – A new study has presented the most rigorous investigation to date into the long-term cognitive impacts of severe COVID-19. The research, led by scientists from Imperial College London and the University of Cambridge, found persistent cognitive deficits in hospitalized patients equivalent to declines consistent with 20 years of brain aging.
The new research, published in the journal *eClinicalMedicine*, looked at **46 patients** who were hospitalized with severe COVID-19. Sixteen of those patients required mechanical ventilation during their hospital stay.
Around six months after their acute illness the participants completed a barrage of complex cognitive assessments. Each COVID subject was paired with 10 age and demographically matched healthy control subjects.
"Cognitive impairment is common to a wide range of neurological disorders, including dementia, and even routine aging, but the patterns we saw – the cognitive 'fingerprint' of COVID-19 – was distinct from all of these," explained senior author David Menon.
These COVID patients were slower to respond to tasks and less accurate in their responses, compared to their matched controls. More specifically, the COVID patients performed poorly

on "verbal analogical reasoning" tasks which are designed to test particular word-based reasoning cognitive domains.
"On a neurological level, this pattern of impairment aligns with the observation of sub-acute phase hypometabolism within frontoparietal systems after COVID-19 illness that are known to be recruited in different combinations and configurations during the performance of these tasks," the researchers explained in the new study.
The research found the scale of these cognitive deficits significantly correlated with the severity of each patient's acute illness. Those with severe COVID requiring ventilation in hospital displayed the most significant cognitive declines.
On average, the research calculated the magnitude of the cognitive deficits to be equivalent to about 20 years of aging. So, a 50 year old hospitalized with severe COVID displayed cognitive test scores similar to what would be seen from a 70 year old.
The findings raise two big questions that the researchers currently have no good answers for. What is specifically causing these persistent cognitive deficits, and do patients recover their cognitive capacities over longer periods of time?
Hypothesizing a potential cause, the researchers indicate these cognitive problems are not likely the result of SARS-CoV-2 infiltrating the brain, despite some prior research finding that is possible. Instead, the most plausible explanation at this point is that severe COVID can cause brain damage due to disruptions in brain oxygen supplies and clotting or bleeds during the acute illness. An excessive immune response is also suspected to play a role in the ongoing cognitive deficits seen in those after a severe illness.
So does it get better over time? Menon said his team has seen some small signals of improvement in patients after long follow-up periods but at best any cognitive recovery is likely to be slow and gradual.
"We followed some patients up as late as 10 months after their acute infection, so were able to see a very slow improvement," said Menon. "While this was not statistically significant, it is at least heading in the right direction, but it is very possible that some of these individuals will never fully recover."
A study published earlier this year from researchers at the University of Oxford found minor cognitive deficits in subjects experiencing mild COVID-19 up to six months after an acute infection. Alongside these new findings researchers are beginning to paint a clearer picture of the spectrum of cognitive impacts from a COVID-19 infection.
Adam Hampshire, first author on the new study, said these findings indicate a large number of COVID survivors are most likely experiencing significant problems in the months after their acute infection. As vaccinations and more sophisticated treatments begin to reduce the mortality impact of COVID-19 it will be crucial to focus on those survivors experiencing longer-term chronic impacts from this new disease.
"Around 40,000 people have been through intensive care with COVID-19 in England alone and many more will have been very sick, but not admitted to hospital," said Hampshire. "This means there is a large number of people out there still experiencing problems with cognition many months later. We urgently need to look at what can be done to help these people."

●▶ **The new study was published in the journal** *eClinicalMedicine*.

Effectiveness of Primary and Booster COVID-19 mRNA Vaccination against Infection Caused by the SARS-CoV-2 Omicron Variant in People with a Prior SARS-CoV-2 Infection

By Margaret L. Lind, Alexander Robertson, Julio Silva, et al
Source: https://www.medrxiv.org/content/10.1101/2022.04.19.22274056v1

Importance The benefit of primary and booster vaccination in people who experienced prior SARS-CoV-2 infection remains unclear.
Objective To estimate the effectiveness of a primary (two-dose) and booster (third dose) vaccination against Omicron infection among previously infection people.
Design Test-negative case-control study.
Setting Yale New Haven Health System facilities serving southern Connecticut communities.
Participants Vaccine eligible people who received SARS-CoV-2 RT-PCR testing between November 1, 2021, and January 31, 2022.
Exposure COVID-19 mRNA primary and booster vaccination.
Main Outcomes and Measures We conducted two analyses, each with an outcome of Omicron BA.1 variant infection (S-gene target failure defined) and each stratified by prior SARS-CoV-2 infection status. We estimated the effectiveness of primary vaccination during the period before and during booster eligibility (14-149 and ≥150 days, respectively, after 2nd dose) and

of booster vaccination (≥14 days after booster dose). To test whether booster vaccination reduced the risk of infection beyond that of the primary series, we compared the odds among boosted and booster eligible people.

Results Overall, **10,676 cases and 119,397 controls were included** (median age: cases: 35 years, controls: 39 years). Among cases and controls, 6.1% and 7.8% had a prior infection. The effectiveness of primary vaccination 14-149 days after 2nd dose was 36.1% (95% CI, 7.1-56.1%) and 28.5% (95% CI, 20.0-36.2%) for people with and without prior infection, respectively. The effectiveness of booster vaccination was 45.8% (95% CI, 20.0-63.2%) and 56.9% (95% CI, 52.1-61.2%) in people with and without prior infection, respectively. The odds ratio comparing boosted and booster eligible people with prior infection was 0.83 (95% CI, 0.56-1.23), whereas the odds ratio comparing boosted and booster eligible people without prior infection was 0.51 (95% CI, 0.46-0.56).

Conclusions and Relevance Primary vaccination provided significant but limited protection against Omicron BA.1 infection among people with and without prior infection. While booster vaccination was associated with additional protection in people without prior infection, it was not associated with additional protection among people with prior infection. These findings support primary vaccination in people regardless of prior infection status but suggest that infection history should be considered when evaluating the need for booster vaccination.

The Critical Contribution of Pseudouridine to mRNA COVID-19 Vaccines

By Pedro Morais[1], Hironori Adachi, and Yi-Tao Yu[2]

Front. Cell Dev. Biol., 04 November 2021

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Source: https://www.frontiersin.org/articles/10.3389/fcell.2021.789427/full

The current COVID-19 pandemic is a massive source of global disruption, having led so far to two hundred and fifty million COVID-19 cases and almost five million deaths worldwide. It was recognized in the beginning that only an effective vaccine could lead to a way out of the pandemic, and therefore the race for the COVID-19 vaccine started immediately, boosted by the availability of the viral sequence data. Two novel vaccine platforms, based on mRNA technology, were developed in 2020 by Pfizer-BioNTech and Moderna Therapeutics (comirnaty® and spikevax®, respectively), and were the first ones presenting efficacies higher than 90%. Both consisted of N1-methyl-pseudouridine-modified mRNA encoding the SARS-COVID-19 Spike protein and were delivered with a lipid nanoparticle (LNP) formulation. Because the delivery problem of ribonucleic acids had been known for decades, the success of LNPs was quickly hailed by many as the unsung hero of COVID-19 mRNA vaccines. However, the clinical trial efficacy results of the Curevac mRNA vaccine (CVnCoV) suggested that the delivery system was not the only key to the success. CVnCoV consisted of an unmodified mRNA (encoding the same spike protein as Moderna and Pfizer-BioNTech's mRNA vaccines) and was formulated with the same LNP as Pfizer-BioNTech's vaccine (Acuitas ALC-0315). However, its efficacy was only 48%. This striking difference in efficacy could be attributed to the presence of a critical RNA modification (N1-methyl-pseudouridine) in the Pfizer-BioNTech and Moderna's mRNA vaccines (but not in CVnCoV). Here we highlight the features of N1-methyl-pseudouridine and its contributions to mRNA vaccines.

How a dispute over sharing coronavirus genomes is threatening a vital tool for tracking variants

By Jeremy P. Kamil

Source: https://thebulletin.org/2022/05/how-a-dispute-over-sharing-coronavirus-genomes-is-threatening-a-vital-tool-for-tracking-variants/

May 03 – On Nov. 26, the day the World Health Organization (WHO) named omicron the fifth variant of concern of the COVID-19 pandemic, US stock markets lost more than 2 percent of their value; the prominent Dow Jones Industrial Average fell more than 2.5 percent, its worst performance of the year. News of the variant, first reported by South Africa the day before, caused economic shockwaves in other markets as well. With global equity markets representing roughly $120 trillion in value, it's fair to say that the discovery of omicron had trillions of dollars in impact in a single day.

Omicron's genetic profile closely matched the mix of mutations that variant modelers predicted would dodge the protection of vaccines and previous infections, leading to a fear that the variant might rapidly spread through the world and potentially cause a great amount of sickness. Amid intense public interest in omicron and its economic and societal reverberations, governments sought to rapidly understand if new vaccine formulations or new mitigation measures were necessary. Knowing the genomic sequence of variants is critical to developing public health responses, and with omicron, the public had this information quickly.

But what if it had instead remained in the hands of a small number of private entities who made it their business to sell exclusive, "early access" insights on emerging variants to Wall Street trading firms? There are no doubt strong incentives to divine the signal from the noise in freshly generated variant sequencing data, and knowing first could make all the difference. Or what if the genomic data for omicron hadn't been available at all, because the researchers who found it had little incentive to share the information?

Unfortunately, in the rapidly evolving genomic surveillance landscape, neither of these negative scenarios is out of the question for future variants.

Recent history shows that access to critical information about circulating viruses isn't guaranteed. And now, some important members of the scientific establishment are working to undermine a key source of viral genomic data: the public-private Global Initiative on Sharing All Influenza Data (GISAID) initiative, a global collaboration that has incentivized researchers to share their findings and to which they have uploaded millions of SARS-CoV-2 genomes. At the same time, big technology corporations like Microsoft, Oracle, and Google are eying the viral genomic surveillance market as a potentially lucrative data source, raising the specter of a for-profit system. It's not hard to imagine a future where much critical genomic data is privatized, or otherwise inaccessible in the fight against pandemics.

GISAID and inequalities in viral genome sharing

Global access to virus samples and genome sequences has long been a contentious matter. For decades, the Western scientific establishment did not properly credit the researchers and others—often in the developing world or from oppressed groups—who discovered viruses or made other important contributions to medical research. And when virus discoveries made vaccines and therapeutics possible, they were usually developed in wealthy countries, and poorer countries have often found themselves last in line to access them.

The technology to sequence viral genomes and rapidly share colossal amounts of digital data has improved enormously in recent years. But we already know what happens when poorer countries recognize that richer ones are keener to gather data on their viruses than they are to share new vaccines and medicines. They simply stop sharing. In 2007, for example, the Indonesian government—concerned that vaccines developed from its influenza samples would only benefit wealthy countries— refused to share H5N1 bird flu samples with the WHO.

In 2006, Peter Bogner, a Time Warner executive, and Nancy Cox, the Director of the Influenza Division at the Centers for Disease Control and Prevention (CDC) in the United States, devised a solution to encourage equitable genomic data sharing, the GISAID initiative. What they developed was a framework designed to overcome the hesitancy among scientists to rapidly share their influenza data. Their solution was to provide a way for people to share viral genome sequence data and ensure that those who used their data credited them. The initiative, which formally launched in 2008, also encourages (and in some cases requires) data consumers to work with data generators, fostering collaboration among scientists around the world. While Cox retired from the CDC in 2014, and Bogner and his team are based in Santa Monica, California, where he lived before GISAID was founded, GISAID essentially operates as a series of public-private partnerships with governments, public-health agencies and academic institutions in Germany, Argentina, Brazil, China, Republic of the Congo, Ethiopia, Indonesia, Malaysia, Russia, Senegal, Singapore, and South Africa. The computers that hold the viral genome data were initially based in Geneva, Switzerland, but after a 2009 dispute with the Swiss Institute for Bioinformatics, the databases were moved to Germany. The organization lists its sources of funding, which include a major grant from the Rockefeller Foundation, as well as smaller contributions from the WHO, the Institute Pasteur (France), and from various governments and biopharma firms such as Roche, GSK, Merck, J&J, and Pfizer.

Although the GISAID sharing mechanism was originally designed for influenza genome data, it has truly shined during the COVID-19 pandemic. On April 4th, researchers from the Bandung Institute of Technology in Indonesia uploaded a BA.2 variant genome—a subvariant of omicron—to GISAID, marking 10 million sequences shared since the beginning of the pandemic. Approximately 50,000 submitters in over 200 countries rely on GISAID to share their data on influenza, SARS-like coronaviruses, and respiratory syncytial virus (RSV), a common respiratory virus that can be harmful in young children and the elderly.

GISAID's attribution requirements are more than just about providing scientists with an ego boost; credit means scientific credibility, opportunities for funding, and, broadly, the ability to cultivate human capital and infrastructure in a region. When leading Congolese

microbiologist Jean-Jacques Muyembe demanded that Ebola samples from an outbreak in the Democratic Republic of Congo that began in 2018 remain in his country, he appeared to force the hands of scientists in richer countries who wanted to study the Congolese pathogens, better positioning his domestic colleagues to receive resources and credit.

By 2019, Muyembe had had a long and illustrative history confronting biases in the biomedical enterprise that favor researchers in richer countries, primarily in Europe and North America. After getting a doctorate in Belgium in the late 1960s, he returned to his home country, then known as Zaire and now named the Democratic Republic of Congo, to work as a field epidemiologist. In 1976, he encountered patients suffering from a new viral disease. Without access even to medical gloves, Muyembe took patient samples and provided them to Belgian scientist Peter Piot, who co-published the discovery of Ebola without naming Muyembe.

Despite the snub, Muyembe's career flourished, and when Ebola struck his country for the 10th time in an epidemic beginning in 2018, he was able to dictate a startling demand: All blood samples would stay in the country. It was a decision born out of frustration with slights that included African scientists not receiving credit for work they had performed. As Muyembe announced his decision on the blood samples, according to NPR, Japan agreed to invest in a state-of-the-art research facility in the Democratic Republic of Congo.

One of Muyembe's legacies, he told the outlet, is that "if another young Congolese scientist finds himself with an interesting blood sample, he'll be able to investigate it right here in Congo."

Despite GISAID's success as an effective sharing mechanism during public health emergencies, it has also faced controversies and outright attacks. The organization has been criticized in glossy scientific journals, such as *Science*. But these criticisms come almost entirely from scientists in wealthy countries who'd prefer to be able to anonymously access and benefit from other people's data. Last April, for example, former director of National Institutes of Health Francis Collins sent an email in which he proposed that governmental funding agencies in the United States and Europe, as well as the nonprofit Gates Foundation, should use their collective heft to curtail GISAID's role by enforcing "public domain" sharing of viral genome data.

Likewise, the Gates Foundation, which has a major focus on global health and has given more than $60 billion in grants since 1994, is moving forward with multiple initiatives to fund pathogen genomic surveillance in various so-called "lower middle-income countries" in Africa, Southeast Asia, and Latin America. In a 2021 funding call, a Gates Foundation-sponsored organization called Public Health Alliance for Genomic Epidemiology attempted to compel scientists in these countries who accepted their funding to deposit their viral genome sequencing data into the public domain. Doing so would strip these scientists of any right to even be credited by name when authors from wealthier countries use their data in publications or grant applications.

Public domain repositories

But what is public domain sharing? And why isn't it the preferred way to share coronavirus sequence data? Public domain databases such as the US National Center for Biotechnology Information's Genbank or the European Nucleotide Archive are instrumental for biology research, and almost all genetic sequence data is, in fact, shared in the public domain. But public domain sharing—whether it's music, software, photography, art, or genetic data—means exactly that. When you put your work into the public domain, it is now owned "by the public." This means anyone can use it for any reason without attribution or any obligation to share benefits.

There are virtues to public domain sharing of genetic sequence data. The public domain is a fantastic way for society to extract the maximum value of genetic data once it has already been generated, for instance by taxpayer-funded research, because the products, in principle, can be used for the benefit of everyone. But its virtues are inextricable from its drawbacks. A major problem with public domain sharing is that scientists do not have any incentive to generate or rapidly share viral genome data via this mechanism. Instead, they often allow their data to sit on computers until they get a manuscript accepted or a grant funded. This reticence to rapidly share genetic data is a recipe for disaster in public health emergencies like pandemics, because fresh viral sequence data from many geographies are needed to discover new variants, to determine which ones are growing faster than others, and to keep diagnostics and vaccines up to date.

An omicron sequence did not show up in the public domain until Nov. 29, almost an entire week after data on the variant became available on GISAID (Nov 23). By Nov 30, only two omicron genome sequences had been made available in the public domain—both from a single country, Belgium. By this time, the GISAID community had already shared 230 omicron genomes from 13 countries and three continents. The public health merit of eliminating or marginalizing such an important system for early detection of new viruses and viral variants seems dubious.

The push for public domain sharing ignores the very problem GISAID was built to solve. A system that allows anyone, anywhere to anonymously access and use a researchers' data for any reason without so much as crediting them by name offers no incentives for rapid sharing. Therefore, if public domain sharing became the norm, the incentives to provide data

in a timely way would have to come from outside, in the form of financial contracts or grant support mechanisms that stipulate that data must be deposited into the public domain.
It's hard to see how a global viral genomic surveillance system that relies on external inputs, like grant funding, which are at the mercy of federal budgets and philanthropic whims, would be able to detect the next pandemic virus early enough to stop it in its tracks. It's even harder to see how such an approach would succeed if all the data are supposed to be shared via public domain.

A for-profit route?
Will corporations and scientific agencies in Europe and North America inadvertently build a viral variant detection framework that gathers data from poor countries to protect those of us in wealthier places? What would happen if data analyses conducted on computers in Seattle, Berlin, and Paris demonstrate the existence of a terrifying new virus circulating in Uganda, Nigeria, and Cameroon? Who would see the data first?
Given such a prominent role of GISAID in curating and distributing data that has such profound effects on economic activity around the world, it is perhaps not a surprise to see a coterie of big tech and geopolitical players trying to lay down new infrastructure and stand up services that can intercept microbial genomic surveillance data at its source. Microsoft, Oracle, and Google's Verily Health arm have all shown strong interests in becoming involved in microbial genomic surveillance.
If the technologies and investments of companies turn out to become a key part of the pipeline to detect new viruses, what would prevent corporations from selling early access to such "signals" to hedge funds or to firms that trade in airline stocks or oil futures? In any case, it is easy to see how quickly things can get dystopian when timely genetic data are generated and handled in non-transparent ways. In fact, we already know that firms like 23andMe and health data brokerages are trading patient data for profit. What's to stop this type of for-profit entrepreneurial system from becoming the default way that we track the emergence of new viruses and viral variants?
Today, even in wealthy countries like the United States, coronavirus genome sequences are decoded by firms like LabCorp, Quest Diagnostics, Aegis Scientific, and many other companies, some of which have deals with stores like Walgreens to carry out COVID-19 PCR tests on patient nasal swabs. In 2021, the CDC put in place contracts that pay these firms to decode the viral genomes from 25,000 samples a week. Of course, this data is valuable, but patients are never told that their samples might generate up to $200 in net revenue for the work of sequencing the viral genome. After being decoded, these viral genomes are deposited in the public domain. And even when it's smaller academic labs that do the sequencing, funding agencies like the National Institutes of Health and CDC require them to deposit their data into the public domain, where corporations could freely use it to generate insights, which they could then turn around and sell for profit.
A particular problem in the United States, which does not offer health care as a right to its citizens, is that a person—whether insured or not—might well end up paying out-of-pocket costs for a coronavirus test and for medical care, but people behind the scenes are capturing additional revenue off their illness by sequencing the viral genome data from their samples, and that revenue will not be directly used to offset the patient's medical costs or improve their care.
In developing countries, the situation could get even more objectionable. The hundredth genome sequence from a crowded slum in a developing or low-to-middle-income country like Brazil or India could be far more valuable than the millionth sequence from New York City or London. Crowded conditions and lack of medical resources can speed viral evolution. Will we allow private entities to quietly implement and benefit from their own viral genomic surveillance networks?
One of the lessons of the COVID-19 pandemic is that viral genome data can move stock markets, send the price of oil plummeting, impact the revenue of major hotel chains and airline companies, with cascading effects on just about everything and everyone. In the wake of COVID-19, investments are being made to ensure global economies are not caught off guard again by a virus like SARS-CoV-2, which was able to spread undetected for weeks.
Making these changes won't be easy. Yet it's fair to say that genetic data that comes from people's bodies—even if it is the genomes of microorganisms that cause disease—is no ordinary commodity. New technologies are making it possible to produce and monetize new data streams in ways we could not previously imagine. Implemented properly, we could use advances in genome sequencing to keep tabs on myriad infectious diseases and track their evolution in real time. In fact, genome sequencing is poised to become the primary way that an infection is diagnosed. But if the few are allowed to profit at the expense of the many, the spigots of viral genome data will dry up. People will simply have no incentive to donate samples, and so, new viruses won't be detected until after the most severe cases show up at hospitals. Time and time again, humans take advantage of each other to make a buck. Some of that is just capitalism. That said, if we do not work to build equitable and transparent ways of generating and sharing microbial genome data from people who are ill, we will be cheating ourselves out of an early warning system that can prevent the next big pandemic.

The challenge going forward is to not abuse or betray trust. If wealthy countries want to know about viruses circulating in poorer countries, they must establish partnerships built on trust and transparency.

Jeremy P. Kamil, Ph.D. is an associate professor of microbiology and immunology at Louisiana State University Health in Shreveport, Louisiana, whose laboratory studies human cytomegalovirus. During the pandemic, he has gained national recognition for his advocacy of viral genome sequencing and rapid data sharing during public health emergencies. In March 2020, Dr. Kamil spearheaded the establishment of a local viral genome sequencing program that would become the largest single contributor of SARS-CoV-2 genome data from the state of Louisiana. He is a principal investigator on a grant from the Rockefeller Foundation to improve representativeness in viral genomic surveillance by fostering transparent and equitable collaborations between universities and local community health clinics.

WHO – Acute hepatitis in children below 10 years old …

COVID Transmission 1,000 Times More Likely from Air vs. Surfaces: Study

Source: https://www.usnews.com/news/health-news/articles/2022-05-04/covid-transmission-1-000-times-more-likely-from-air-vs-surfaces-study

May 04 – If you're still wiping down groceries, doorknobs and light switches in an attempt to thwart COVID-19, maybe you can relax a little: You're 1,000 times more likely to get COVID from the air you breathe than from surfaces you touch, a new study suggests.
University of Michigan researchers tested air and surface samples around their campus and found odds are greater for inhaling virus particles than picking them up on your fingers.
"In this study, we set out to better understand potential exposures to the SARS-CoV-2 coronavirus -- the virus which causes COVID-19 -- in several college campus settings," explained study author Richard Neitzel, a professor of environmental health sciences and global public health.
The settings included offices, classrooms, performance spaces, cafeterias, buses and a gym. However, the samples were taken during the pandemic lockdown, so these were relatively empty spaces.
"We also used information on campus COVID-19 infections to estimate the probability of infection associated with our environmental measurements," added Neitzel.
"The overall risk of exposure to the virus was low at all of the locations we measured," he said.

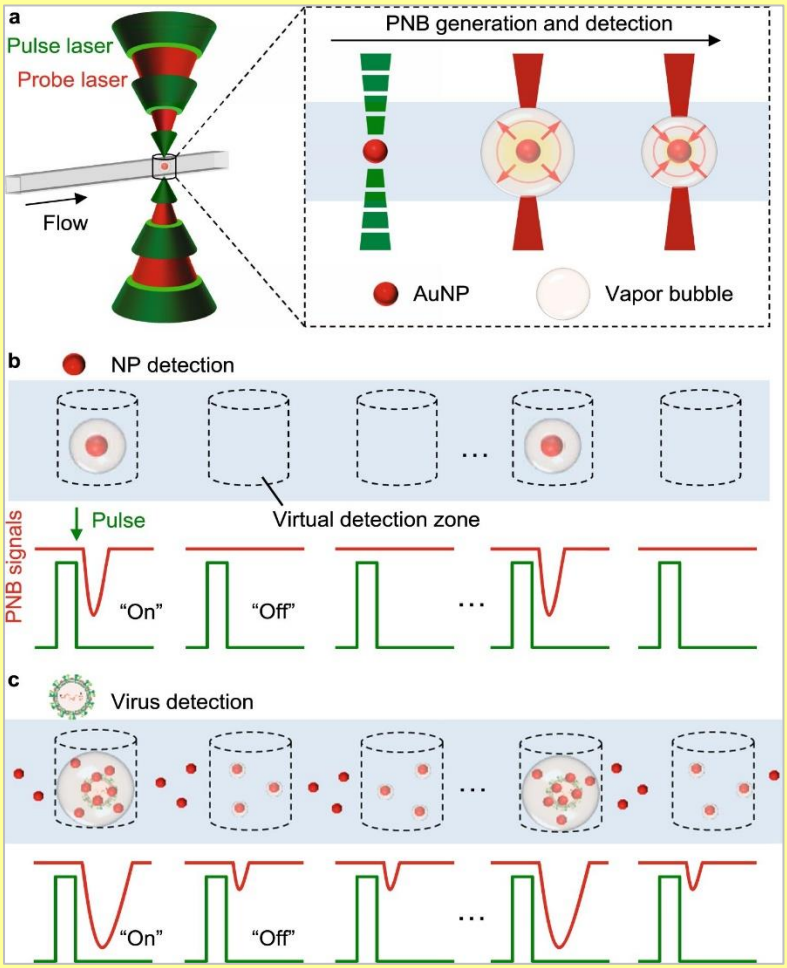
However, "our results suggest that there was a much higher risk of infection from inhalation than from contact with surfaces like door handles, drinking fountains, keyboards, desks, sinks and light switches," he noted.
To get a handle on relative risk, between August 2020 and April 2021 Neitzel and his colleagues used air pumps and swabs in various locales across the locked-down campus.
In all, more than 250 air samples were gathered, of which 1.6% tested positive for the virus that causes COVID. Of over 500 surface samples, 1.4% were positive.
The most risky setting was the gym, with positive indications found for 75% of air samples and 50% of all surface samples. Most of the contaminated gym surfaces involved drinking fountain buttons; no samples taken from gym equipment turned up positive.
Overall, far fewer positive readings were found in office spaces or around computer keyboards, light switches, tabletops, microwaves, fridge handles or student desks.
But after stacking positive samples up against actual COVID cases on campus, the team determined that the probability of getting COVID after exposure to airborne virus particles was roughly 1 per 100 exposures.
The researchers determined the probability of illness from a contaminated surface to be 1 for every 100,000 exposures.
Still, Neitzel stressed that the findings reflect a time and place in which strict surface cleaning protocols were enforced, and when crowds were nonexistent. "Our results," he cautioned, "may not be completely representative of other community settings."
Nevertheless, the results suggest people should be more concerned about inhalation risks from the coronavirus than the risks from touching surfaces, "at least in an environment where surfaces are cleaned regularly, as was the case with our campus," Neitzel added.
Elizabeth Scott, a professor emerita at Simmons University in Boston, said "there has been a growing recognition that COVID-19 is predominantly airborne."
Yet Scott, who was not part of the study team, cautioned that "the relative importance of surface transmission may be higher in homes, dorms [or] where people are living together and repeatedly touching the same surfaces."
That kind of private space risk, she stressed, was not evaluated by the study. Also, it's important to note that "other respiratory viruses and other bacterial infections *are* spread predominantly via contact surfaces," added Scott, former co-director of the Simmons Center for Hygiene and Health in Home and Community.
In her view, "we need to continue effective and holistic hygiene practices for hands and surfaces, as well as respiratory and air hygiene, to protect against all the other community-borne infections that were an issue before COVID-19, and will be with us for the future," Scott said.

●▶ **The findings were published April 27 in the** *Journal of Exposure Science & Environmental Epidemiology*.

New rapid virus test uses gold particles and is 150 times more accurate than standard tests

By Marin Wolf (The Dallas Morning News)
Source: https://medicalxpress.com/news/2022-05-rapid-virus-gold-particles-accurate.html

May 04 – University of Texas at Dallas researchers have developed a rapid virus test using gold particles and lasers that promises to deliver results as accurate as lab tests in a fraction of the time.
The technology, called digital plasmonic nanobubble detection—or Diamond for short—is 150 times more accurate than standard rapid tests, according to a study published in *Nature Communications* last month. Its accuracy is comparable to polymerase chain reaction (PCR) tests, which take hours to perform.
The team of UTD scientists that authored the study, led by associate professor of mechanical engineering Dr. Zhenpeng Qin, tested Diamond against respiratory syncytial virus, although the researchers say the technology can be used to detect other prominent viruses, like COVID-19 and influenza.
"For the [PCR] COVID test, we drive through the pharmacy and give the sample. Getting the sample tested usually takes two to four hours before we get the results," said Haihang Ye, a UTD research associate in mechanical engineering. "Our technology can reduce the sample testing time to 30 minutes, but the sensitivity can be as good as those molecular tests."
Faster, cheaper and more effective virus tests are in high demand as the U.S. shifts into a new normal in the coronavirus pandemic. Though case counts are near all-time lows in North Texas, the highly contagious BA.2 variant continues to spread locally and across the country.



Concept of DIgitAl plasMONic nanobubble Detection (DIAMOND). a The schematic illustration of the plasmonic nanobubbles (PNBs) generation and detection in flow. The gold nanoparticles (AuNPs) as labels are used for the generation of the PNBs by short laser pulses and subsequently detected by a secondary probe laser due to the amplified optical absorption. b, c The principle of digital counting for NP (b) and virus (c) detection. The "on" and "off" in (b) and (c) refer to the positive and negative PNB signals representing for the presence or absence of targets (i.e., NP and virus, respectively). The laser pulses create "virtual" detection zones as compartmentations for independent counting of PNB signals. The three dots shown in (b) and (c) refer to ellipses and indicate the omission of detection events in a repeated operation. Credit: *Nature Communications* (2022). DOI: 10.1038/s41467-022-29025-w

The cost of a COVID-19 test varies widely depending on location and type of test. A study of the largest hospitals in every state done by the Peterson Center of Healthcare and Kaiser Family Foundation Health System Tracker found coronavirus test prices ranged anywhere from $20 to more than $1,400. Only 3% of the hospitals surveyed listed testing prices below $50.

A Diamond test, which Ye said can be produced for around $15, mixes a patient sample from a nasal swab with gold nanoparticles attached to antibodies for the virus being tested. The antibodies, marked by the gold nanoparticles, then bind with proteins on the virus' surface if the virus is present in the sample.

Researchers then inject the sample mixed with labeled antibodies into a narrow tube mounted on a glass slide. As the liquid passes through the tube, it's hit by the beams of two lasers, one of which activates the gold nanoparticles, causing them to expand.

If the expansion is strong enough, the nanoparticle will boil the water around it and create vapor bubbles. Large nanobubbles mean the virus is present in the sample.

"If there's no virus, there will be a tiny nanobubble signal from the particle only so we can differentiate the sample's status," said Yaning Liu, a UTD mechanical engineering doctoral student and co-first author of the Diamond study.

Diamond is the product of years of research and millions of dollars in grant funding, including $2.5 million in grants from the National Institute of Allergy and Infectious Diseases and a $293,000 grant from the Department of Defense's Congressionally Directed Medical Research Programs.

To test different viruses using the technology, all researchers need to do is change the associated antibodies, Ye said. Though Diamond has the potential to expand testing options for a number of viruses, it requires researchers to know what they're testing for.

"One of the challenges with the current tests is that providers have to kind of have an idea of what they're looking for," said Elitza Theel, associate professor of laboratory medicine and pathology at the Mayo Clinic in Rochester, Minn.

A less-targeted approach using a technology called metagenomic next-generation sequencing allows scientists to sequence all of the genetic material in a sample to identify which infectious pathogens are present. The technology is already in use, but the process is expensive and takes days to return results, Theel said.

"It's not really helpful in the immediate acute setting," she said.

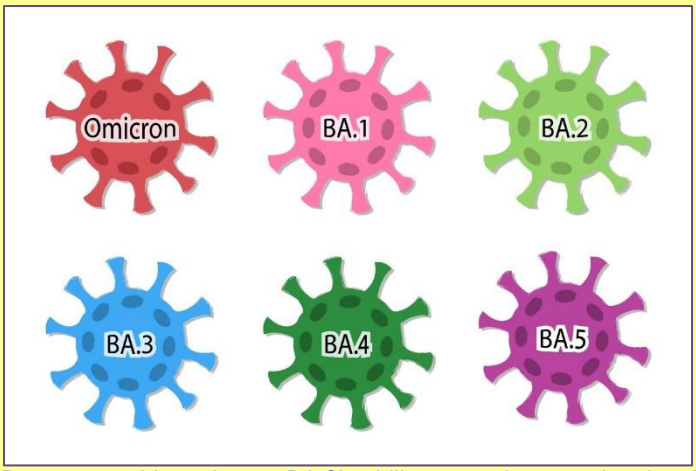
While Diamond must be approved by the Food and Drug Administration before it can be used publicly, the scientists behind the technology launched a company called Avsana Labs to hopefully commercialize it. Qin serves as president of the company, which was created through UTD's Venture Development Center.

Just last week, another North Texas company had its COVID-19 test approved by the FDA. Frisco-based InspectIR Systems invented a breathalyzer apparatus, the first coronavirus test of its kind to get federal approval, that can yield results in less than three minutes.

More infectious Omicron subvariant BA.2.12.1 rapidly spreading across US

Source: https://newatlas.com/health-wellbeing/omicron-subvariant-ba-2-12-1-spreading-disease-severe-infectious/

May 05 – COVID-19 variant-tracking estimates from the Centers for Disease Control and Prevention (CDC) indicate a new Omicron sub-variant is rapidly becoming prevalent in the United States. Dubbed BA.2.12.1, little is known about this novel variant beyond it likely being the most infectious version of SARS-CoV-2 to date and experts warn it could be triggering a new wave of cases across the country.



Since the Omicron variant of SARS-CoV-2 emerged in late 2021, the virus has spread, and mutated, at an incredible pace. The first iteration of Omicron (B.1.1.529) took a few short weeks to become dominant in the United States before being rapidly pushed out of prominence by the next sub-variant, BA.1.1.

By March another iteration of Omicron called BA.2 had taken over the US. BA.2 wasn't a new subtype of Omicron but rather it was a different iteration from the same lineage that emerged in South Africa in late 2021.

BA.2 was found to be about 30 percent more transmissible than the prior Omicron iterations that had spread across the country. But more problematic was BA.2's ability to evade monoclonal antibody treatments previously developed to treat COVID-19.

Now yet another iteration of Omicron has been detected rapidly growing in prominence in the US. This variant, called BA.2.12.1, is a new mutation of unknown origins. It emerged on the CDC's variant tracker in early February but exploded in growth across the country in April.

The latest NowCast modeling from the CDC estimates BA.2.12.1 accounted for 36.5 percent of infections in the country by the end of April. In the north-east of the country, where BA.2.12.1 was first detected, it is now thought to account for up to 80 percent of all infections.

The emergence and growth of BA.2.12.1 mirrors two other new Omicron subtypes that have been reported in South Africa – BA.4 and BA.5. A recent summary of these new variants' characteristics from scientist Eric Topol indicates they are even more infectious than BA.2, with some novel mutations that could allow them to reinfect those previously infected with early Omicron iterations. Topol notes BA.4 and BA.5 are possibly 10 percent more transmissible than BA.2, however, BA.2.12.1 may be even more infectious, with a 25 percent transmission advantage over the previously dominant Omicron variant.

A recently posted preprint study from scientists in Beijing, yet to be peer-reviewed, offers the first robust look at how antibodies from a prior Omicron infection interact with BA.4, BA.5 and BA.2.12.1. The findings suggest all three of these new Omicron subtypes may have properties that allow them to escape any immunity generated from a BA.1 infection.

BA.2.12.1 was also found to harbor some unique mutations that could enhance its entry into human cells, essentially adding weight to the suspicion it is likely the most infectious variant to appear so far.

Of course, needless to say, all this data is rapidly evolving and it's unclear exactly what these new Omicron subtypes will do in real-world conditions. New York City has been called the bellwether of the US and it has seen a recent increase in COVID-19 hospitalizations.

As of early May, officially recorded COVID-19 cases in New York State hit the highest levels seen since January. South Africa, battling its own BA.4/BA.5 spike, is also recording the highest new COVID-19 case rates it has seen in months.

So far there is no evidence to indicate these new variants cause more severe disease compared to prior Omicron subtypes. However, small increases in hospitalizations, both in New York and South Africa, suggest higher rates of infections in a community will always mean the virus finds those most vulnerable.

Perhaps the biggest question right now concerning these new emerging Omicron subtypes is what to do about variant-specific vaccine boosters. Both Moderna and Pfizer are in advanced stages of trialing an Omicron-specific mRNA booster. The companies are currently

hoping to have those shots available later this year, ahead of the Northern Hemisphere winter, however, both new vaccines have been designed to target the BA.1 subtype of Omicron.
The preprint study analyzing these emerging Omicron subtypes indicates it is possible the immune escape properties of BA.4, BA.5 and BA.2.12.1 will lead to new waves of reinfections. And maybe a variant-specific vaccine targeting BA.1 will not be optimal at protecting against these increasingly immune-evasive lineages of Omicron.
"This poses a great challenge to the currently established herd immunity through WT-based vaccination and BA.1/BA.2 infection," the new research explains. "Similarly, this observation also suggests that Omicron BA.1-based vaccine may not be the ideal antigen for inducing broad-spectrum protection against emerging Omicron sublineages."
The US Food and Drug Administration (FDA) has scheduled a meeting for late June to lock in the optimal variant new booster vaccines should be targeting for later in the year. Moderna, at the front of the pack with trials on their BA.1 mRNA booster, is aiming for an August deployment of the new formulation. But Moderna's CEO has warned that if a different Omicron sub-variant needs to be targeted the August date will be pushed back to later in 2022.

COVID-19 Worsens Asthma in Children

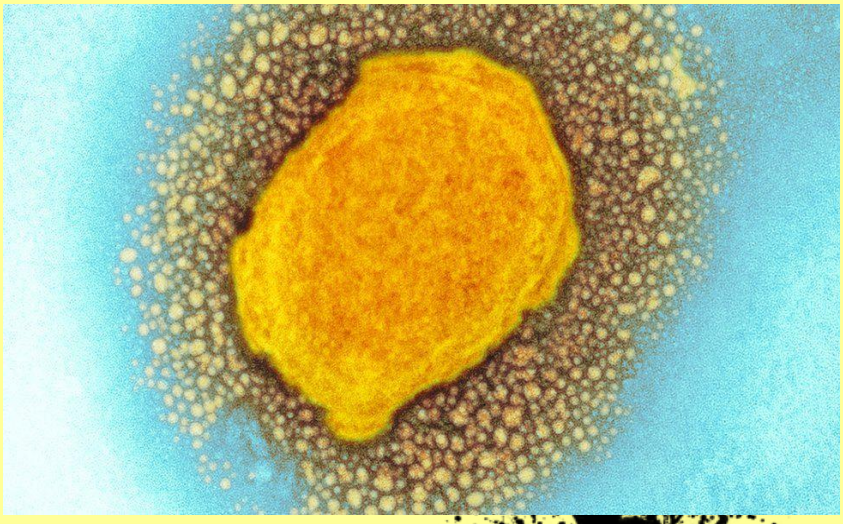
Journal of Allergy and Clinical Immunology: In Practice, online April 26, 2022
Source: https://www.medscape.com/viewarticle/973452?uac=82598DG&faf=1&sso=true&impID=4227396&src=wnl_edit_tpal

May 05 - Asthma in children may worsen after an infection with the coronavirus, doctors warn.
They studied nearly 62,000 U.S. children with asthma who had PCR tests for the virus in the first year of the pandemic, including more than 7,700 who tested positive. Infected children had significantly more asthma visits, hospitalizations, emergency inhaler use, and steroid treatments during the six months after their illness compared to children who tested negative and to their own prior history, researchers reported in the Journal of Allergy and Clinical Immunology: In Practice.
Children who tested negative for the virus "had improved asthma control for the next six months, meaning fewer emergency department visits and hospitalizations for asthma, and less asthma treatment," said Dr. Christine Chou of Children's Health of Orange County, in California.
Results of earlier studies showing improvement in asthma control in the early part of the pandemic were likely due to public health measures like staying home and masking, which curbed exposure to asthma triggers, Chou said. Despite the overall impression that children with asthma did well during the first year of the pandemic, she added, the new study shows "longer lasting harm of COVID on children's asthma control."

Monkeypox case confirmed in England

Source: https://www.bbc.com/news/uk-61363896

May 07 – A person (**UPDATE 14/5**: + one couple **UPDATE 16/5:** +4 homosexuals) in England has been diagnosed with the monkeypox virus, the UK Health Security Agency has said. The patient had recently travelled to Nigeria, where they are believed to have caught the virus before coming to the UK, the health agency said.



They are now being treated at an expert infectious disease unit at Guy's and St Thomas' NHS trust in London.
Monkeypox is a rare viral infection from which most people recover in a few weeks, according to the NHS.
The UKHSA said monkeypox does not spread easily between people and the risk to the wider public was very low.
In an update published on Saturday, the health agency said: "As a precautionary measure, UKHSA experts are working closely with NHS colleagues and will be contacting people who

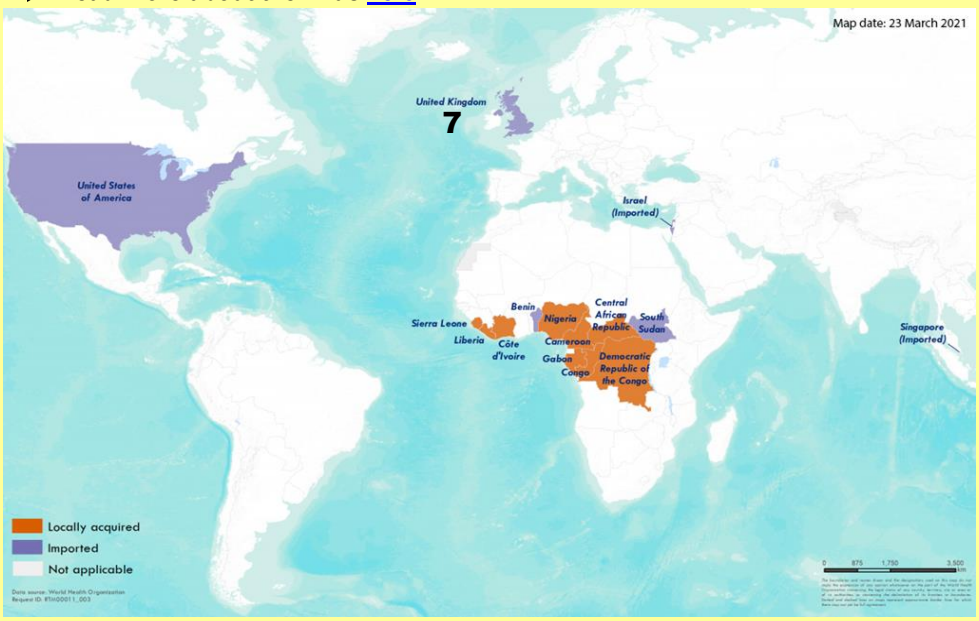
might have been in close contact with the individual to provide information and health advice." The first-ever recorded occurrence of the virus in the UK was in 2018, and since then a handful of cases have been confirmed by health authorities.

Monkeypox: What are the symptoms and how do you catch it?

Monkeypox causes a rash, which can be extremely itchy, which changes and goes through different stages before finally forming a scab

Initial symptoms of monkeypox include fever, headache, muscle aches, backache, swollen lymph nodes, chills and exhaustion, the UKHSA said. A rash can develop, often beginning on the face, then spreading to other parts of the body. The rash changes and goes through different stages before finally forming a scab, which later falls off. It can be spread when someone is in close contact with an infected person. The virus can enter the body through broken skin, the respiratory tract or through the eyes, nose or mouth. It can also be spread by contact with infected animals such as monkeys, rats and squirrels, or by virus-contaminated objects, such as bedding and clothing.

●▶ **Read more about the virus** here.



Countries reporting confirmed human cases of monkeypox 1970 - 2021

COVID-19 Infection Has More Than 50 Long-Term Effects

Source: https://www.medscape.com/viewarticle/973598

May 06 — Clinical experiences in approaching COVID-19 from different perspectives, results obtained by various therapeutic options and, above all, the challenges posed by a

new healthcare reality — long COVID — were all the focus of a recent discussion at the 7th International Congress of the Spanish Society of Precision Health.

In this forum, titled Precision Health: A COVID-19 Professional Debate, Mayca González, MD, a specialist in microbiology and an expert in age management medicine at the University of Granada, reviewed the most recent data regarding long COVID. "According to the latest evidence, 9 out of 10 COVID-19 patients (87%) discharged from hospital experience at least one symptom 60 days after illness onset, with 32% reporting one or two symptoms and 55% presenting three or more. Additionally, more than 50% of symptomatic cases have at least one symptom of the disease 1 year after infection."

Another study found that 12.8% of the infected study participants continued to have dyspnea after 6 months, even in the absence of a pneumonia diagnosis, González added.

Research on this topic has also shed light on the main risk factors for developing long COVID. "First of all, gender, age, and even the number of symptoms" are risk factors, said González. "Therefore, women and people between 40 and 54 years of age are more likely to suffer from long COVID. It is also known that the more severe the acute illness, the greater the number of symptoms that appear after post-infection.

"Having a body mass index equal to or greater than 25, reporting three to seven symptoms of COVID-19 in the acute phase, and patients with more than five symptoms during the first week of the disease are factors associated with being prone to suffer from long COVID. All this sets up a health problem that will undoubtedly be a major challenge from now on."

González stressed that studies have shown that there are more than 50 long-term effects of COVID-19, the most prevalent being fatigue (58%), headache (44%), attention disorders (27%), and hair loss (25%).

Among all the research projects carried out on this topic, González highlighted a study published in January that, in her opinion, is one of the most relevant to date "because it delves into the pathophysiologic circumstances behind symptoms at all levels, something that we did not fully know until now.

"For example, it has been shown that dyspnea, hypoxia, fatigue, 'ground-glass' opacities, and pulmonary fibrosis are due to damage to the lung parenchyma [primarily] mediated by the virus and secondarily due to immunological microvascular damage. On the other hand, at a cardiovascular level, up to 20 cardiovascular conditions can occur 1 year after overcoming COVID-19. This allows us to foresee that these patients will be a significant demand on health systems in the coming years."

Microbiome and Vagus Nerve

Regarding the digestive and intestinal system, González highlighted a hitherto unknown mechanism: the involvement of the vagus nerve and the intestinal microbiota.

"There are studies that suggest a pattern of persistent or recurrent viremia in some patients, causing a clinical evolution of nonspecific symptoms associated with personal limitations," she said. "This could lead us to think about the possibility that the virus would have a reservoir at this level. Along the same lines, research currently in progress points to a possible involvement of the vagus nerve as the cause of the manifestations of long COVID. We must not forget that this nerve connects the brain and the gastrointestinal tract, in addition to controlling heart rate, sweat production, and the gag reflex."

In her analysis of this pilot study carried out by a group of Spanish researchers, González commented that **two thirds (228) of the 348 participants involved had at least one symptom suggestive of vagus nerve dysfunction.** Upon further evaluation of these 228 patients, in the first 22 subjects with vagus nerve dysfunction, 20 were women with a median age of 44 years.

"The study also reflects that the most frequent vagus nerve dysfunction related symptoms were diarrhea (73%), tachycardia (59%), dizziness (45%), dysphagia (45%), and dysphonia (45%); 86% of the patients had three different vagus nerve dysfunction related symptoms. Six of the 22 patients displayed alteration of the vagus nerve in the neck shown by ultrasound, including both thickening of the nerve and mild inflammatory reactive changes," she noted.

Another important fact of this research was that 10 of the patients showed abnormal breathing patterns and reduced maximum inspiratory pressures, which, according to González, indicated the weakness of the respiratory muscles connected to the vagus nerve. "Seventy-two percent also had oropharyngeal dysphagia or difficulty swallowing, and eight patients showed reduced or impaired ability to move food from the esophagus to the stomach and acid reflux."

Prescription: Exercise

At the same conference, Wilson Martínez, MD, a specialist in sports and exercise medicine, addressed the role of physical exercise in the recovery of people who have suffered from COVID-19. "It should be kept in mind that many patients with mild or severe COVID-19 do not fully recover and have a wide variety of chronic symptoms for months or weeks after

infection that are often neurological, cognitive, or psychiatric in nature. This is what is known as post-COVID-19 syndrome, reported by between 10% and 20% of patients."
In his presentation, *The Value of Exercise in the Post-COVID Patient*, Martínez reviewed the most recent studies that show the link between exercise and the benefits for health in general and against SARS-CoV-2 and its consequences in particular. "In these investigations," he told the audience, "exerkines are discussed, understanding as such the substances that are produced or generated with the practice of physical activity (including hormones and metabolites) with healthy benefits at different levels. There is a varied repertoire of exerkines in the systemic circulation, and it is known that the higher the intensity and momentum with which exercise is performed, provided it is done properly, that these exerkines manifest in a more positive way."
In the context of COVID-19, Martínez explained this positive impact "taking into account that SARS-CoV-2 affects the angiotensin-converting enzyme-2 receptor, and this in turn involves the appearance of fibrosis, inflammation, vasoconstriction, reduced neurogenesis, and cardiovascular damage. This activation of a series of vascular signaling chains that occurs with exercise makes it possible to counteract a good number of the symptoms of the post-COVID-19 syndrome, acting in a certain sense like a polypill."
Specifying the potential benefits of exercise in post-COVID-19 syndrome, Martínez highlighted that there is an improvement in the psychological component, since it reduces stress, which translates into an improvement in mood and a feeling of well-being.
"At the neurological level, it stimulates brain plasticity, improves cognitive abilities, decreases allostatic load and optimizes sleep quality," he explained. "As for the cardiovascular system, angiogenesis occurs, improving the vascular system and cardiovascular function, lowering blood pressure, normalizing dysautonomia, and notably increasing mitochondrial biogenesis.
"In the respiratory system, it decreases dyspnea and improves oxygen consumption and lung function. In muscles, it improves exercise tolerance, increases muscle strength and muscle mass, with better intramuscular coordination. In relation to the immune system, it decreases inflammatory cytokines and increases anti-inflammatory cytokines, generally improving immune function," Martínez continued.

Strength Training Essential

Martínez stressed that there is no known drug that produces all these benefits. "Unfortunately, we are not taught or used to prescribing exercise. Based on all this evidence, it is obvious that it should be incorporated into the prevention of and approach toward not only COVID-19 and post-COVID-19, but in general, for the care of cardiovascular and metabolic health, both to prevent diseases and as an adjuvant in many pathologies."
Regarding what type of activity is most recommended in these patients, Martínez pointed out that "there is sufficient evidence to suggest that adapted and supervised training with aerobic and strength endurance exercises can be an effective multisystemic therapy for post-COVID-19 syndrome."
In this sense, Martínez stressed the need to value the importance of strength training. "Although a good part of the population practices aerobic activity, the percentage drops when it comes to strength routines, especially among women, since they associate it with the risk of excessive bodybuilding. In the case of post-COVID-19, this training is essential, since one of the most worrying signs of this syndrome is the loss of muscle mass.
"A little more research is required in this field, but without a doubt, it is a perfect tool to counteract and manage the multiple signs and symptoms that persist after having suffered from COVID-19," Martínez concluded.

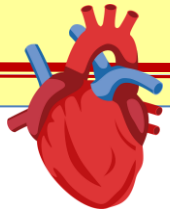
Increased emergency cardiovascular events among under-40 population in Israel during vaccine rollout and third COVID-19 wave

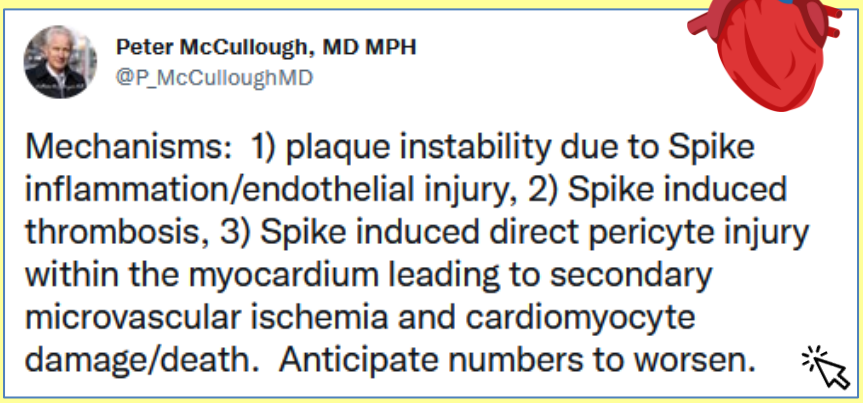
By Christopher L. F. Sun, Eli Jaffe and Retsef Levi
Scientific Reports volume 12, Article number: 6978 (2022)
Source: https://www.nature.com/articles/s41598-022-10928-z

05 May 2022 Editor's Note: Readers are alerted that the conclusions of this article are subject to criticisms that are being considered by the Editors. A further editorial response will follow once all parties have been given an opportunity to respond in full.

Abstract

Cardiovascular adverse conditions are caused by coronavirus disease 2019 (COVID-19) infections and reported as side-effects of the COVID-19 vaccines. Enriching current vaccine safety surveillance systems with additional data sources may improve the understanding of COVID-19 vaccine safety. Using a unique dataset from Israel National Emergency Medical





Services (EMS) from 2019 to 2021, the study aims to evaluate the association between the volume of cardiac arrest and acute coronary syndrome EMS calls in the 16–39-year-old population with potential factors including COVID-19 infection and vaccination rates. An increase of over 25% was detected in both call types during January–May 2021, compared with the years 2019–2020. Using Negative Binomial regression models, the weekly emergency call counts were significantly associated with the rates of 1st and 2nd vaccine doses administered to this age group but were not with COVID-19 infection rates. While not establishing causal relationships, the findings raise concerns regarding vaccine-induced undetected severe cardiovascular side-effects and underscore the already established causal relationship between vaccines and myocarditis, a frequent cause of unexpected cardiac arrest in young individuals. Surveillance of potential vaccine side-effects and COVID-19 outcomes should incorporate EMS and other health data to identify public health trends (e.g., increased in EMS calls), and promptly investigate potential underlying causes.

Lessons learned from 2001–2021 – from the bioterrorism to the pandemic era

Aleksander Michalski[1,A-F], Józef Knap[2,B-E], Agata Bielawska-Drózd[3,C-E], Michał Bartoszcze[3,A-F]

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A – Research concept and design, B – Collection and/or assembly of data, C – Data analysis and interpretation, D – Writing the article, E – Critical revision of the article, F – Final approval of the article

Michalski A, Knap J, Bielawska-Drózd A, Bartoszcze M. Lessons learned from 2001–2021 – from the bioterrorism to the pandemic era. Ann Agric Environ Med. doi: 10.26444/aaem/146604

Abstract

Introduction and Objective. The aim of the study was to analyze available literature on the development of biological warfare and combating the SARS CoV-2 pandemic. Against the background of contemporary threats from biological factors, the strengths and weaknesses of response in the event of a bioterrorist attack during the ongoing COVID-19 pandemic have been identified. The scope and importance of international cooperation in the fight against the pandemic is assessed.
Review methods. The more important literature on bioterrorism, biological weapons and the COVID-19 pandemic, both from earlier work and recent publications, was analyzed, emphasizing new threats and adequate defence against them.
Brief description of the state of knowledge. The bio-warfare threat and the current COVID 19 pandemic that has hit mankind on a global scale has clearly shown how dangerous biological agents are and what effects they can cause, negatively affecting every sphere of human activity with catastrophic consequences. Data on examples of bioterrorist attacks carried out and research on the development of biological weapons and methods of combating pandemic COVID-19, were reviewed. New threats related to technological development,including those resulting from genetic manipulation, biosynthesis, and modern means of delivery, are pointed out. Attention has been paid to the implications of controlling the proliferation of biological weapons and the issues of international cooperation in the fight against bioterrorism and the COVD-19 pandemic.
Summary. The lesson learned clearly demonstrates the weakness of states in responding to such threats. The risks of uncontrolled scientific advances are still underestimated. Appropriate international control measures must be taken urgently to prepare for new pandemics, bioterrorist attacks, and the possibility of using modern biological weapons.

Oral COVID-19 Vaccine Protects Host, Slows Transmission in Hamsters

Source: https://www.genengnews.com/news/oral-covid-19-vaccine-protects-host-slows-transmission-in-hamsters/

May 09 – The available COVID-19 vaccines have been called the biggest scientific accomplishment of the century and a modern miracle. But that hasn't stopped scientists from working on making improvements. To that end, a new study presents promising data on a COVID-19 vaccine that is designed to be taken as a pill. Moreover, the vaccine not only protects the host, but also decreases the airborne spread of the virus to other close contacts.

The experiments, done in a hamster model that mimics human exposures, demonstrated the potential of a COVID vaccine that works through the mucosal tissue to neutralize the SARS-CoV-2 virus, limiting infections and the spread of active virus in airborne particles.

"Considering most of the world is under-immunized—and this is especially true of children—the possibility that a vaccinated person with a breakthrough infection can spread COVID to unimmunized family or community members poses a public health risk," said Stephanie Langel, PhD, medical instructor in the department of surgery, Duke University School of Medicine. "There would be a substantial benefit to develop vaccines that not only protect against disease, but also reduce transmission to unvaccinated people."

Langel and colleagues—including teams from the vaccine developer Vaxart and the clinical research non-profit Lovelace Biomedical Research Institute—tested an orally-delivered adenovirus type 5-vectored SARS-CoV-2 vaccine candidate that expresses the spike protein.

Hamsters, vaccinated by the oral or intranasal route, had robust and cross-reactive antibody responses. When the animals were exposed to the SARS-CoV-2 virus at high levels, prompting breakthrough infections, they were less symptomatic than non-vaccinated hamsters, had lower amounts of infectious virus in the nose and lungs.

More specifically, the authors wrote, "Oral- or intranasal-vaccinated hamsters had decreased viral RNA and infectious virus in the nose and lungs and experienced less lung pathology compared to mock-vaccinated hamsters after SARS-CoV-2 challenge."

The hamsters also did not shed as much virus through normal airborne exposures. The authors wrote that naïve hamsters, exposed in a unidirectional air flow chamber to mucosally-vaccinated, SARS-CoV-2-infected hamsters, also had lower nasal swab viral RNA and exhibited fewer clinical symptoms than control animals. This suggests that the mucosal-route reduced viral transmission.

Unlike vaccines that are injected into the muscle, Langel said, mucosal immunizations increase production of immunoglobulin A (IgA)—the immune system's first line of defense against pathogens—in the nose and lungs. These mucosal ports of entry are then protected, making it less likely that those who are vaccinated will transmit infectious virus during a sneeze or cough.

The same platform encoding the SARS-CoV-2 spike and nucleocapsid proteins elicited mucosal cross-reactive SARS-CoV-2-specific IgA responses in a Phase I clinical trial (NCT04563702).

"Our data demonstrate that mucosal immunization is a viable strategy to decrease the spread of COVID through airborne transmission," Langel said.

●▶ **The findings are published in *Science Translational Medicine* in the paper,** "Adenovirus type 5 SARS-CoV-2 vaccines delivered orally or intranasally reduced disease severity and transmission in a hamster model."

Our Biggest Mistakes During the COVID-19 Pandemic

By Arthur L. Caplan, PhD

Source: https://www.medscape.com/viewarticle/972742

May 04 – Hi. I'm Art Caplan. I'm at the Division of Medical Ethics at New York University's Grossman School of Medicine.

We're starting to see some fading in the number of hospitalizations associated with COVID-19, the beginning of the end of mask mandates, and generally, people saying they're going back out to events, going back to restaurants, going to go visit friends, or going back to various sports venues or theater. They want normalcy.

It may not be a bad time to take a little bit of a grumpy attitude and ask what we've learned so far about the response to COVID-19 — what were our 10 biggest mistakes? I think there are probably more than 10, but let's see what that list might look like just so we can not only begin to debate how to correct what I think were errors and mistakes, but also see whether we're ready for the next wave of whatever it is that might show up as a pandemic, such as future COVID-19 variants, flu variants, Ebola, Zika, or some other horrible thing that might put American society and the world at risk.

Language Matters

The first thing I think we learned is that language matters. In this whole debate about COVID-19 and what to do, we heard terms like "warp speed" and "booster." Both of those terms, I think, were inaccurate. The suggestion that our vaccines were made at warp speed led some people to think they're not safe or they're cutting corners, or the evidence isn't good. Politicians, from Trump to Biden, wanted to take credit for getting vaccines out there very quickly in response to the appearance of COVID-19.

It's understandable, but you can't go around describing medicines or vaccines as "warp speed" or something that has never before been done at this rate. You scare people, and there's no reason to scare people. The evidence for COVID-19 vaccines was solid, impressive, and something that had been worked on in terms of basic science for many, many years. If there was a warp speed, it was because the manufacturers were given money to make the vaccines and have them ready to go as soon as approval came. The public often didn't understand that.

Similarly with boosters. They kept talking about the third shot as a booster. Many people hear the term booster and think, *Well, that's not something I need* or *That's more voluntary*. Look, the COVID-19 vaccine is a three-shot vaccine. It takes three shots to keep all the variants at bay, keep you out of the hospital, and keep you from dying. By talking about boosters all the time, the CDC and many other government agencies, I think, gave the impression that something really important was not.

There was even a hint that we were giving out boosters while the rest of the world didn't get any shots. That's inaccurate. It's a three-shot vaccine. The rest of the world needs three shots too. Everybody does. By misdescribing things and calling them boosters when they weren't, rather than saying you've got a vaccine that requires three shots to be complete, I think we undermined both Americans' willingness to get that third shot and set up a false scenario where the rest of the world was criticizing us, if you will, for indulging ourselves with boosters when they didn't have any vaccine. They certainly merit vaccine, but everybody merits the complete sequence of vaccination with the three shots. Every vaccinologist I've talked to says it's a three-shot vaccine, so this language of boosters really undercut what we could do.

The Ethics of Values vs Science

Another lesson we learned is that the pandemic is as much about values as it is about science. It's really important to understand that some of our biggest failures in responding to COVID-19 had nothing to do with a lack of vaccines, an inability to prove that masks helped, that testing was valuable in terms of trying to quarantine and isolate infected people, or that ventilation was important. I mean, the science, I think, was done very well and held up well, but what we never messaged very well was the ethics and the values.

When people said things like, "I want to be free to go where I want and do what I want, even if it's a pandemic," that is not an acceptable interpretation of liberty. You don't get to go where you want, do what you want, and show up where you want if you're going to pose a danger to somebody else. It's very simple. Liberty gets restricted when the possibility is there that you could harm somebody else.

If you're going out infected or you don't know your COVID-19 status, which was true for many people throughout the COVID-19 epidemic, then you have a duty not to put them at risk. We never sold that message effectively about the obligations to let liberty be tamped down or temporarily restrained to protect us. That's a fundamental goal of society, and by the way, a principle we follow when we say you have to have rules governing how you drive your car and putting kids in child seats.

There are many parts of our lives where we restrict liberty so that we can have less mayhem and more, if you will, social activity permitted. More freedom by restricting things that people do. We don't say you go out and pick which side of the road you want to drive on tomorrow morning, that it's up to you, it's a liberty choice.

The Mess of Medical Messaging

Another major failure I think we learned about is that we're not very good at communication within the medical and science communities to the public. I think there were many people who tried very valiantly to communicate messages to the public on mainstream media and social media, and they did their best. The battle about COVID-19 and getting messages across to fight misinformation about phony cures or the dangers of masks — that they're going to suffocate your children if they wear them — and many other powerful misinformation messages took place at the grassroots level.

The people who were peddling bunk showed up at the school board, the church, the synagogue, the high school, and at public meetings and public forums. It's great to have messaging top-down and to be on the national media, send out messaging there, get things into major print outlets and social media outlets, but the battle in public health communication is grassroots-up, too.

We need more people who are showing up at local forums and local activities to really get messages across to the local community, to answer questions, and also to serve as trusted

sources. Throughout the whole COVID-19 pandemic, I think some of the most trusted people remain doctors and nurses — the personable people who had relationships with patients or that people knew.
That's where we've got to get more effective communication going and get those people out a little bit more locally. It isn't just top-down, as much as everybody wants to pay attention to what Biden says or what Tony Fauci says, or what pundits are saying on various TV networks. That's half of the messaging battle. When you don't fill in the other half, misinformation and bad information take off, and it really hurt during the COVID-19 pandemic.

Pandemic Exposed Problems With Vaccine Distribution

I think there was another myth that grew, saying we were betraying the rest of the world when the richer countries vaccinated themselves. It would be useful to get vaccine out as fast as possible around the world. It's prudent because we know that new variants can occur in unvaccinated places, and it's obviously important for humanitarian reasons to help save lives in places that have dangerous outbreaks of COVID-19 or something else.
The world needs a better system to disseminate vaccines. It isn't enough just to send them on a boat to a dock. If the country where they arrived is corrupt and the leader is going to sell those vaccines to the highest bidder or some other country, if there are no refrigerators, if there are no roads, if there's no one trained to give the shots, if there's not even messaging that goes out to fight anti-vaccine misinformation in those countries, then vaccination isn't going to happen. It isn't as simple as just saying, "Give us the patents or give us the vaccine supply."
We've got an infrastructure challenge in much of the world that has to be overcome in order to vaccinate. Let me add that there are plenty of places in the world now where no one is getting in to vaccinate. Think about Ukraine, think about Ethiopia, think about Yemen, think about Somalia, North Korea. There's a big list of war-torn states and failed states where no one's going to be launching a vaccine campaign. We've got to come up with other tools in order to battle COVID-19 or any other outbreaks in those places.

Testing Took a Backseat, Supply Issues Caused Harm

My last item on the top 10 list, although it's not really 10, is that we didn't use all our tools. It was a big push trying to vaccinate our way out of COVID-19. Vaccines helped, but they're not enough. We never really pushed hard for testing. We wound up doing things like shutting down cities, shutting down entire schools if they had one case. The right way to go is to get testing out there that is cheap, available, and regular, every day, so that you could keep your child home if they were infected rather than closing the whole school. Similarly with the workplace.
The idea of quarantining and isolation — they're valuable. They're all public health tools, but in modern economies and modern society, they're not practical. Even the Chinese trying to shut down Shanghai and other huge cities are learning the bitter truth — that it really is impractical to shut down 26 million people in a city. You've got to test your way through, and we didn't pursue that option, and we didn't pursue the option of antiviral medicines. They were the tools that we used to get past HIV, and we didn't use them effectively. We didn't develop them fast enough. We didn't have protective gear. It's inexcusable that we don't store it and maintain it. Ventilators as well.
The just-in-time system of supply might be useful for car manufacturers, but it isn't going to work in healthcare. We need a reservoir of backup so that if something breaks out, we can quickly disseminate the requisite protective gear — the requisite masks, gowns, and so on.
Last, this is an airborne disease. It took us a long time to admit it, but we need to make sure that not only are we paying attention to deep cleaning, which I think didn't do much of anything, but that we're really trying to get viruses out of the air by upgrading ventilation systems in schools and workplaces, in hospitals, in nursing homes. That's something that is a weakness in our system. We've got to fix it.
There were many lessons forthcoming from the COVID-19 experience that I think finger-pointing might be appropriate, but hopefully not only finger-pointing but also trying to learn, improve, and do better for the next pandemic. As the experts say, there will be a next pandemic, and hopefully what we did wrong or what we didn't do as well in this one, we can fix in time for the next one.
I'm Art Caplan at the Division of Medical Ethics at New York University's Grossman School of Medicine.

Arthur L. Caplan, PhD, is director of the Division of Medical Ethics at New York University Langone Medical Center and School of Medicine. He is the author or editor of 35 books and 750 peer-reviewed articles as well as a frequent commentator in the media on bioethical issues.

The potential efficacy of an aviation bioterrorist attack and its psychosocial consequences

By Olaf E. TRUSZCZYŃSKI, Łukasz MACANDER, and Marian MACANDER

Pol J Aviat Med Bioeng Psychol 2017; 23(2): 19-27

Source: https://d1wqtxts1xzle7.cloudfront.net/80785061/download-libre.pdf

The work concerns the analysis of the possibility of a bioterrorist attack using infected material using modern air transport carriers to infect the human population. It is possible to use passenger and transport planes, but the use of drones and minidrones seems the most dangerous. A bioterrorist attack is very specific and differs from other forms of terrorism, first of all in the possibility of self-replication of the pathogen, as well as the ability to "sleep" its operation even for many years and completely unexpectedly activate it. In such conditions, not only fast medical neutralizing action becomes crucial, but also calming psychosocial reactions and reasonable cooperation of the authorities and the media.

Dogs can sniff out COVID-19 infections with high success rates

Source: https://www.cidrap.umn.edu/news-perspective/2022/05/news-scan-may-09-2022

May 09 – In a study published in *Open Forum Infectious Diseases*, researchers showed canine olfaction—or dog sniffing—was both highly sensitive and specific when it came to identifying patients with COVID-19, even those who were asymptomatic or pre-symptomatic.

The researchers, based in Hawaii, exposed dogs to sweat samples from 584 participants (ages 6 to 97 years; 24% positive SARS CoV-2 samples and 76% negative SARS CoV-2 samples). Samples were collected from cotton pads runs cross the necks of participants, and the dogs had no prior history of scent training.

During the first part of the study, the testing phase, the dogs detected SARS-CoV-2 from cotton pad samples with a diagnostic sensitivity of 98% and a specificity of 92%.

In the second part of the study, a follow-up screening test in a hospital setting, a single dog screened 153 patients before surgery, and results were compared to polymerase chain

reaction (PCR) testing. The dog performed with 96.4% diagnostic sensitivity and 100% specificity.
"The results confirm that canines can be taught to discriminate between sweat samples from SARS-CoV-2-positive and SARS-CoV-2-negative individuals," the authors concluded. "Sensitivity and specificity were equally high in an implementation phase which took place in a hospital, demonstrating the potential for medical detection dogs to provide screening for COVID-19 in public places such as hospitals, schools, and businesses."
The authors said dog sniffing could be considered a useful tool for virus detection, especially in places or settings where mass rapid or PCR testing would be improbable.

What causes the UAE's sandstorms and how common are they?

Source: https://www.thenationalnews.com/uae/2022/05/09/what-causes-the-uaes-sandstorms-and-how-common-are-they/

May 09 – The UAE often faces sandstorms that can reduce air quality and hamper visibility on the roads.
The National Centre of Meteorology issued a warning that such dust and sand storms would sweep through the Emirates this week.
The Plume air quality app, which monitors cities around the world, said that could cause "high" levels of pollution.
It said babies and people who were sensitive should remain indoors.
Plume occasionally records "airpocalyptic" levels of pollution in the UAE, which means everyone is subject to immediate and heavy effects from exposure. That happened most recently last week.
As the summer approaches, sandstorms are likely to become more regular. But why? And why do they potentially pose a risk to public health?

How common are sandstorms?

In the UAE, sandstorms are certainly not unusual. They most often hit during the summer and turbulent weather, such as during the transition from winter to spring, when rising temperatures cause strong winds. The rate of storms is expected to increase with the effects

of climate change, a report published in 2017 found. More extreme sandstorms are usually reported elsewhere in the region, in countries such as Saudi Arabia, Kuwait and Iraq, where there are strong north-westerly winds. During the early days of the Covid-19 pandemic, concentrations of nitrogen dioxide, sulphur dioxide and carbon monoxide – all pollutants released by vehicles – dropped, in some cases by as much as 70 percent. But a recent study in the Emirates found the air was more polluted owing to an increase in concentrations of tiny particulate matter in the air in the east of the Arabian Peninsula, including the UAE.
That resulted from an unusually active period of dust storms caused by north-westerly winds.

What are sandstorms made of?
A lot more than sand. The storms can carry pollutants or even viruses and bacteria. "You could have a sandstorm here and the impact on what is carried on the sand or in the sand is completely different," Ruqaya Mohamed, section manager of air quality, noise and climate change at the Environment Agency Abu Dhabi, told *The National.* "The sandstorm could have the same origin, but depending on where it passes, by the time it reaches your place or my place it carries all sorts of things along the way," she said.

Sandstorms typically contain silica crystals, as well as viruses, bacteria, dust mites, fungi and even plants. They have been blamed for spreading meningitis spores across Africa. The storms can also transmit viruses such as influenza, scientists have said. Some experts have said the 2001 foot and mouth outbreak in the UK was caused by a large storm in North Africa, which may have carried the spores to the north of the UK a week before the first cases were reported.

Who is at risk of becoming ill?
The American Thoracic Society has said sand particles can be inhaled, but are usually too large to be deposited in the lungs, so they generally become trapped in the upper airway. As a result, upper airway and mucus membrane irritation is the most common health problem. **People who suffer from allergies or asthma suffer most. Fifteen minutes of exposure to even small particles can increase the potential of suffering from asthma symptoms.** But anyone with a weakened immune system, including the elderly and pregnant women, are more at risk of being infected by viruses or bacteria contained in the dust.

What should I do in a sandstorm?
If you can, you should stay indoors until it passes. If not, wear a mask or use a wet towel to protect yourself against inhaling dust particles. Running an air purifier indoors will help. Doctors say it is also important to stay hydrated.

Why don't UAE sandstorms look like the ones on TV?
The UAE's location and climate does not tend to expose it to the extreme winds found elsewhere. Forecasters say most of the storms that reach the country originate from the dries-up marshlands of Kuwait or Iraq, but they usually blow themselves out before they reach the Emirates. Instead of a fast-moving wall of air, as seen in Dubai in Hollywood film ***Mission Impossible: Ghost Protocol*****,** the sand is suspended.

Can anything be done to improve air quality in the UAE?
Abu Dhabi has expanded a programme aimed at improving air quality in the emirate. Experts from the environment agency have joined the World Health Organisation's Global Air Pollution and Health Technical Advisory Group. They now sit on two working groups – one focused on dust, sand and health, and the other on policy interventions. It is hoped the knowledge gained in the groups can help the emirate to continue to make strides to improve air quality.

EDITOR'S COMMENT: What if "someone" takes advantage of a sandstorm to orchestrate a bioterrorism attack against UAE? A movie hypothetical scenario – perhaps …

WHO Estimates Nearly 15 Million Deaths Linked to COVID Pandemic

Source: https://www.homelandsecuritynewswire.com/dr20220505-who-estimates-nearly-15-million-deaths-linked-to-covid-pandemic

May 05 – The World Health Organization (WHO) on Thursday released a report estimating that between 13.3 million and 16.6 million deaths were linked to the coronavirus pandemic in its first two years.
The long-awaited estimate is more than double the official death toll of 6 million where COVID-19 featured on death certificates either as the primary cause or a contributing factor.
Scientists tasked by the UN's health agency with calculating the COVID-19 death toll between January 2020 and the end of 2021 said the figure reflected deaths that were either caused directly by the virus or attributed to its impact on health systems, calculated by studying unexpected variations in so-called excess mortality.
"These sobering data not only point to the impact of the pandemic but also to the need for all countries to invest in more resilient health systems that can sustain essential health services during crises, including stronger health information systems," WHO chief Tedros Adhanom Ghebreyesus said.

#	Country, Other	Total Cases	New Cases	Total Deaths	Total Recovered	Serious, Critical	Population
	World	515,902,628	+93,900	6,272,187	470,749,938	40,366	
1	USA	83,437,158		1,023,908	80,872,122	1,714	334,569,983
2	India	43,094,548		523,975	42,547,699	698	1,404,939,670
3	Brazil	30,524,183		663,967	29,609,094	8,318	215,336,405
4	France	28,849,915		146,498	27,426,293	1,511	65,538,961
5	Germany	25,203,564		136,564	23,135,500	1,279	84,276,309
6	UK	22,102,983		175,984	21,428,440	277	68,541,415
7	Russia	18,211,178		376,560	17,578,659	2,300	146,049,463
8	S. Korea	17,464,782	+26,714	23,206	N/A	423	51,350,274
9	Italy	16,682,626		164,179	15,353,323	369	60,298,443
10	Turkey	15,038,495		98,819	14,935,811	975	86,006,947

As of May 06, 2022 – Source

How Is the Pandemic Death Toll Calculated?
The WHO said the released figures are based on country-reported data and statistical modeling.
Excess mortality is calculated as the difference between the number of deaths that had occurred and the number that would have been expected in the absence of the COVID pandemic based on data from earlier years.
Accurate figures of coronavirus deaths have been problematic throughout the pandemic, as the numbers are only cautiously interpreted as a fraction of the devastation wrought by the virus. This is partly attributed to limited testing and differences in how countries count COVID-19 deaths, especially in places with patchy healthcare provision, and also to the difficulty of ascertaining how the pandemic might have impacted deaths caused by other things.

Some governments have disputed WHO's methodology for calculating COVID deaths, resisting the idea that there were many more deaths than officially counted.

Where Are the Highest Excess Mortality Rates?
According to the WHO, 84 percent of the excess deaths were concentrated in Southeast Asia, Europe and the Americas.
Some 10 countries alone accounted for 68 percent of all excess deaths.
Upper-middle-income nations accounted for 28 percent of the figure, lower-middle-income states 53 percent and low-income countries 4 percent.
Meanwhile, high-income countries accounted for 15 percent of the excess mortality rate.
"This may seem like just a bean-counting exercise, but having these WHO numbers is so critical to understanding how we should combat future pandemics and continue to respond to this one," said Albert Ko, an infectious diseases specialist at the Yale School of Public Health who was not linked to the WHO research.

Eroding norms over release of self-spreading viruses

By Filippa Lentzos, Edward P. Rybicki, Margret Engelhard et al.
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Source: https://www.science.org/doi/10.1126/science.abj5593

An evidence-based norm collectively established and reinforced through the work of generations of virologists is that laboratory modifications of self-spreading viruses are genetically too unstable to be used safely and predictably outside contained facilities. That norm now seems to be challenged. A range of transformational self-spreading applications have been put forward in recent years. In agriculture, for example, self-spreading viruses have been proposed as insecticides, or as vectors to modify planted crops. In health care, self-spreading viruses have been promoted as vaccines. Yet, glossed over by these proposals is that the self-spreading dynamics of a virus repeatedly passing from host-to-host (passaging) give it substantial potential to alter its biological properties once released into the environment. We explore the consequences of this apparent norm erosion in the context of recent proposals to develop self-spreading genetically modified viruses, in wildlife management and in self-spreading vaccines.

How to protect the world from ultra-targeted biological weapons

By Filippa Lentzos, December 7, 2020
Source: https://thebulletin.org/premium/2020-12/how-to-protect-the-world-from-ultra-targeted-biological-weapons/

December 2020 – The potential reach of the state into our individual biology and genetic makeup is expanding at an unprecedented rate. Global responses to the COVID-19 pandemic have crystallized just how quickly and readily machines, algorithms, and computing power can be combined with biological data and used in technologies that subjugate bodies and control populations.
As the Chinese city of Wuhan went into lockdown, the authorities carried out large-scale remote temperature measurements of households in apartment complexes through drones equipped with infrared cameras. Drones were also used to patrol public places, tracking whether people were travelling outside without face masks or violating other quarantine rules. Chinese police forces debuted augmented reality (AR) smart glasses powered by artificial intelligence (AI) capabilities, designed to recognize individuals with potential COVID-19 symptoms. The glasses have facial recognition capability to identify and profile individuals in real-time and can also record photos and videos. As Wuhan started to open up again, the authorities introduced "Health Code," an app people were required to use when entering and exiting residential areas, supermarkets, subways, and taxis, among other spaces. The app stores your personal information, including your ID number, where you live, whether you have been with people carrying the virus, and what symptoms they had. As you touch in or out on entering or exiting, the app gives you a colour: green means you can go anywhere, yellow means you have to quarantine for 7 days, red for 14 days. The app also surreptitiously collects—and shares with the police—your location data.
And this type of surveillance wasn't used just in China. A range of countries have adopted intrusive and coercive forms of surveillance and use of personal and biological data reminiscent of dystopian novels like *Nineteen Eighty-Four* and *Brave New World*. As other countries went into lockdown, surveillance cameras with facial recognition tracked quarantine evaders or gauged elevated temperatures of potentially infected individuals in crowds. Fine-grained location data transmitted from mobile phones determined how many people were obeying lockdown orders, fever-detecting

cameras screened travellers arriving at airports, and algorithms monitored social media posts for signs of COVID-19's spread. Contact-tracing apps, centrally storing user interactions, provide "social graphs" of who you have physically met over a period of time. "Immunity passports" or "risk free certificates" combine facial recognition technology with COVID-19 testing and medical records.

As genomic technologies develop and converge with AI, machine learning, automation, affective computing, and robotics, an ever more refined record of our biometrics, emotions, and behaviors will be captured and analysed. Governments and, increasingly, private companies will be able to sort, categorize, trade, and use biological data far more precisely than ever before, creating unprecedented possibilities for social and biological control. Some even argue that the new geopolitical order will be based on the commodification of a new resource emerging from the convergence of the artificial intelligence and biotech industries: our biological and genomic data.

These game-changing developments will deeply impact how we view health and treat disease, how long we live, and how we consider our place on the biological continuum. They will also radically transform the dual-use nature of biological research, medicine, and health care and create the possibility of novel biological weapons that target particular groups of people and even individuals. In the coming decade, managing the fast and broad technological advances now under way will require new governance structures that draw on individuals and groups with cross-sectoral expertise—from business and academia to politics and defense—to identify emerging security risks and make recommendations for dealing with them.

A screen shot of base sequences of the AMY1 gene from Arabidopsis thaliana, a small flowering plant widely used as a model organism in plant biology. (US government photo)

Adding computing power to bioinformatics

Genomic technologies are driving a vast expansion in genomic data, from gene sequences and entire genomes to data that links genes to specific functions and other types of metadata for humans, other animals, plants, and microbes. This data is becoming increasingly digitized, and computational power is significantly changing how genomic data is analysed. The integration of AI computation into biology opens up new possibilities for understanding how genetic differences shape the development of living organisms, including ourselves, and how these differences make us and the rest of the living world susceptible to diseases and disorders, and responsive to drugs and treatments.

Advanced pattern recognition and the abstraction of statistical relationships from data—the hallmarks of machine and deep learning—have shown significant potential to help researchers make sense of complex genomic data sets and extract clinically relevant findings. Take two prominent examples: functional genomics and tailored drug discovery.

The ability of machine learning to link, correlate, and analyse data is particularly useful for interpreting gene functions and identifying genetic markers responsible for certain diseases, as one expert report highlights. Known as functional genomics, this field of research makes it possible to predict how likely someone is to develop diseases such as type 1 diabetes or breast cancer or to develop certain traits and capabilities, such as height or resistance to specific pathogens, that result from complex genetic influences. Deep learning also enables computer-based experimentation for functional genomics, and work is underway to predict how genetic sequences might function before they are assembled—even if the combination has not been seen in nature.

Computational power has also helped researchers understand the evolving relationship between our genotypes, phenotypes (i.e. physical characteristics), and microbiomes (the bacteria and viruses that live on and inside the human body), and to improve our genotype-phenotype functional knowledge of pathogens.

Private industry has been instrumental in developing data mining techniques. Google's genomic AI platform, DeepVariant, for example, has been at the forefront of developing an automated, deep learning approach to identifying genetic variants in an individual genome from billions of short sequences.

Adding computational power to drug development facilitates "parallel read operations of 10 billion nucleic acid molecules in a single experiment," according to another expert report, and can increase experimental precision to single molecule manipulations. Emphasizing biological modelling, the report notes that the use of deep learning to develop new drug candidates has overcome many limitations of physics-based models, enabling models to be built from simple representations of chemical and biological entities and automating suggestions of synthesizable structures with improved properties. It also highlights how the convergence of automation with evolutionary algorithms vastly expands the number of materials that can be synthesized, tested, and optimized.

In developing new drug candidates, a robot can reportedly screen over 10,000 compounds per day through conventional "brute-force" tactics. However, while simple to automate, this approach is still relatively slow and wasteful; every compound in the library needs to be tested. The first AI robot to automate early-stage drug design came on stream in 2015. Called "Eve," it was developed by researchers at the Universities of Aberystwyth and Cambridge, who earlier had developed "Adam," a machine to independently discover scientific knowledge. To make drug candidate screening processes intelligent, Eve randomly selects a subset of compounds from a library, carries out various tests on them, and, based on the compounds that pass the tests, uses statistics and machine learning to predict new structures that might score even better.

Private companies also play a significant contributing role in developing machine learning for drug development. The pharmaceutical giant Novartis, for example, used computational power to develop a vaccine in less than three months from the first reported human infections of H7N9 influenza virus. In another example, Deep Genomics uses its AI platform to map pathological genetic pathways to inform drug development.

Advances in function genomics and drug discovery, as well as in other areas, offer the possibility of developing bespoke, or personalized, treatments using machine learning analysis of genomic and health data. "Precision public health" aims to deliver the right intervention to the right population at the right time, and it is already beginning to deliver genomic-based interventions for health and health care. The Centers for Disease Control and Prevention promotes its wide use of artificial intelligence and machine learning to improve public health surveillance (forecasting of influenza for example) and disease detection, mitigation, and elimination. While still in its early days, precision medicine—spanning personalized vaccines and antibodies, personalized treatment relying on virology and microbe research, personalized cancer treatments, and treatments involving in vivo gene editing—is also starting to become a reality.

A number of private companies, such as Tempus, IBM, and Pfizer, are actively exploring possibilities, though these efforts are still mostly focused on understanding how machine learning could help identify genetic markers or patients that should or could be candidates for personalized treatments. Experts emphasize that there is "still pervasive uncertainty about how accurate deep machine-learning will be in drawing useful interferences between the different datasets that make our biology."

Rising security concerns

Various risk assessment frameworks have been used to get a sense of the potential security risks arising from the mix of artificial intelligence and biotechnology. But balancing the generality needed to capture a broad scope of converging technologies in the life sciences with the need to maintain enough specificity to capture nuances has proved difficult. The main security concerns boil down to worries that, if the intent were there, the convergence of emerging technologies could be used to speed up the identification of harmful genes or DNA sequences. More specifically, there are concerns that adding advanced pattern recognition to genomic data could significantly facilitate: the enhancement of pathogens to make them more dangerous; the modification of low-risk pathogens to become high-impact; the engineering of entirely new pathogens; or even the re-creation of extinct, high-impact pathogens like the variola virus that causes smallpox. These possibilities are coming at a time when new delivery mechanisms for transporting pathogens into human bodies are also being developed. In addition to the bombs, missiles, cluster bombs, sprayers, and injection devices of past biowarfare programs, it could now also be possible to use drones, nano-robots, even insects.

Added to these pathogen-specific risks are traditional cyber risks and "cyber-biosecurity" risks focused particularly on the bioeconomy. Cyber-biosecurity risks include waging adversarial attacks on automated bio-computing systems, biotech supply chains, or strategic cyber-biosecurity infrastructure. Malicious actors could, for example, use AI malware to co-opt networks of sensors and impact control decisions on biotech supply chains with the intent to damage, destroy, or contaminate vital stocks of vaccines, antibiotics, cell, or immune therapies. In another scenario, AI malware could be used to automate data manipulation with the intent to falsify, erase, or steal intelligence within large curations of genomics data. Such data poisoning

could affect how pathogens are detected and analysed. It could also affect biointelligence on complex diseases in subpopulations collected over many years

The merger of the biological data revolution with computing power has created another serious security concern: ultra-targeted biological warfare. In past biowarfare programs, weapons targeted their intended victims through geographic location. Advances in biotechnology open up the possibility that malicious actors could deploy a biological weapon over a broad geographic area but only affect targeted groups of people, or even individuals.

The possibility of such "genetic weapons" was first discussed in the biological arms control community in the 1990s, as the Human Genome Project to map the full complement of human genes got underway. The UK government said "it cannot be ruled out that information from such genetic research could be considered for the design of weapons targeted against specific ethnic or racial groups." The British Medical Association cautioned that "the differential susceptibility of different populations to various diseases" had been considered in the past, and that "whilst we should hope that genetic weapons are never developed, it would be a great mistake to assume that they never can be, and therefore that we can safely afford to ignore them as a future possibility." A report from the Stockholm International Peace Research Institute (SIPRI) spoke of the potential for "future development of weapons of mass extermination which could be used for genocide."

Developments in genomic technologies and other emerging technologies, especially machine and deep learning, have spurred renewed concerns. "Access to millions of human genomes—often with directly associated clinical data—means that bioinformaticists can begin to map infection susceptibilities in specific populations," a recent report from the United Nations Institute for Disarmament Research warned. A United Nations University report, meanwhile, asserts that "deep learning may lead to the identification of 'precision maladies,' which are the genetic functions that code for vulnerabilities and interconnections between the immune system and microbiome. Using this form of bio-intelligence, malicious actors could engineer pathogens that are tailored to target mechanisms critical in the immune system or the microbiome of specific subpopulations." A 2018 National Academies of Sciences report suggests "[a]ctors may consider designing a bioweapon to target particular subpopulations based on their genes or prior exposure to vaccines, or even seek to suppress the immune system of victims to 'prime' a population for a subsequent attack. These capabilities, which were feared decades ago but never reached any plausible capability, may be made increasingly feasible by the widespread availability of health and genomic data."

It is important to note that there are barriers limiting access to targeted biological weapons. The technical base, expertise, and funding required for the design of a targeted biological weapon suggest that only a significantly resourceful and motivated actor would be likely to explore this possibility.

Re-envisioning biological disarmament

Experts at SIPRI have suggested that, because of the complexity required to create them, ultra-targeted biological weapons are relatively unlikely to be used: "If the purpose is to harm a specific individual or group, most malevolent actors would surely resort to more low-tech or direct methods, such as firearms or poison." This suggestion may be accurate, but it is not, unfortunately, a sufficient basis for biological arms control in the 21st century. As one of the great champions of biological disarmament, Matthew Meselson, professor of molecular biology at Harvard University, reflected in 2000 as he contemplated the century ahead in an essay on averting the hostile exploitation of biotechnology: "[A]s our ability to modify fundamental life processes continues its rapid advance, we will be able not only to devise additional ways to destroy life but will also become able to manipulate it—including the processes of cognition, development, reproduction and inheritance… Therein could lie unprecedented opportunities for violence, coercion, repression, or subjugation."

The current disarmament regime, the Biological Weapons Convention, has been in force since 1975. The treaty comprehensively prohibits biological weapons, understood as biological agents used for harmful purposes, and countries that are party to the treaty agree that it unequivocally covers all microbial or other biological agents or toxins, naturally or artificially created or altered, as well as their components, whatever their origin or method of production.

On the whole, this covers the pathogen-specific risks and risks of ultra-targeted biological weapons. Indeed, the UK government, which first raised the issue of genetic weapons as a possibility in the mid 1990s, specifically stated that genetic weapons would be a "clear contravention" of the treaty. Cyber-biosecurity risks are not covered by the BWC, but the BWC and arms control treaties more generally are not appropriate instruments to address these sorts of risks.

Where there might be some uncertainty around the coverage of the BWC is where the harms do not involve biological agents. Developments in science and technology are making novel biological weapons conceivable that, instead of using bacteria or viruses to make us sick, directly target the immune, nervous or endocrine systems, the microbiome, or even the genome by interfering with, or manipulating, biological processes. This could be achieved,

for example, by using a construct based on synthetic structures created or inspired by DNA or RNA, but not qualifying as DNA, RNA, or any other known, naturally occurring nucleic acid. In this sort of case, the coverage of the BWC is less clear, but the intent of the treaty to prohibit such harm is beyond doubt.

The real challenge for the treaty, however, is not in its coverage but in ensuring that countries comply with it and live up to their obligations. This oversight is particularly difficult because the relevant materials, equipment, and technical know-how are diffused across multiple and varied scientific disciplines and sectors—and they are increasingly in private, rather than public, hands. Moreover, biological agents themselves exist in nature and are living organisms generally capable of natural reproduction and replication.

The dual-use nature of biology and the challenges it poses for compliance assessment was recognized in the early phase of the negotiations on the treaty. In a 1968 statement to the predecessor of the Conference on Disarmament, the United Kingdom noted, for instance, that no verification is possible in the sense of the term as we normally use it in disarmament discussions. In other words, it was not considered possible to verify the BWC with the same level of accuracy and reliability as the verification of nuclear treaties like the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), which was negotiated immediately prior to the BWC. Consequently, Article I of the BWC—through which states "agree to never under any circumstances acquire or retain biological weapons"—is therefore vague in demarcating the borders of prohibited and legitimate activities. Article I merely refers to biological agents "of types and in quantities that have no justification for prophylactic, protective, or other peaceful purposes."

The main responsibility for compliance assessment in the BWC falls on the countries that are party to it, unlike in its sister-conventions, the Chemical Weapons Convention and the NPT, where compliance assessment is tasked to the Organisation for the Prohibition of Chemical Weapons (OPCW) and the International Atomic Energy Agency (IAEA). In the BWC, each country relies on its own resources to assess other countries' compliance. The United Nations Security Council acts as the final arbitrator on allegations of compliance breaches—though it has not to date been requested to investigate any allegations. The role of the treaty's Implementation Support Unit is purely to support countries in their efforts to implement the BWC.

The "general purpose criterion" of the BWC means the treaty permits almost any kind of biological research for defensive or protective purposes. Some such work is justifiable. Other research edges closer to the blurred line between defensive and offensive work. Distinguishing permitted biodefense projects from those that are prohibited is difficult; one cannot just assess the facilities, equipment, material, and activities involved, but must also examine and interpret the purpose, or intent, of those activities.

A series of significant and accelerating advances in abilities to manipulate genes and biological systems have made Cold War-era tools of compliance assessment increasingly outdated. Among those new abilities are:

- The addition of machine and deep learning to bioinformatics.
- The coupling of those developments with "cloud labs," third-party firms that are centralizing and scaling the wet work of genetic engineering.
- Research on deliberately releasing viruses into the environment.
- The rise in biodefense programs and the build-up in those programs' capacities.

To establish the intent of biological research, it is not enough to simply count fermenters, measure the sizes of autoclaves, and limit amounts of growth media. A growing number of countries recognize that biology, to a large extent, defies material accountancy-type verification methodologies. The United Kingdom, for instance, recently noted that BWC compliance is "much more one of transparency, insight, and candour, rather than material balances or counting discrete objects such as fermenters."

Somewhat ironically in our ever-increasing digital world, the last few years has seen a move away from strictly quantitative approaches and binary models of compliance assessment in biological arms control toward more qualitative methods. Leading countries are exploring means of demonstrating good practices and responsible science through new voluntary initiatives that enable them to demonstrate transparency and build trust—initiatives such as peer review, implementation review, and transparency visits. These information-sharing initiatives emphasize interaction and flexibility, expert-level exchanges of best practices rather than just on-site monitoring, and a broad conception of relevant laboratories and facilities—and they have been deemed to add real value to compliance judgements by participating states.

Similarly, as a way to complement laws and regulations around biosecurity, civil society groups have led the development of norm-building controls like codes of conduct, prizes, awards, competitions, and other incentives for good behavior. The flip-side—leveraging reputational risks, corporate shaming, and social pressures for poor behavior—is also beginning to be explored. It has become abundantly clear that, in the Fourth Industrial Revolution, compliance with the Biological Weapons Convention needs to be less about verifying a binary state—being "in compliance" or "not in compliance"—and more about analyzing justifications provided for the activities in question and managing dual use potential.

For biological arms control and the UN more generally, the broader challenges involve extending the management regime to stakeholders other than countries, particularly to

private industry and civil society groups but also others, and maintaining contemporary relevance as the global forum for security debates around emerging technologies. Technologies, like biotechnologies, that have traditionally been siloed in elite institutions and national labs and monitored by national governments are now increasingly accessible to and even controlled by private tech platforms and research communities around the world. In the era of AI, limiting access to intangible knowledge and computerized tools involving dual use research will only become more difficult.

There is a narrowing window of opportunity to structurally evolve biological arms control. One way to do this—and to link the biological field with other emerging technologies—is to actively encourage collaborations across the fields of AI, cyber, and biotechnologies to develop responsible security practices through which scientists learn about each converging field and its impact on dual use research. Yet, on its own, this type of collaboration is not enough to protect the world from misuse of powerful and converging technologies.

One idea for improving the management of broad and fast technological advances involves a World Economic Forum-like "network of influence," composed of exceptional individuals from business, academia, politics, defense, civil society, and international organizations, to act as a global Board of Trustees to oversee developments relevant to biological threats in science, business, defense, and politics and to decide on concerted cross-sector actions. A similar idea—not limited to the biological field but cutting across emerging technologies—would develop a "Global Foresight Observatory" comprising a constellation of key public and private sector stakeholders convened by a strategic foresight team within the UN. The Board of Trustees or the Global Foresight Observatory could be supplemented by a secondary oversight layer that enrolls individuals and select institutions in key positions to act as "sentinels." These sentinels could have dual functions: first, to actively promote responsible science and innovation, and second, to identify security risks for consideration by the Board or the Observatory.

These new governance structures could be supplemented by political initiatives—AI and bioinformatics groups, for example—to establish a new type of transparency, confidence-building, and BWC compliance assessment, and to support the prevention of biological weapons development and the management of dual use biological research. The colossal challenges of converging technologies will require bold ideas like these to re-envision future biological arms control.

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New pathogen research rules: Gain of function, loss of clarity

By Lynn C. Klotz and Gregory D. Koblentz

Source: https://thebulletin.org/2018/02/new-pathogen-research-rules-gain-of-function-loss-of-clarity/

February 2018 – In December 2017, after six years of debate and discussion, the United States government closed a chapter—though perhaps not the book—on one of the most controversial experiments in the annals of dual-use research: the creation of an H5N1 avian influenza virus that was transmissible through the air between mammals. That is, the Health and Human Services Department has finally issued new rules governing how it will decide whether to fund similar experiments in the future. While these new rules embody a reasonable set of principles for assessing the risks and benefits of such research, the review process could also be strengthened in several ways to ensure that it is comprehensive and rigorous.

The rise of "gain of function"

In 2011, Dutch researcher Ron Fouchier and American virologist Yoshihiro Kawaoka sparked a major controversy when, separately, they submitted manuscripts to *Science* and *Nature* in which they described how to generate strains of H5N1 avian influenza that were transmissible between mammals. This research on mammalian airborne transmissible H5N1, or matH5N1, was published only after the National Science Advisory Board on Biosecurity and the World Health Organization engaged in lengthy and contentious review processes that focused on whether the research should be made public.

The experiments—which not only demonstrated that mammalian transmission of the virus was possible but also provided information on how to construct such a virus—triggered broad concern about the safety and security of so-called "gain-of-function" experiments. "Gain-of-function" experiments were defined by the US government as experiments that resulted in

the creation of pathogens with enhanced virulence or transmissibility, or both. The introduction of the term "gain of function" immediately caused confusion. From a scientific perspective, "gain of function" can refer to a wide range of natural or artificially induced biological mutations, some of which could potentially create a more dangerous pathogen and others that do not. Because the controversy over matH5N1 was framed in terms of "gain of function," and not according to existing terminology and concepts for describing and assessing dual-use research that had been developed over the previous 10 years, the life sciences and biosecurity communities had to endure a long, unproductive debate about how to define this new category of worrisome research. Carving out "gain of function" as somehow distinct or separate from dual-use research has muddied debate and has had a long-lasting impact on policy.

The controversy over experiments that could make H5N1 transmissible between mammals triggered a flurry of new policies on dual-use research in the United States. In 2012 and 2014, the US government issued new regulations describing oversight of dual-use research of concern. The term "dual-use research of concern" was defined as comprising seven types of experiments conducted on one of 15 pathogens or toxins that, because they posed the highest risk of deliberate misuse, were designated as Tier 1 agents. Despite these new rules, concern about gain-of-function research was renewed when the Centers for Disease Control and Prevention and the National Institutes of Health, in July 2014, experienced a trio of biosafety failures involving variola virus (the causative agent of smallpox), *Bacillus anthracis* (the bacterium that causes anthrax), and avian influenza. None of these incidents caused any human illnesses, but they occurred over a short time and at elite biomedical research institutions; these circumstances heightened concerns about the safe conduct of research into pathogens with enhanced virulence or transmissibility.

In response to the incidents, in October 2014 the White House issued a moratorium on funding new gain-of-function studies on influenza, SARS, and MERS; asked scientists engaged in such research to voluntarily halt their experiments; and announced that it would initiate a "deliberative process" to develop a new policy on dual-use gain-of-function research. The deliberative process, which was led by the National Science Advisory Board on Biosecurity, and which lasted 18 months, consisted of five meetings of the board; the commissioning of both a technical report analyzing the risks and benefits of gain-of-function research and an ethical study of such research; and two workshops, conducted by the National Academies of Science, to solicit the input of stakeholders. In May 2016, the advisory board issued its recommendations for oversight of gain-of-function experiments. (The recommendations introduced yet another confusing term: "gain-of-function research of concern.")

In January 2017, the deliberative process reached its culmination with the issuance of guidance by the White House Office of Science and Technology Policy on research involving enhanced pathogens of pandemic concern. The shorthand for this guidance is "the P3CO Framework," where—in government-speak—"P3CO" stands for "potential pandemic pathogen care and oversight." The problematic terms "gain of function" and "gain-of-function research of concern" were thankfully replaced by language built around a better term—"enhanced."

In its guidance, the Office of Science and Technology Policy recommended that federal agencies adopt new mechanisms to govern the creation, transfer, and use of potential pandemic pathogens with enhanced virulence, transmissibility, or both. According to the guidance, agencies adopting such policies might be able to resume funding the research that the White House had suspended in October 2014.

In December 2017, the Health and Human Services Department—home of the National Institutes of Health, the world's largest funder of biomedical research—issued its policy on the oversight of research involving enhanced potential pandemic pathogens. This new policy—called the "Framework for guiding funding decisions about proposed research involving enhanced potential pandemic pathogens"—is broadly similar to, but not identical to, the corresponding guidance from the Office of Science and Technology Policy, which itself drew heavily from the advisory board's report. The department, at the same time it issued its policy, also announced that, under the new oversight system recommended by the Office of Science and Technology Policy, it was resuming funding of research into enhanced potential pandemic pathogens.

We, the authors, harbor concerns about adequate oversight of potentially dangerous research, and the framework incorporates several elements that address those concerns. The framework is thorough. It does a good job of laying out the principles and processes through which the Health and Human Services Department will make funding decisions regarding research that involves enhanced potential pandemic pathogens. The framework's approach to dual-use research of concern is not based on lists of experiments or on specific pathogens, but instead takes a risk-based approach that focuses on the attributes of modified organisms. While the identity of starting organisms is central to existing oversight policy for dual-use research of concern, the framework emphasizes the importance of organisms' properties once the experiment is over. This more comprehensive approach to dual-use research is a welcome change. Some elements of the new framework, however, remain worrisome.

Too narrow

The framework's scope is not broad enough. The framework applies only to research funded by the Health and Human Services Department, and primarily the National Institutes of Health. Research funded by other federal agencies, or by the private sector, is not subject to this review process. This narrow scope contrasts with rules that the United States issued in 2012 regarding oversight of dual-use research, which applied government-wide. Key provisions in the Health and Human Services framework contain wording almost identical to that in the guidance issued by the Office of Science and Technology Policy, so there does not appear to be a compelling reason that every federal agency should need its own set of rules to oversee research involving potential pandemic pathogens. Yet other agencies do need to oversee such research. The Agriculture Department has identified research on transmission of avian influenza between species, including mammals, as a key gap in understanding the epidemiology of this virus, and one that needs to be filled. Potential biodefense research, especially research involving threat characterization, could be conducted or funded by the Defense Department, the Homeland Security Department, or the intelligence community, and such research could be relevant as well.

Likewise, considering current growth in the bioeconomy, increasing commercialization of synthetic biology and genome editing, and the increasing role of the private sector in funding basic research, the exemption from oversight of privately funded life sciences research is a large and growing loophole. The recent synthesis of horsepox virus by Canadian scientists, with funding from a US biotech company, illustrates how privately funded research can stray, intentionally or inadvertently, into the realm of dual-use research. The National Science Advisory Board on Biosecurity recommended that oversight of gain-of-function research be applied to all researchers, regardless of their source of funding. While this approach has not yet been implemented, the guidance issued by the Office of Science and Technology Policy held out the prospect of revisiting oversight of potential pandemic pathogens to determine if such oversight could be extended to all life sciences research, regardless of source of funding.

Terminology and definitions

The framework's definitions of certain terms leave a lot to be desired. For example, the framework defines a potential pandemic pathogen as a pathogen that has both of the following properties:

1. It is likely highly transmissible and likely capable of wide and uncontrollable spread in human populations; and
2. It is likely highly virulent and likely to cause significant morbidity and/or mortality in humans

This definition of a human potential pandemic pathogen has some flaws. The word "likely" is too strong, as it implies a high probability or a high level of confidence in the estimated probability. "Possibly" would be a better qualifier—it implies some probability, but does not set the bar too high. Words such as "highly" and "significant" might be too strong as well.

Assessing the risk posed by research with potential pandemic pathogens requires consideration of several factors. These include the likelihood that an experiment will generate an organism with enhanced virulence, transmissibility, or both; the likelihood that this virus could escape the laboratory; and the consequences of such a release. An estimated 60 percent case fatality rate is associated with wild-type H5N1 avian influenza. So even if the likelihood of an experiment generating a strain of this virus with enhanced transmissibility among mammals were judged as possible but not likely, grave concerns about the virus's potential to seed a pandemic if it escaped from a laboratory would remain high.

As another example, consider a highly pathogenic avian influenza strain that has been modified in the laboratory to bind to isolated human lung-cells in culture—a first step toward infection in humans via airborne transmission. If these modified viruses have *not* been tested for airborne transmissibility in ferrets, the standard animal model for studying human influenza airborne transmission, would they qualify as being "likely highly transmissible" among humans and therefore subject to review under the framework? The framework should not be interpreted to apply only to reviewing *in vivo* work with enhanced potential pandemic pathogens. *In vitro* research with an enhanced virus that could possibly be transmissible among humans should still be subject to review.

The framework does a better job defining what an enhanced potential pandemic pathogen is—or, in the older vernacular, a gain-of-function potential pandemic pathogen. An enhanced potential pandemic pathogen is defined as "a [potential pandemic pathogen] resulting from the enhancement of the transmissibility and/or virulence of a pathogen." This definition is straightforward. The "and/or" language here is important, as the literature is rife with research studies in which the virulence of avian or human influenza viruses has been intentionally or accidently increased in ferrets, mice, and other mammals. Such research, based on the definition cited just above, should be subject to review under the framework as well.

Review process

The review process created by the new rules is a mixed bag. One positive development is that entities such as institutional biosafety committees, which review research to ensure that it adheres to relevant biosafety and dual-use research rules, have been removed from the process of deciding if a proposed project should be referred to the Health and Human

Services Department for review. Institutional biosafety committees may not have the expertise necessary to review certain types of research proposals, and they could be pressured by investigators within their institutions to deem proposed research not subject to review by Health and Human Services.

Instead, the funding agency holds the primary responsibility for implementing these new rules. First, the funding agency "conduct[s] standard scientific merit review" of a proposal. Next, proposed research that is "reasonably anticipated" to create, transfer, or use enhanced potential pandemic pathogens is referred to departmental-level review. The department-level review is conducted by a multidisciplinary group including experts with experience in scientific research, biosafety, biosecurity, medical countermeasures, law, ethics, public health preparedness and response, biodefense, select agent regulations, and public health policy. The review group can also contain voting and non-voting members from Health and Human Services or other federal agencies. The funding agency must "consider the recommendations resulting from the departmental-level review" to make a decision on funding.

Multidisciplinary review is an important aspect of dual-use research oversight, and its inclusion in the new rules, along with the wide-ranging expertise suggested for the proposed department-level review committee, is to be applauded. But multidisciplinary review committees should include some *ad hoc* members from outside the government—otherwise, the details of reviews may never be transparent to outsiders.

An important question remains about where the review group will be based. It is unclear where the departmental review would be managed. The guidance by the Office of Science and Technology Policy, in order to reduce the risk of conflict of interest, encouraged agencies to vest responsibility for oversight of enhanced potential pandemic pathogens in offices that are not part of an agency that is proposing to fund such work. This recommendation was a direct result of a controversy surrounding H5N1—the advisory board got into trouble for questioning the wisdom of experiments that had been funded by the National Institutes of Health, the board's parent agency. Subsequently, most of the board's members were replaced, the charter of the group was narrowed, and no meetings were held for two years. Any review of research into enhanced potential pandemic pathogens needs to be organized and conducted by a group sufficiently independent from the funding agencies that have an interest in the research under review. The Office of the Assistant Secretary for Preparedness and Response in the Health and Human Services Department is one logical choice.

Another positive aspect of the framework is that it requires the department-level committee to consider the risks posed by research that involves any of the following outcomes:

- Enhancing the harmful consequences of a pathogen
- Disrupting immunity or the effectiveness of an immunization against the pathogen without clinical or agricultural justification
- Conferring to the pathogen resistance to clinically or agriculturally useful prophylactic or therapeutic interventions against that pathogen, or facilitating the pathogen's ability to evade detection methodologies
- Increasing the pathogen's stability, transmissibility, or ability to disseminate
- Altering the host range or tropism of the pathogen
- Enhancing the susceptibility of a host population to the pathogen
- Generating or reconstituting an eradicated or extinct pathogen

These seven categories of experiments are based on a list first put forward 14 years ago in a National Academy of Sciences report titled "Biotechnology research in an age of terrorism" (also called the Fink Report). This is the same list of experiments included in the 2012 and 2014 US government policies for dual-use research of concern—but those policies are only applied to research with 15 Tier 1 pathogens and toxins. The inclusion of these seven categories of dual-use experiments in the framework usefully expands, beyond increases in virulence and transmissibility, the range of potential risks that will be subject to review by the Health and Human Services Department. Still, since the new department policy only applies to enhanced potential pandemic pathogens, it represents only incremental progress toward the Fink Report's recommended goal of reviewing all research in the life sciences that engages in such experiments.

New criteria for risks and benefits

Assessing the risks and benefits of research into enhanced potential pandemic pathogens is inherently problematic. During the deliberative process, participants never achieved agreement on whether potential benefits outweighed risks for matH5N1. Many still believe that the potential benefits of that research do not justify the potential risk. How will the risks and benefits of research into enhanced potential pandemic pathogens be measured and balanced? What criteria will the Health and Human Services Department use to guide its review of research proposals and its funding decisions? What is the threshold or standard of evidence that will be used to make these judgments? Most of the criteria discussed in the framework are standard in existing policy regarding dual-use research of concern, and will generate the same intensity and diversity of opinion that were witnessed throughout the debate on H5N1 and during the deliberative process.

The framework contains two notable items that are not standard in existing policies for dual-use research of concern. First, review of proposed research with an enhanced potential pandemic pathogen will include an assessment of whether there are "no feasible, equally efficacious alternative methods to address the same question in a manner that poses less risk than does the proposed approach." During the deliberative process, some observers pointed out that alternative methods have been published that can determine the mutations required to make H5N1 avian influenza transmissible through air between mammals—and that these methods would not generate new strains of enhanced live viruses. Researchers should always employ low-risk or no-risk alternatives first, before resorting to live virus—especially one with the potential to cause a global pandemic if it escaped from a lab. Therefore, it is good to see this principle of responsible research enshrined in the framework.

The second addition to the criteria for guiding funding decisions by the Health and Human Services Department is laudable, but it may prove more difficult to operationalize. The final criterion in the Health and Human Services review process, which is based directly on recommendations by the advisory board and the Office of Science and Technology Policy, is to determine whether or not research is "ethically justifiable." The department-level review committee, in its review of the ethical aspects of a proposed experiment, is encouraged to consider to what extent the experiment represents non-maleficence, beneficence, justice, respect for persons, scientific freedom, and responsible stewardship. Previous guidance for dual-use research of concern was focused strictly on scientific criteria for assessing the risks and benefits of dual-use research. In a 2015 paper commissioned, as part of the deliberative process, by the advisory board on the ethics of dual-use research, Monash University professor Michael Selgelid observed, "Like risk-benefit assessment, ethics involves inevitable uncertainty." The Health and Human Services Department, facing an extra dimension of uncertainty in the review process, will be forced to grapple with a new set of issues which it might find itself unprepared to address adequately.

Transparency

The criteria used to judge which experiments involving enhanced potential pandemic pathogens warrant review by the Health and Human Services Department—and how the risks, benefits, and ethical aspects of such experiments are measured and weighed—are ambiguous enough to provide departmental reviewers wide latitude in their funding decisions. The process and outcomes must be transparent in order to demonstrate that the process is conducted in good faith and that policy is implemented appropriately. The framework, though it recognizes the importance of transparency for maintaining public trust in science, does not go far enough in actually providing the requisite level of transparency.

The guidance from the Office of Science and Technology Policy called on agencies "to the maximum extent possible" to "provide transparency to the public regarding funded projects involving the creation, transfer, or use of enhanced [potential pandemic pathogens]." According to the framework, the Health and Human Services Department "will periodically ask the National Science Advisory Board for Biosecurity to review the process described herein." This approach to transparency is neither timely nor tied to specific reviews of proposed or funded projects. Instead, the policy provides only for occasional transparency about the process itself, not the results of that process. In addition, nothing guarantees that the advisory board review will be made available to the public. Furthermore, since the advisory board is advisory only, it has no ability to force Health and Human Services to revise its process if it finds the process lacking, or to revisit or reverse a funding decision. Meanwhile, the advisory board itself recommended the establishment of an independent advisory committee to evaluate the implementation of the new oversight policy. Until such an accountability mechanism is established, the Health and Human Services Department should provide annual reports on the implementation of its policy on potential pandemic pathogens, which would be reviewed by the advisory board and interested stakeholders. It is also incumbent upon the Office of Science and Technology Policy to follow up on the commitment it made in its guidance to review the implementation of departmental policies on review of potential pandemic pathogens one year after their adoption and determine if any revisions are necessary.

International considerations

The final weakness in the framework is that it only applies to research conducted within the United States. Previous research has demonstrated that research with enhanced potential pandemic pathogens is occurring in labs around the world. Ultimately, the release of an enhanced potential pandemic pathogen from a laboratory is an international issue, as pandemics know no boundaries. With modifications, the framework could serve as a starting point for international discussion about oversight and regulation of research into enhanced potential pandemic pathogens. In December 2017, state parties to the Biological and Toxin Weapons Convention—the international treaty that outlaws the development and possession of biological weapons—agreed to establish a number of expert working groups to examine key issues related to the treaty. One of the working groups will be dedicated to examining developments in science and technology related to the treaty,

including biological risk assessment and management. Another working group will focus on strengthening national implementation, including measures to prevent the development of biological weapons and the transparency of dual-use research. Both of these working groups could provide suitable venues for discussing new US policies on the oversight of research into enhanced potential pandemic pathogens and for learning how other countries approach this issue.
The December 2017 adoption of the framework by the Health and Human Services Department is a milestone in the long-running debate over how best to provide oversight of life sciences research to maximize benefits and minimize risks. While this policy was the culmination of several years of effort by a diverse group of stakeholders, it is by no means the final word on the subject. The Office of Science and Technology Policy is supposed to lead a review of policies on potential pandemic pathogens one year after their adoption by departments. This article has provided an initial assessment of the areas that deserve further scrutiny—and possibly revision—in order to strengthen oversight of this important field of research.

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Preventing the Misuse of Biology: Lessons from the Oversight of Smallpox Virus Research

By Jonathan B. Tucker
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Certain basic research findings in the life sciences have the potential for misuse by states or sophisticated terrorist organizations seeking to develop more lethal or effective biological weapons. The recognition of this problem has led to proposals for new systems of governance, including the international review and oversight of "dual-use" research. The case of the World Health Organization's Advisory Committee on Variola Virus Research (VAC), which oversees all research with the live smallpox virus, offers some useful lessons for assess- ing these proposals. This article examines how the VAC has dealt with conten- tious policy issues, describes the strengths and weaknesses of the oversight process, and discusses the implications for the international governance of dual-use research.

Developing New Vaccine Against Three Biothreat Pathogens

Source: https://www.homelandsecuritynewswire.com/dr20220510-developing-new-vaccine-against-three-biothreat-pathogens

May 10 – Scientists from Lawrence Livermore National Laboratory (LLNL) and three other institutions are seeking to develop a multi-pathogen vaccine that will protect against three bacterial biothreat pathogens.
Led by LLNL, the team includes disease experts from the University of New Mexico Health Sciences Center (UNMHSC), the University of Nevada, Reno School of Medicine (UNR Med) and the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID).
The researchers, who will collaborate under a five-year, $10 million grant from the Defense Threat Reduction Agency (DTRA), are aiming to develop **a single vaccine that will protect against tularemia, melioidosis and plague.**

LLNL scientists have demonstrated the ability of a subunit vaccine, incorporating different antigens from the *Francisella tularensis* bacterium into a single particle, to protect against inhalation of high doses of this bacteria. *F. tularensis* is the bacteria that causes the disease tularemia, also known as rabbit fever. Their collaborators at UNR Med and USAMRIID have been testing candidate subunit vaccines for melioidosis and plague respectively, and their data suggests that those subunit vaccines could be effective.

Kris Kulp, leader of the Lab's Biosciences and Biotechnology Division, noted that the three-way vaccine, if successful, will protect against several high-priority pathogens in a single dose, greatly facilitating the defense of U.S. troops against biothreats.

"Not only will a simplified immunization regime be cost-effective, it also will enable warfighters to be fully vaccinated more quickly. This project builds on LLNL expertise using nanoparticle technology to deliver vaccines against single pathogens and takes them to the next step by adding antigens that will protect against multiple pathogens simultaneously," Kulp said.

LLNL biologist Amy Rasley, who is co-principal investigator on the project with fellow Lab biologist Nick Fischer, calls the concept of a multi-pathogen vaccine that can protect against several biothreat pathogens at once "game-changing."

"The development of such a vaccine presents exciting technical challenges associated with understanding the interactions of the vaccine components with each other and with our immune system, as well as in the manufacturing and testing of such vaccine formulations. We are thrilled to be part of this first step in looking at the feasibility of such an approach," Rasley added.

Fischer noted, "We are gratified that our nanotechnology platform is being widely tested and applied to a wider range of difficult-to-treat pathogens and diseases. This effort mirrors the *F. tularensis* vaccine development we started in 2019."

In addition to the four institutions, a Bay Area vaccine company — San Carlos-based Vaxcyte, Inc. — will produce *Yersina pestis* and *F. tularensis* antigens in a manner that is scalable and amenable to production in a "good manufacturing practices" environment.

The team's scientists will build on a nanotechnology — called nanolipoprotein particles (NLPs) — that was developed at LLNL for delivering vaccines and drugs inside the human body.

NLPs are water-soluble molecules that are 6 to 30 billionths of a meter in size and resemble HDL particles, which are associated with playing a role in regulating the human body's good cholesterol. LLNL scientists have worked on this nanotechnology, also known as nanodisc, since 2005.

Using the NLPs as a delivery platform, the antigens for the three disease-causing bacteria could be co-delivered with an adjuvant molecule, which stimulates the immune response against the antigens.

Terry Wu, a tularemia expert at UNMHSC, said, "We are excited to expand our collaboration with LLNL to develop subunit vaccines important for national defense and public health."

Wu and his UNMHSC team will provide expertise to evaluate the safety and efficacy of the multi-pathogen vaccine against pneumonic tularemia.

At Fort Detrick, Md.-based USAMRIID, Joel Bozue and Christopher Cote will provide immunological characterizations of novel vaccines and perform efficacy studies using a mouse model of pneumonic plague.

Additional USAMRIID studies will test the LLNL tularemia vaccine to determine if it is able to protect rats in a pneumonic tularemia model against a diverse panel of *F. tularensis* strains from clinical and environmental samples.

UNR Med researchers Paul Brett and Mary Burtnick, who have more than 50 years combined experience studying the pathogenic *Burkholderia* species, will provide their expertise on *Burkholderia pseudomallei* for the multi-pathogen vaccine.

F. tularensis is classified as a class A high-priority pathogen and Tier 1 select agent by the Centers for Disease Control and Prevention (CDC). It is considered a potential biothreat agent based on its extremely low infectious dose. Disease manifestations vary depending on the route of exposure. It is an infectious disease that can cause fever, skin ulcers, enlarged lymph nodes, pneumonia and throat infection with inhalational disease (pulmonary tularemia) being most severe.

Plague is an infectious disease responsible for killing millions during the Middle Ages and is caused by the bacterium *Yersinia pestis*. While antibiotic treatment is effective against plague, the disease is associated with high mortality rates when contracted via inhalation (pneumonic plague). Due to its extreme virulence, ability to be aerosolized and previous historical use as a bioweapon, it is classified as a Tier 1 select agent by the CDC. Plague continues to be endemic worldwide.

Melioidosis is an infectious disease, predominant in tropical climates, caused by the bacterium *B. pseudomallei*. Melioidosis is typically contracted through inhalation of contaminated dust or water droplets or through contact with contaminated soil. Antibiotic treatment for melioidosis is prolonged, often three to eight months, and the disease is associated with high mortality rates when contracted via inhalation. The CDC classifies *B. pseudomallei* as a Tier 1 select agent.

In 2019, LLNL and two other institutions (UNMHSC and the Tulane National Primate Research Center) received a five-year, $7.5 million grant from DTRA to accelerate the testing of an NLP-based tularemia vaccine.
In addition to Fischer and Rasley, other LLNL biomedical scientists who are part of the team working to develop the multi-pathogen vaccine are Sean Gilmore, Sandra Peters and Dina Weilhammer.

Experts divided over who should get a 4th COVID vaccine dose

Source: https://newatlas.com/health-wellbeing/fourth-covid19-vaccine-booster-immune-response-protection/

May 10 – Two newly published studies indicate a fourth COVID-19 vaccine dose can substantially boost a person's immunity and reduce the risk of infection compared to triple-dosed individuals. Most fourth-dose programs around the world are currently limited to the very old and vulnerable, however, experts are divided on whether more age groups should be offered an extra booster at this point in time.
Ever since the initial two-dose COVID-19 vaccine protocol started rolling out in late 2020 the ongoing question has been: when is another dose necessary? As 2021 progressed and new SARS-CoV-2 variants emerged it became clear that three vaccine doses were optimal for general protection against severe disease. But now in 2022 many are wondering when a fourth dose will be needed.
A new study published in *The Lancet Infectious Diseases* offers one of the most robust insights into immune responses to a fourth COVID-19 vaccine dose. The UK study closely measured a variety of immune biomarkers in elderly subjects who received their fourth vaccine dose approximately seven months after their third shot.
The results showed a fourth dose significantly boosted both antibody and T-cell responses to levels similar to those seen after three doses. In some cases those immune biomarkers were stronger after a fourth dose than after the third.
Interestingly, the study reported the efficacy of a fourth dose was associated with how much a third dose had waned in any given individual. Those subjects with persistent humoral and cellular immune responses from the third dose did not display strong benefits from a fourth dose.
"This finding was replicated in participants with a history of SARS-CoV-2 infection, indicating that there might be a ceiling or maximum anti-spike protein IgG titre and T-cell response and that the fourth dose might not boost humoral and cellular responses if the baseline response is high," the researchers write in the study. "These individual data are important for policy makers as the benefit of a fourth dose might be less in people who already have high levels of immune responses from recent infection or vaccination."
Another recently published study complements these results, comparing third and fourth vaccine dose COVID infection rates in a large number of elderly subjects. The research looked at around 1.2 million people over the age of 60 in Israel. Half of the cohort had received three COVID vaccine doses and the other half received four.
The study found a fourth dose lowered rates of infection by a factor of two compared to three doses. This protection from infection peaked at four weeks after the fourth dose. By the eight-week mark the study saw no difference in infection rates when comparing three- and four-dose cohorts.
However, protection from severe disease was significantly increased by a factor of three in the four-dose cohort. And this protection seemed to hold for at least six weeks, suggesting a fourth dose could be important in elderly and vulnerable populations.
Many parts of the world have already commenced fourth-dose vaccine programs but there is no consensus on who should be getting the extra boosters. The UK, for example, offers fourth doses to people over the age of 75, while the US set its bar at 50 years of age. Most countries are offering fourth doses to people with severe immunosuppressive illness, but not other vulnerable groups such as those with chronic diseases or cancer.

The big dilemma facing regulatory bodies around the world is how broadly should fourth doses be distributed right now. Some researchers, such as immunologist Danny Altmann from Imperial College London, argue these new findings affirm the value of widely pushing fourth doses across all age groups.

"Just because our first-generation vaccines wane rapidly and offer rather permeable protection nowadays, does not suggest we should give up and have no further boosters," Altmann said to The Guardian. "On the contrary, [given] many of us, even with high apparent antibody levels, actually show [very little] protective neutralization of Omicron, there is all the more urgency to use [fourth] doses – in all age groups – to boost levels back up into the protective range."

On the other hand, Adam Finn, a pediatrics researcher from the University of Bristol, argues there is no current need for healthy, young or middle-aged people to get a fourth vaccine shot. Finn recently said that because most younger people right now are about as protected as they can be from severe disease, there is no major benefit in broad distribution of fourth doses.

"I think it's questionable whether young, healthy people will ever be offered another COVID vaccine beyond dose three – at least with the vaccines and variants we have now," Finn said to The Guardian. "You just don't achieve anything very useful by [further] immunizing healthy young people with these vaccines because they rarely get sick – which the vaccines prevent."

Another wrinkle in the fourth-dose debate is the looming possibility of an Omicron-specific booster. Both Moderna and Pfizer are in the advanced stages of developing a more targeted booster vaccine but it is still unclear exactly when these new shots will arrive.

Both companies have been working on a booster targeting the BA.1 subtype of Omicron. The problem is that recently emerging subvariants of Omicron (BA.2.12.1, BA.4 and BA.5) are suspected to be able to evade immunity generated by a BA.1 infection.

So although Moderna has estimated it could have its new booster ready for distribution from September, that timeframe is based on the presumption that BA.1 is the correct antigen target to shoot for. Some viral evolution experts have recently warned the virus is evolving rapidly at the moment and variant-specific vaccines will be too slow to produce.

Paul Loubet and Idile Launey, vaccine researches in France, suggest we cannot wait until these new variant-specific vaccine formulations appear. They argue vulnerable populations must be given booster shots now to help reduce rates of severe disease over the coming months.

"Heterologous boosters with next-generation vaccines, such as multivalent vaccines (vaccines providing protection against different variants simultaneously), universal coronavirus vaccines, vaccines eliciting stronger T-cell responses, or mucosal vaccines (either intranasal or oral), are among the future options for COVID-19 vaccination," the pair wrote in a commentary for *The Lancet*. "However, while awaiting these next-generation vaccines, booster immunizations are crucial to restore vaccine effectiveness against severe outcomes in clinically vulnerable populations."

●▶ **The UK 4th dose study was published in *The Lancet Infectious Diseases* and the Israel 4th dose study was published in *The New England Journal of Medicine*.**

Erich Traub

Source: https://www.bionity.com/en/encyclopedia/Erich_Traub.html

Dr. Erich Traub was a Nazi germ warfare scientist allegedly smuggled into the United States in 1949 from the former Soviet Union under the auspices of the top secret United States government program Operation Paperclip.[1]

Dr. Traub is known as the father of the Plum Island biological research lab, located 6 miles from Old Lyme, Connecticut. According to the book Lab 257, by author Michael Carroll, Dr. Traub was chief of Insel Riems, a virological research institute in the Baltic sea now known as the Friedrich Loeffler Institute.[2]

Traub worked directly for Adolf Hitler's second in charge, Heinrich Himmler.[3] At Insel Riems, Dr. Traub's interests included personally collecting Rinderpest virus from Anatolia, and packaging weaponized foot and mouth disease for dispersal onto cattle and reindeer in Russia.[3] Dr. Traub also experimented with the glanders bacteria and had a particular fascination for organisms that voraciously devour the brain.[3]

According to his National Defense Program FBI application form, he was born on June 27, 1906 in Asperglen, Germany and he died in Germany in 1988.[3]

Plum Island

In the book, *The Belarus Secret*, author John Loftus, the Justice Department employee who exposed Kurt Waldheim as a Nazi, states that Nazi germ warfare scientists had experimented with poison ticks dropped from planes to spread rare diseases. Loftus also

states that he had received information that the United States had tested some of these poison ticks on the Plum Island artillery range off the coast of Connecticut during the early part of the 1950s. [4]

Michael Carroll quotes former **Plum Island lab** director Jerry Callis talking about tick research on Plum Island:
"Plum Island experimented with ticks, but never outside of containment. We had a tick colony where you take them and feed them on the virus and breed ticks to see how many generations it would last, on and on, until its diluted. Recently they reinstated the tick colony."
Carroll additionally cites a 1978 US Department of Agriculture (UDSA) document titled "African Swine Fever," which further confirms the study of vector competence in ticks on Plum Island, noting that the report stated:
"In 1975 and 1976 the adult and nyphal stages of Ablyomma americanum (the Lone Star tick) and Ablyomma cajunense (the Cayenne tick) were found to be incapable of harboring and transmitting African Swine fever virus."
Coincidentally, the Lyme disease outbreak was identified about the time of the Swine Fever tick study conducted on Plum Island. Despite rumors to the contrary, at the time of the Plum Island Swine Fever experiments, the Lone Star tick's documented range was not limited to Texas.

Plum Island Lab 257

As early as 1944, lone stars ticks had been reported as abundant in Texas, Oklahoma, Louisianna, Arkansas, and Missouri.[5] They were also reported to be present in lesser numbers in Minnesota and Ohio of the same year.[6] By 1977, these ticks were endemic throughout the American southeast. It's range has since continued to expand. Today it is endemic from New England west through much of the Great Plains and the upper Midwest. Carroll states in Lab 257, that no one can answer how the Lone Star tick migrated from Texas to New York and Connecticut.
This is, however, clearly not the case.
Erich Traub's legacy of arthropod vector competancy experimentation continued during the 1980s at Plum Island under the jurisdiction of Entomologist Dr. Richard Endris, who is reported to have nurtured over 200,000 soft and hard ticks of varying species in tick nurseries on Plum Island, personally collected from locations as far away as Cameroon, Africa.[3] In a footnote in Lab 257, Carroll notes that Endris, while under contract with the US Army lab at

Fort Detrick had also conducted experiments in 1987 on Plum Island, using sand flies as vectors of the rarely fatal illness Leishmaniasis.[3] The work is alleged by Carroll to have been done in secrecy, with few safety precautions.
Carroll cites Dr. Traub as having worked with the U.S. Army, the Navy, the Central Intelligence Agency (CIA) and the UDSA before he returned to Germany in 1953. Dr. Traub is known to have visited Plum Island on at least three different occasions, and was offered the directorship there several times.

Operation Paperclip

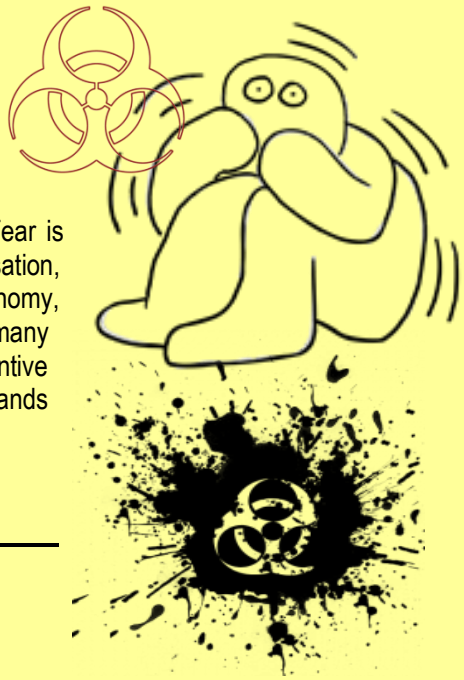
Source: https://en.wikipedia.org/wiki/Operation_Paperclip

Operation Paperclip was a secret United States intelligence program in which **more than 1,600 Nazi German scientists**, engineers, and technicians were taken from former Nazi Germany to the U.S. for government employment after the end of World War II in Europe, between 1945 and 1959. Conducted by the Joint Intelligence Objectives Agency (JIOA), it was largely carried out by special agents of the U.S. Army's Counterintelligence Corps (CIC). Many of these personnel were former members, and some were former leaders, of the Nazi Party.[1][2]
The primary purpose for Operation Paperclip was U.S. military advantage in the Soviet–American Cold War, and the Space Race. In a comparable operation, the Soviet Union relocated more than 2,200 German specialists—a total of more than 6,000 people including family members—with Operation Osoaviakhim during one night on October 22, 1946.[3]
In February 1945, Supreme Headquarters Allied Expeditionary Force (SHAEF) set up T-Force, or Special Sections Subdivision, which grew to over 2,000 personnel by June. T-Force examined 5,000 German targets with a high priority on synthetic rubber and oil catalysts, new designs in armored equipment, V-2 (rocket) weapons, jet and rocket propelled aircraft, naval equipment, field radios, secret writing chemicals, aero medicine research, gliders, and "scientific and industrial personalities".[4]
When large numbers of German scientists began to be discovered in late April, Special Sections Subdivision set up the Enemy Personnel Exploitation Section to manage and interrogate them. Enemy Personnel Exploitation Section established a detention center, DUSTBIN, first in Paris and later in Kransberg Castle outside Frankfurt.
The US Joint Chiefs of Staff (JCS) established the first secret recruitment program, called Operation Overcast, on July 20, 1945, initially "to assist in shortening the Japanese war and to aid our postwar military research".[5] The term "Overcast" was the name first given by the German scientists' family members for the housing camp where they were held in Bavaria.[6] In late summer 1945, the JCS established the JIOA, a subcommittee of the Joint Intelligence Community, to directly oversee Operation Overcast and later Operation Paperclip.[7]
The JIOA representatives included the army's director of intelligence, the chief of naval intelligence, the assistant chief of Air Staff-2 (air force intelligence), and a representative from the State Department.[8] In November 1945, Operation Overcast was renamed Operation Paperclip by Ordnance Corps officers, who would attach a paperclip to the folders of those rocket experts whom they wished to employ in America.[6]
In a secret directive circulated on September 3, 1946, President Truman officially approved Operation Paperclip and expanded it to include 1,000 German scientists under "temporary, limited military custody".

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

Bioterrorism and the Use of Fear in Public Health

Prof Edward P. Richards, Terry O'Brien, and Prof Katharine C. Rathbun
The Urban Lawer Vol 34 (3) | Summer 2002
Source: https://d1wqtxts1xzle7.cloudfront.net/33132578/urbanlawyer-libre.pdf



In 1910, Rosenau, the father of preventive medicine in the United States, wrote: Fear is lessening, but we would not want it to disappear entirely, for while it is a miserable sensation, it has its uses in the same sense that pain may be a marked benefit to the animal economy, and in the same sense that fever is a conservative process. Reasonable fear saves many lives and prevents much sickness. It is one of the greatest forces for good in preventive medicine, as we shall presently see, and at times it is the most useful instrument in the hands of the sanitarian.

Russian General: German and Polish military biological research has also been conducted in Ukraine

Source: https://fresno24.com/russian-general-german-and-polish-military-biological-research-has-also-been-conducted-in-ukraine/

May 11 – Not only the United States but also Germany and Poland had military biological projects in Ukraine, Igor Kirillov, commander of the Russian Armed Forces' radiation, chemical and biological defense teams, said in front of cameras on Wednesday.

According to Kirillov, Berlin launched an independent national biosecurity program in 2013, involving 12 countries, including Ukraine. On the German side, the Institute for Microbiology in Munich, the Robert Koch Institute in Berlin, the Löffler Institute in Greifswald and the Nocht Institute for Tropical Medicine in Hamburg were involved in the project.

Documents seized by the Russian military in Ukraine show, according to the general, that between 2016 and 2019, epidemiologists from the Bundeswehr Institute for Microbiology took three and a half thousand serum samples throughout Ukraine. The general stated that the involvement of institutions subordinate to the German army demonstrates the military orientation of biological research in Ukrainian laboratories.

Kirillov claimed: the Polish Veterinary Institute, together with the American Battelle Institute under contract to the Pentagon, participated in research to assess the epidemiological risks and spread of the rabies virus in Ukraine.

In addition, Polish funding has been provided to the Medical University of Lviv, whose Institute for Epidemiology and Hygiene is involved in U.S. military biology projects and has been retraining specialists in dual-use materials and technologies since 2002.

Kirillov argued, among other things, that the "ideologues" of U.S. military-biological activity in Ukraine were leading members of the U.S. Democratic Party, arguing that the U.S. executive had created the legal framework for federal funding for military biological research.

As he said, these involved democratically controlled NGOs, including the investment funds of the Clinton and Rockefeller families, as well as George Soros and Hunter Biden.

Major pharmaceutical companies such as Pfizer, Moderna, Merck and Gilead, affiliated with the U.S. military, have joined the system, he said. He claimed U.S. experts had tested new drugs by circumventing international safety standards, severely reducing research costs for the companies involved.

He added that the involvement of democratically controlled NGOs and biotechnology organizations and the increase in their revenues had given the party leaders hidden campaign finance.
Ukrainian governmental organizations have also been involved in the research to cover up illegal activity, and to conduct field and clinical trials and to procure the necessary biomaterials.
"*In this way, the US Department of Defense has significantly expanded its research capabilities, not only in the field of biological weapons, but also in obtaining information on antibiotic resistance and population in specific regions, using a virtually uncontrolled pilot site and the high-tech capabilities of transnational corporations. whether there is an antibody to certain diseases*Said the general.
The general claimed that during the war, which Moscow called a "special operation," the Russian army had obtained documents suggesting that in 2020 a multidrug-resistant tuberculosis pathogen had been deliberately used in the Slavyansk region of the Luhansk "People's Republic".
In the village of Stepepove, as he said, counterfeit banknotes infected with the TB pathogen were distributed to children with the consideration that they would catch the food with unwashed hands.
As he said, bacteriological research has confirmed the resistance of isolated bacteria to first- and second-line anti-tuberculosis drugs, meaning that the disease they cause is much more difficult to treat and the cost of treatment is much higher.
Referring to the remaining documentation, Kirillov said that since 2014, Mariupol has had a regional center for the collection and passport of cholera pathogens, from which the selected strains were sent to the Kiev Public Health Center, which forwarded them to the United States.
The general also reported that substances that had not been destroyed in a hurry had been seized at the biolaboratories in Mariupol. However, the general warned that, according to the Russian Ministry of Defense, provocations under the "Syrian scenario" were being prepared in Ukraine in order to accuse the Russian armed forces of using weapons of mass destruction.
Responding to arguments that there was no military biological research in Ukraine, Kirillov pointed out that while research into diseases such as HIV, polio, measles, hepatitis would have been a social priority for health care, Americans prefer study of cholera, tularemia, plague, and hantaviruses was important.
He also said that by the end of April, Russian forces had found 13 drones in Ukraine equipped with a 30-liter tank suitable for spraying biological materials. According to Kirillov, a preliminary analysis of the seized documents suggests that Ukraine may have been an "experimental field" for the development of components for biological weapons and the testing of new drug samples.

'Inhuman experiments' – Russia releases new details about US biolabs in Ukraine

Source: https://detv.us/2022/05/11/inhuman-experiments-russia-releases-new-details-about-us-biolabs-in-ukraine-rt-en/

May 11 – The Russian Defense Ministry has released new details on US military-biological activity in Ukraine during a briefing. These include cases of infection with tuberculosis and covert cholera research.
The Russian Defense Ministry has new details about experiments in the US-funded biolabs in Ukraine released. The authority received this information in the course of the special military operation in Ukraine.
This enabled the specialists of the Russian Ministry of Defense to carry out the work directly in two biological laboratories in Mariupol. It turned out that documents showing cooperation with the US military were immediately destroyed. Mariupol has been under the control of the Donetsk People's Republic since early April.

"Preliminary analysis of the documents submitted indicates that Mariupol was used as a regional center for the collection of cholera pathogens and passportization. Selected strains were sent to the Public Health Center in Kyiv, which started further shipment of biomaterials to the United States. These activities have been carried out since 2014, as evidenced by the parent transfer certificates."
This is what Igor Kirillov, the head of the NBC protection squads of the Russian armed forces, said in a broadcast by the Zvezda TV channel published video. And he added:
"A file on the destruction of the collection of pathogens dated February 25, 2022 was found in the sanitary and epidemiological laboratory, according to which cholera, tularemia and anthrax pathogens were handled there."
Part of the collection of a veterinary laboratory was not destroyed in a hurry, the remaining 124 strains were removed by Russian specialists and brought to safety. It is worrying that the collection contains pathogens that are not typical of veterinary medicine – such as typhoid, paratyphoid and gangrene.
"This could be an indication of the laboratory's misuse and involvement in a military biology program."
Another clue is three drones with 30-liter containers and equipment for spraying substances found on March 9 in the Kherson region. At the end of April, ten more such devices were found near the village of Kachowka.
The Russian military also released information about suspected cases of deliberate infection of children with dangerous pathogens on the territory of the Ukrainian-controlled Luganskaya Oblast in 2020.

Leaflets infected with the tuberculosis virus in the form of counterfeit banknotes were distributed to minors in the Stepovoe settlement of Slavyanozerbsky district, according to the ministry. According to the conclusion of the Lugansk Republican Medical and Epidemiological Station, "contamination of the banknotes was most likely artificially induced, since the material contains extremely dangerous strains of the pathogen in concentrations that can ensure infection and the development of the tuberculosis process." And further: "The results of the bacteriological studies confirmed the resistance of the isolated bacteria to first- and second-generation tuberculosis drugs, which means that the disease they cause is much more difficult to treat and the cost of treatment is much higher," Kirillov said of the presumed goal of the experiments.

According to him, other "inhuman experiments by the Pentagon" on Ukrainian citizens, such as patients in Psychiatric Hospital No. 1 (Streleye village, Kharkov region), also took place on the territory of eastern Ukraine.
"The main category of subjects was a group of male patients aged 40 to 60 years with a high degree of physical exhaustion."
The specialists who carried out the biological research had entered via third countries in order to disguise their affiliation with the USA. Kirillov showed a photo of Florida-born Linda Oporto, who was directly involved in this work.
The Russian Defense Ministry concluded that Ukraine was indeed becoming the Pentagon's proving ground for the development of biological weapons components and testing of new drug samples.
The agency confirmed that non-governmental foundations supporting the US Democratic Party and big pharmaceutical companies, including Pfizer, Moderna, Merck and Gilead, were involved in the scheme. The ministry described the US politicians Barack Obama, Joe Biden, Hillary Clinton and the financial speculator George Soros as the main ideologues of the profitable biological research program in Ukraine. Kirillov emphasized:
"American experts are working to test new drugs, bypassing international safety standards. As a result, Western companies can significantly reduce the cost of research programs and gain a significant competitive advantage."
So far, the US has vehemently denied the existence of illegal biological weapons production programs in Ukraine. In his April 10, 2022 statement, Robert Pope, the director of the Cooperative Threat Reduction Program, said that "there is no basis for the allegation that research into biological weapons development is taking place in Ukraine." In addition, Ukraine does not have the necessary infrastructure to "develop and manufacture biological weapons."

Russian MoD: Dem Party Leaders, Pfizer, Moderna Involved in US Biological Activities in Ukraine

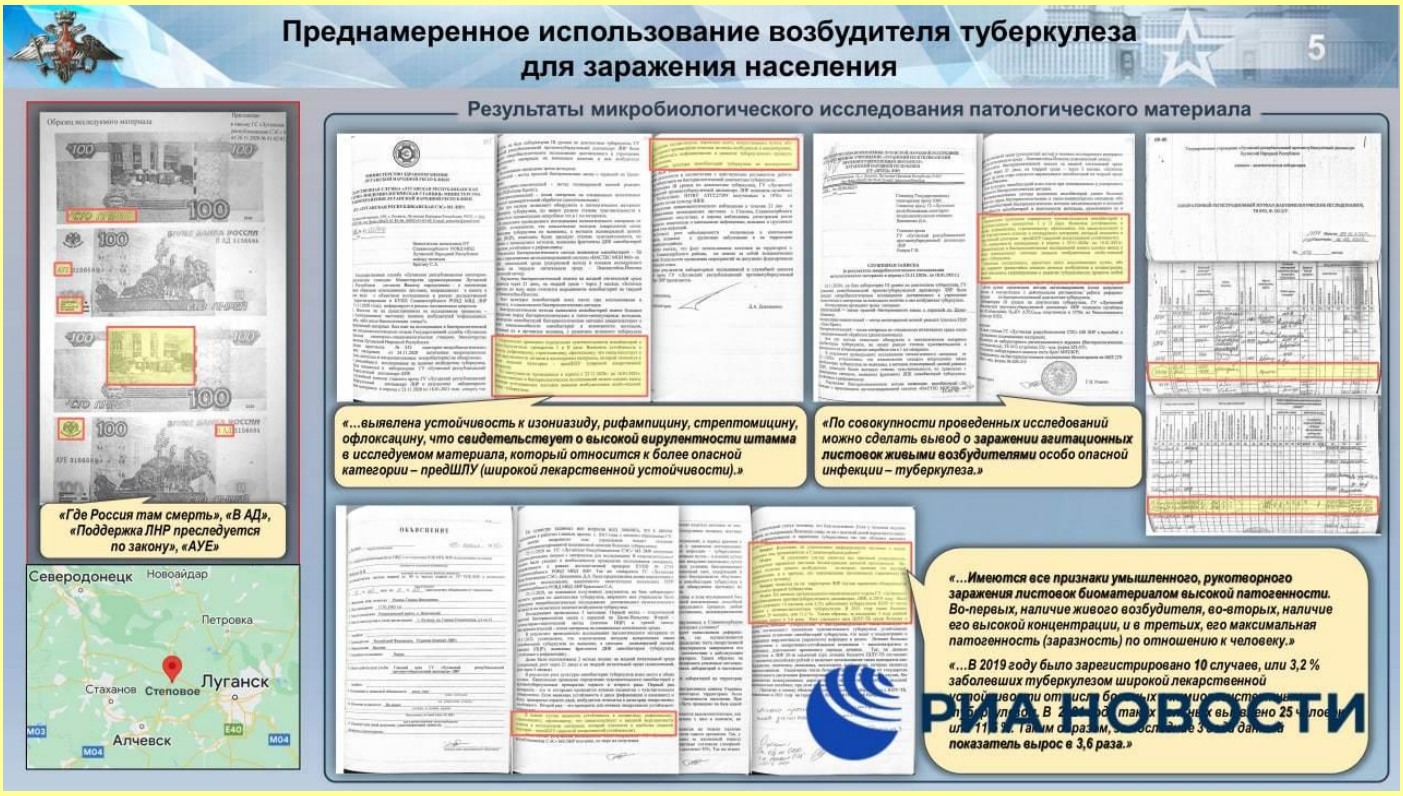
Source: https://www.farsnews.ir/en/news/14010222000130/Rssian-MD-Dem-Pary-Leaders-Pfizer-Mderna-Invlved-in-US-Bilgical

May 12 – Senior Democratic Party politicians are the chief "ideologists" of America's illegal operations in biolabs operating throughout Ukraine, and have involved major multinational biotech companies in their activities, Igor Kirillov, the head of Russia's Radiation, Chemical, and Biological Defense Troops, indicated.
Speaking at a briefing in Moscow on Wednesday and citing an MoD analysis of documentary evidence, the RCB Troops chief said the profits US politicians earn for the private biotech sector helps to pay for their re-election via campaign donations, Sputnik reported.

According to Kirillov, the US executive branch has also worked to create a "legislative framework to finance military biological research directly from the federal budget", and with funds of non-government organisations underwritten by the state and controlled by the leadership of the Democratic Party, including charitable foundations affiliated with the Clinton family, the Rockerfellers, George Soros, and Hunter Biden.

Major global pharmaceutical companies have become involved in these shady "public-private" partnership schemes, including Pfizer, Moderna, Merck, and Pentagon-affiliated biotech firm Gilead, Kirillov added.

"US specialists are working [in Ukraine] on the testing of new medicines, bypassing international safety standards. As a result, Western companies seriously reduce the costs of research programmes and gain significant competitive advantages," the officer continued.



Ukrainian state structures are also involved in the US-funded and organised military biological activities in their country, Kirillov stated, with Kiev's main job being "to conceal illegal activities, conduct field and clinical trials and provide the necessary biomaterial".

In 2020, Kirillov noted, an attempt was made to infect the residents of the settlement of Stepovoye in the Lugansk People's Republic with a multi-drug-resistant strain of tuberculosis using counterfeit banknotes contaminated with the disease's causative agent and spread among local youth.

Additionally, the RCB Troops chief said that his agency has received information detailing the Pentagon's experiments on Ukrainian nationals at Psychiatric Hospital No. 1 in the village of Strelechie, Kharkov region, with the research targeting male patients aged 40-60 with a high stage of physical exhaustion, and overseen by a US national.

The Russian military operation in Ukraine has stopped the spread of US military activities in Ukraine, and halted these "criminal experiments" on its civilian population, Kirillov stressed.

In the case of the research taking place at the Kharkov mental hospital, Western specialists were evacuated in January 2022, and the equipment and pharmaceutical preparations involved relocated to Western Ukraine, he added.

Polish specialists have also been working with Ukraine's biolabs, Kirillov said, citing documents detailing the work of the Polish Institute of Veterinary Medicine and the US' Battelle Memorial Institute - a Pentagon contractor - on research assessing epidemiological threats and the spread of the rabies virus in Ukraine.

"In addition, documentary evidence has been obtained about Poland's funding of Lvov Medical University, which includes a participant in US military biological projects - the Institute of Epidemiology and Hygiene. Since 2002, this organisation has been implementing

a retraining programme for specialists with experience working with dual-use materials and technologies," the officer added.

The German military has also been involved in research in Ukraine, Kirillov said, citing documents indicating that the Bundeswehr's Institute of Microbiology had taken some 3,500 blood serum samples from 25 Ukrainian regions back to Germany between 2016 and 2019. The officer added the Institute's as yet unidentified interest in these biomaterials "raises questions about the goals [being] pursued" by the German Armed Forces.

According to the MoD's information, along with the Munich-based Institute of Microbiology, the Berlin-based Robert Koch Institute, the Loffler Institute in Greifswald, and the Nocht Institute of Tropical Medicine in Hamburg are also participating in biological research activities in Ukraine.

An RCB Troops investigation of samples from a veterinary laboratory in Mariupol has concluded that it also may have been involved in the broader US-led biological research activities, Kirillov stated, pointing to the presence of pathogens uncharacteristic of veterinary diseases, such as typhoid fever, paratyphoid fever, and gas gangrene at the lab. Part of the lab's collection of samples was destroyed on February 25, but due to the rush, some of it has been preserved intact, and is now being analysed by Russia.

"To ensure safety and safe storage, Russian specialists exported 124 strains and have organised their study," Kirillov continued.

The officer also revealed that Russian specialists have carried out work "directly in two biological laboratories in Mariupol", and that "evidence has been obtained of the emergency destruction of documents confirming their work with the US military. A preliminary analysis of the surviving documentation indicates that Mariupol was used as a regional centre for the collection and certification of the cholera pathogen", with the samples sent to the Centre for Public Health in Kiev, which transferred the materials on to the United States.

Kirillov stressed that the information that continues to be gathered and analysed by the Russian MoD casts doubt on assurances by US specialists that Ukraine does not have the capability to develop and produce bioweapons, and that the US itself has not "found" any evidence of biological weapons in Ukraine.

The RCB Troops chief also indicated that Moscow has intelligence related to the preparation of possible provocations involving weapons of mass destruction in Ukraine to accuse the Russian military of using such arms along a "Syrian-style" scenario, in which the necessary evidence is fabricated and the "perpetrators" are appointed ahead of time.

One piece of evidence suggesting the high likelihood of such provocations taking place is Kiev's request in a letter to European Union officials for personal protective equipment that provides protection against toxic chemicals and biological agents, Kirillov said.

The supply of organophosphate toxicity medications to Ukraine is also a concern for the Russian military, the officer noted, pointing out that in the first months of 2022, over 220,000

ampoules of atropine, as well as medicines for treatment and disinfection following a chemical attack, have been delivered to Ukraine by the United States.
Additionally, Kirillov stated, 10 more drones equipped with 30-litre containers and spraying equipment were found in the town of Kakhovka, Kherson region in late April, on top of three others with similar equipment found in the Kherson region in March.
Kirillov's RCB Troops have spent over two months investigating and reporting on the US-sponsored military biological activities taking place at 30 separate facilities across Ukraine going back to at least 2005.
Western officials and media have largely dismissed the information provided as a "conspiracy theory", notwithstanding Under Secretary of State Victoria Nuland's admission at a Senate hearing in March that "biological research facilities" do in fact exist in the Eastern European country and that the US was "working with" the Ukrainians to ensure that these materials "do not fall into the hands of Russian forces". Investigations by the few Western outlets that have conducted their own research have confirmed individual details of the Russian MoD's allegations - such as Hunter Biden's role in securing millions of dollars in funding for a US contractor working in Ukraine.

Neuropsychiatric Risks of COVID: New Data

Source: https://www.medscape.com/viewarticle/973833

May 11 – The neuropsychiatric ramifications of severe COVID-19 infection appear to be no different than for other severe acute respiratory infections (SARI).
Results of a large study showed risks of new neuropsychiatric illness were significantly and similarly increased in adults surviving either severe COVID-19 infection or other SARI, compared with the general population.
This suggests that disease severity, rather than pathogen, is the most relevant factor in new-onset neuropsychiatric illness, the investigators note.
The risk of new-onset neuropsychological illness after severe COVID-19 infection are "substantial, but similar to those after other severe respiratory infections," study investigator Peter Watkinson, MD, Nuffield Department of Clinical Neurosciences, University of Oxford, and John Radcliffe Hospital, Oxford, England, told *Medscape Medical News*.
"Both for those providing and commissioning services, neuropsychological sequelae need to be considered after all severe respiratory infections, rather than only following severe COVID-19 disease," Watkinson said.

Significant Mental Health Burden

Research has shown a significant burden of neuropsychological illness after severe COVID-19 infection. However, it's unclear how this risk compares to SARI.
To investigate, Watkinson and colleagues evaluated electronic health record (EHR) data on more than 8.3 million adults, including 16,679 (0.02%) who survived a hospital admission for SARI and 32,525 (0.03%) who survived a hospital stay for COVID-19.
Compared with the remaining population, risks of new anxiety disorder, dementia, psychotic disorder, depression, and bipolar disorder diagnoses were significantly and similarly increased in adults surviving hospitalization for either COVID-19 or SARI.

Diagnosis	SARI HR (95% CI)	COVID-19 HR (95% CI)
Anxiety	1.86 (1.56 - 2.21)	2.36 (2.03 - 2.74)
Dementia	2.55 (2.17 - 3.00)	2.63 (2.21 - 3.14)
Psychotic disorder	3.63 (1.88 - 7.00)	3.05 (1.58 - 5.90)
Depression	3.46 (221 - 5.40)	1.95 (1.05 - 3.65)
Bipolar disorder	2.26 (1.25 - 4.08)	2.26 (1.25 - 4.07)

Compared with the wider population, survivors of severe SARI or COVID-19 were also at increased risk of starting treatment with antidepressants, hypnotics/anxiolytics, or antipsychotics.
When comparing survivors of SARI hospitalization to survivors of COVID-19 hospitalization, no significant differences were observed in the postdischarge rates of new-onset anxiety disorder, dementia, depression, or bipolar affective disorder.
The SARI and COVID groups also did not differ in terms of their postdischarge risks of antidepressant or hypnotic/anxiolytic use, but the COVID survivors had a 20% lower risk of starting an antipsychotic.

"In this cohort study, SARI were found to be associated with significant postacute neuropsychiatric morbidity, for which COVID-19 is not distinctly different," Watkinson and colleagues write.
"These results may help refine our understanding of the post-severe COVID-19 phenotype and may inform post-discharge support for patients requiring hospital-based and intensive care for SARI regardless of causative pathogen," they write.

Caveats, Cautionary Notes
Kevin McConway, PhD, emeritus professor of applied statistics at the Open University in Milton Keynes, England, described the study as "impressive." However, he pointed out that the study's observational design is a limitation.
"One can never be absolutely certain about the interpretation of findings of an observational study. What the research can't tell us is what caused the increased psychiatric risks for people hospitalized with COVID-19 or some other serious respiratory disease," McConway said.
"It can't tell us what might happen in the future, when, we all hope, many fewer are being hospitalized with COVID-19 than was the case in those first two waves, and the current backlog of provision of some health services has decreased," he added.
"So we can't just say that, in general, serious COVID-19 has much the same neuropsychiatric consequences as other very serious respiratory illness. Maybe it does, maybe it doesn't," McConway cautioned.
Max Taquet, PhD, with the University of Oxford, noted that the study is limited to hospitalized adult patients, leaving open the question of risk in nonhospitalized individuals — which is the overwhelming majority of patients with COVID-19 — nor in children.
Whether the neuropsychiatric risks have remained the same since the emergence of the Omicron variant also remains "an open question since all patients in this study were diagnosed before July 2021," Taquet said in a statement.

●▶ **The study was** published online **on May 11 in *JAMA Psychiatry*.**

PERMANENT MISSION OF THE RUSSIAN FEDERATION TO THE UNITED NATIONS

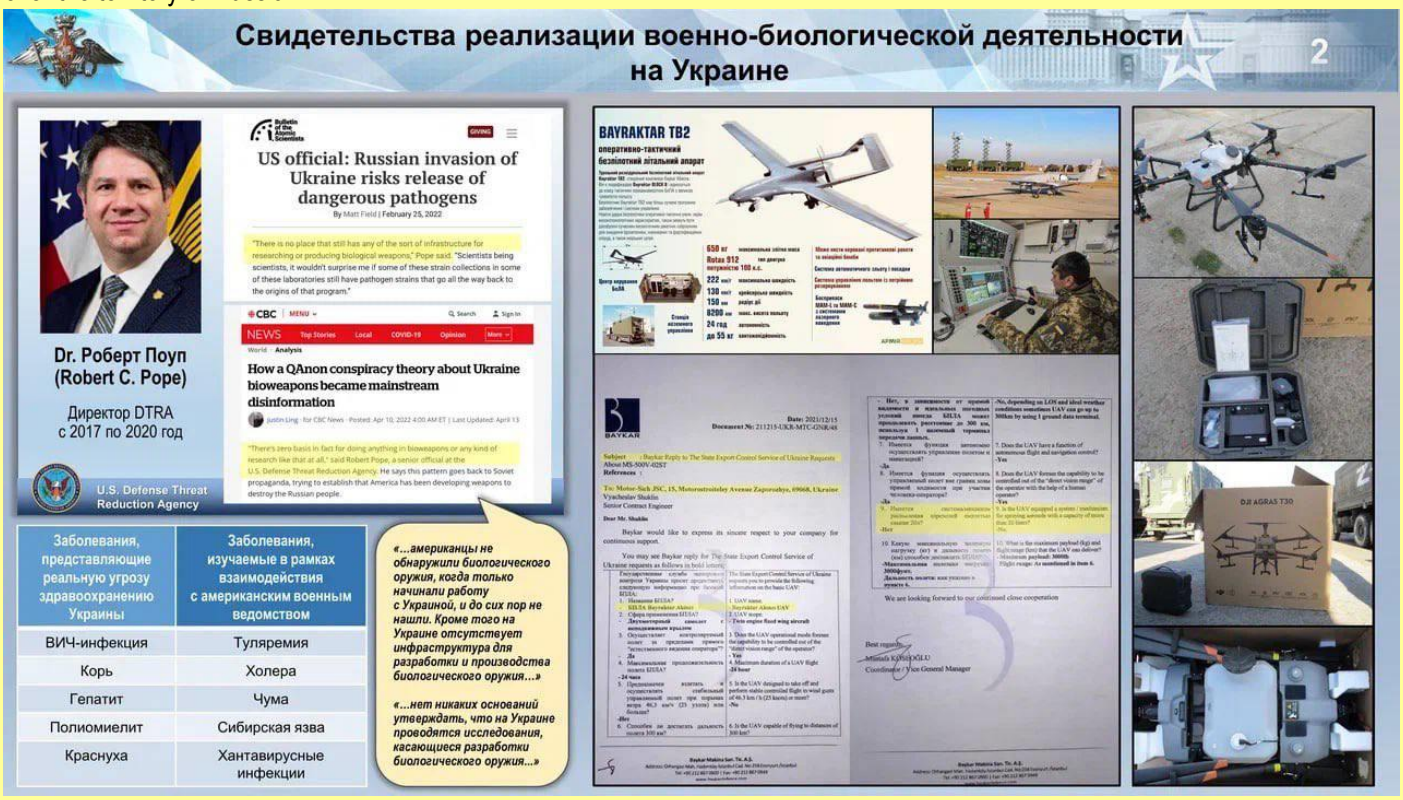
Statement by Permanent Representative Vassily Nebenzia at UN Security Council briefing on biological laboratories in Ukraine (agenda item "Threats to international peace and security")

May 13, 2022
Source: https://russiaun.ru/en/news/unsc_130522

Colleagues,
It is the third meeting of the Security Council on military biological activities in Ukraine that convenes upon Russia's request. Let me explain why.
We keep receiving very worrisome documental evidence that the US Department of Defense is directly involved in implementing in that country dangerous biological projects that have characteristic features of a secret military biological program. This activity was undertaken in the midst of Eastern Europe and close to Russia's western borders, thus posing a real threat to biological security of our country, the region, and the whole world, if we take into account the cross-border nature of biological threats. As confirmed by Mr.Markram, neither the United States nor Ukraine ever submitted to the United Nations any information about those activities in their respective BWC reports that are part of corresponding confidence-building measures. Only our special military operation was able stop this dangerous activity.
Two months have passed since our last meeting on this topic, in which time new evidence has emerged. We circulated all materials in the Security Council. Let me draw your attention to the most telling pieces.
As we take from the documents of Project 3007 "Monitoring of the epidemiological and environmental situation regarding hazardous diseases of aquatic origin in Ukraine", Ukrainian specialists, supervised by American scientists, systematically collected water samples in a number of major Ukrainian rivers, including the Dnepr, Danube and Dniester, as well as in the North Crimean Canal. The goal was to determine the presence of particularly dangerous pathogens, including cholera, typhoid, hepatitis A and E pathogens, and draw conclusions about their possible waterborne spread to assess the damage properties of the selected samples. All the collected strains were subsequently exported to the USA. A

question begs itself – what for? Why does the United States need a collection of dangerous pathogens that can spread in the rivers of that region? A brief look at the map of Ukraine's water resources will suffice for anyone to realize that results of this "scientific research" can be used to start a biological disaster, and not only in Russia, but also in the Black Sea and the Sea of Azov, as well as in Eastern Europe, including Belarus, Moldova and Poland.

The documents indicate that the Kiev regime attempted to get access to technical opportunities for delivery of hazardous biological agents by air. Last year Ukraine sent a request to the Turkish manufacturer of UAVs *Baykar Makina* regarding the possibility of equipping the Bayraktar drones with equipment enabling them to spray more than 20 liters of aerosol while flying for more than 300 kilometers. A copy of this letter is included in the set of documents that we circulated in the Council on 19 April. If equipped with such aerosol system and having 300-kilometer flight range, such a drone will pose a real threat of spraying hazardous biological aerosols over the territory of Russia.



In January 2022, Ukraine reportedly purchased through intermediary organizations more than 50 such devices, which can be used to apply biological formulations and toxic chemicals. On 9 March 2022, three unmanned aerial vehicles equipped with 30-litre containers and sprinkler equipment were detected by Russian reconnaissance units in Kherson region. At the end of April, 10 more were found near Kakhovka.

Russian Ministry of Defense obtained shocking evidence that some projects that the Pentagon implemented on the territory of Ukraine put at risk lives and health of volunteers – Ukrainian citizens. Documentation of UP-8 project stipulates that "minor" incidents with test subjects must be reported to the US Committee on Ethics within 72 hours, whereas serious incidents, including death of volunteers, must be reported within 24 hours. It means that those experiments initially admitted a possibility of a lethal outcome, though official project documentation only wrote about standard blood sample collection. What type of blood sampling it was if test subjects could die afterwards?

There is evidence confirming direct involvement of American political establishment in funding military biological activity in Ukraine through Pentagon's contractors, such as *Black & Veatch* and *Metabiota*. And their goals were far from promoting science. In particular, a letter by the Vice President of *Metabiota* says that the company's goal in Ukraine is "ensuring cultural and economic independence of Ukraine from Russia" – a very unusual task for a biotech company, to say the least.

At previous meetings we informed the Council that Ukraine, being funded and sponsored by the US Defense Threat Reduction Agency, developed a network of biological laboratories

conducting military biological RnD. According to our previous data, this network covered Kiev, Odessa, Lvov, Kharkov, Dnipro, Kherson, Ternopol, Uzhgortod, and Vinnitsa.

Now Mariupol has joined this list. In two biolabs of this city we discovered evidence of emergency destruction of documents confirming engagement with the US military establishment.

A preliminary analysis of extant documentation indicates the use of Mariupol as a regional center for cholera pathogen collection and certification. The selected strains were sent to the Public Health Centre in Kiev, which is responsible for the onward shipment of biomaterials to the United States. These activities have been carried out since 2014, as evidenced by the transfer of strains.

An act of destruction of the pathogen collection dated 25 February 2022 was found in the sanitary and epidemiological laboratory of Mariupol. According to it, this lab handled pathogens of cholera, tularemia and anthrax, which are potential bioweapons agents.

Part of the collection of the veterinary laboratory was not destroyed in a hurry. Russian specialists discovered there pathogens that are uncharacteristic of veterinary medicine, such as typhoid, paratyphoid fever and gas gangrene.

Last time we spoke about a steep increase of TB incidence in People's Republics of Donetsk and Lugansk. Those cases were caused by a new multidrug-resistant tuberculosis pathogen. Now we have reasons to believe that it was not a coincidence.

We conducted an investigation of a biological incident that occurred in the Slavyanoserbsky district of the LPR in 2020. As it turned out, in Stepovoe village flyers made in the form of counterfeit currency notes were infected with the tuberculosis agent and distributed among minors. The idea was that after handling money, children often handle food without washing their hands first.

The analysis revealed that those flyers had been contaminated with highly active TB pathogen, resistant to most anti-TB drugs. The flyers could not have been infected naturally, by someone who is sick with TB, because the concentration of the pathogen was too high. It would not have lasted in natural conditions – in the sunlight which produces a bactericidal effect. So there are all signs of deliberate, man-made contamination of the flyers with highly pathogenic biomaterial. Fortunately, no harm was done by these flyers in Stepovoe village. But if put together, all these facts confirm a very alarming trend.

I will now make a point about another episode that once again demonstrates how Kiev regime and its Western sponsors really feel about the people of Ukraine. There is data, according to which US scientists from a laboratory in Merefa tested potentially dangerous biological drugs on patients of the regional clinical psychiatric hospital No 3 in Kharkov. Similar inhumane experiments were held at the Psychiatric Hospital No 1 in Streleche village of the Kharkov region. The main category of subjects was a group of male patients aged 40-60 years with a high stage of physical exhaustion. This research was secret, all involved personnel had to sign a non-disclosure agreement. In order to conceal their US affiliation, the biological research experts travelled via third countries.

As more information about the activity of biolabs in Ukraine comes to surface, we come up with more questions to the NATO allies of the United States. New documents reveal that between 2016 and 2019 alone, three and a half thousand blood serum samples of citizens living in 25 regions of Ukraine were taken by military epidemiologists from the Bundeswehr Microbiology Institute. I wonder, what for the German military would need biological materials of the people of Ukraine?

We also have documents confirming Poland's involvement in biological research in Ukraine that is conducted jointly with Pentagon's key contractors (in particular, the US-based Battelle Institute).

Mr.President,

I believe that today our Western colleagues will spout another portion of baseless accusations related to "propaganda". That is why we pay very much attention to collecting a body of evidence and regularly circulate in the Security Council and General Assembly original documents that come into disposal of our Ministry of Defense. Everyone can access them. Those are hundreds of pages, signed by concrete officials from Ukraine and the US. The documents help better understand what exactly the Kiev regime and its Western sponsors would like to hide from the global community.

American representatives again and again refuse to give any clarifications as to the nature and real goals of their biological engagement in Ukraine and the whole world. In the Preparatory Committee of the BWC 9th Review Conference that convened in Geneva in early April, the US side did not give a singly intelligible answer apart from a run-around reply that American biological activity by definition is peaceful and "useful" for the international community.

At the Arria meeting of UNSC members on 6 April, independent journalists addressed the United States and i.a. requested to explain why documents about US-Ukrainian cooperation in the area of biological research run counter to statements made by US officials. But the delegations of the US and Great Britain simply did not attend the meeting.

Here is another telling fact. At the mentioned session of the Preparatory Committee, the US delegation again rejected a proposal to create an effective BWC verification mechanism. American delegates refused to resume the work on a legally binding additional protocol to the Convention that the US has been blocking since 2001. US representatives also turned down our initiative to expand BWC confidence measures to include reporting on military biological activities held outside national territories.

It means the United States deliberately blocks attempts to strengthen the BWC regime that should make it identify violations of the Convention more effectively.
Those are very alarming signals, especially in light of the fact that US legislation allows military-biological activity and that national legislation in this area is superior to international in that country.
Let me ask the representatives of Ukraine – if the activity that you carry out in biolabs in Ukraine and entire world is peaceful as you say, then why do you not agree to put it under international control and why do you prevent the international community from having all necessary tools to that end? This would be the easiest way to clear away all doubts and accusations, if they are indeed absolutely groundless as you say. Unfortunately, so far only one explanation suggests itself: you have something to hide.
Colleagues,
We have gathered a considerable bulk of materials that directly point at violations of the Biological and Toxin Weapons Convention by the United States and Ukraine. We will keep collecting and analyzing relevant data. Since the US side refuses to take part in any constructive discussion on this topic, we plan to engage mechanisms that are envisaged in articles 5 and 6 of the BWC. As soon as we are done collecting materials, we will submit them to the Security Council for an investigation. We hope that it will let us curb military-biological activities that pose a threat to international peace and security, and bring perpetrators to account.

Thank you.

Right of reply by First Deputy Permanent Representative Dmitry Polyanskiy:

Mr.President,
Once again we saw attempts to sidetrack the discussion by shifting focus from the issue that we initially raised and mixing together chemical and biological weapons. Colleagues, those are different things. Mr. President, you spoke of both.
But we talk about concrete facts that we discovered and concrete documents confirming that the United States carries out military biological programs in Ukrainian biolabs. We have already circulated several hundreds of documents pointing at concrete data, concrete cases, concrete companies, and concrete individuals. If this is not sufficient evidence for you, then what is?
You do not respond to our questions not only in the Security Council. As we said in our statement, the United States provided no information or clarification as to the character and real goals of its biological activity in Ukraine, including at the Preparatory Committee of the BWC 9th Review Conference, which is a specialized platform. You pretend nothing is happening, but alas, it does. And we demand explanations. We already mentioned what mechanisms we plan to employ, and we will not give up this issue. Your attempts to turn our concrete claims and questions into general "babble" and talks about "Russian propaganda" will not pass. You will have to provide concrete explanations regarding your illicit activity in Ukraine.

Thank you.

Nasal Sprays for COVID Vaccine Being Developed

Source:https://www.medscape.com/viewarticle/973715?uac=82598DG&faf=1&sso=true&impID=4242955&src=mkm_ret_220515_mscpmrk_covid-ous_int

May 10 – Scientists are working on COVID vaccines delivered Ψthrough nasal sprays that could stop the coronavirus from invading the body at its most common entry point, the mucous membrane of the nose and throat.
More than a dozen clinical trials with nasal sprays are under way, *The Guardian* reported.
USA Today said Vietnam, Thailand, Brazil, and Mexico have already started manufacturing the nasal vaccine in anticipation of success in the clinical trials.
A nasal vaccine would probably be employed as a booster in the United States but might be widely used in less-developed parts of the world where injectable vaccines are not common, *USA Today* reported.
While injectable vaccines help the body ward off severe illness, nasal vaccines could stop the virus from entering the body in the first place. The effectiveness of injectable vaccines wanes over time, and COVID variants can evade the vaccines, as evidenced by the high number of Omicron cases.
"If you think of your body as a castle, an intramuscular vaccination is really protecting the inner areas of your castle so once invaders come in, that immunity protects against them taking the throne," Sean Liu, MD, medical director of the Covid clinical trials unit at the Icahn School of Medicine at Mount Sinai in New York City, told *The Guardian*.
"But if you train your immune system to work at the gates of the castle, then the invaders not only have trouble getting in, but they may have trouble spreading inside."

A nasal vaccine could be more easily manufactured and distributed because it's stored in a regular refrigerator rather than ultra-cold temperatures like the Moderna and Pfizer mRNA vaccines. People who don't like needles might accept a nasal vaccine.
And it would be much cheaper to produce, *USA Today* said. Peter Palese, who is also working on nasal vaccines at the Icahn School of Medicine, said a nasal dose could be produced for about 30 cents compared to $30 for a Moderna or Pfizer dose.
Scientists face many challenges in their research, especially measuring the strength of the immune response to the nasal vaccine.
Different techniques are being used to develop the nasal spray. At the Icahn School of Medicine, they're making the vaccine in eggs, like flu vaccines. The Cincinnati Children's Hospital in Ohio is trying a canine flu, *USA Today* said. A nasal version of the Oxford/AstraZeneca vaccine is based on a weakened adenovirus, *The Guardian* reported. In January 2021, researchers from Lancaster University in England and Texas Biomedical Research Institute in San Antonio reported that rodents given two doses of a nasal vaccine had antibody and T-cell responses that were strong enough to suppress SARS-CoV-2.

EDITOR'S COMMENT: What is important it is not the means of delivery but the effectiveness of the content able to achieve what vaccines should do – annual protection or more. Something that we have not seen so far …

Is Paxlovid, the Covid Pill, Reaching Those Who Most Need It? The Government Won't Say

Source: https://www.medscape.com/viewarticle/973906

May 12 – As the nation largely abandons mask mandates, physical distancing, and other covid-19 prevention strategies, elected officials and health departments alike are now championing antiviral pills. But the federal government isn't saying how many people have received these potentially lifesaving drugs or whether they're being distributed equitably.
Pfizer's Paxlovid pill, along with Merck's molnupiravir, are aimed at preventing vulnerable patients with mild or moderate covid from becoming sicker or dying. More than 300 Americans still die from covid every day.
National supply counts, which the Biden administration has shared sporadically, aren't the only data local health officials need to ensure their residents can access the treatments. Recent federal changes designed to let large pharmacy chains like CVS and Walgreens efficiently manage their supplies have had an unintended consequence: Now many public health workers are unable to see how many doses have been shipped to their communities or used. And they can't tell whether the most vulnerable residents are filling prescriptions as often as their wealthier neighbors.
KHN has repeatedly asked Health and Human Services officials to share more detailed covid therapeutic data and to explain how it calculates utilization rates, but they have not shared even the total number of people who have gotten Paxlovid.
So far, the most detailed accounting has come from the drugmakers themselves. Pfizer CEO Albert Bourla reported on a recent earnings call that an estimated 79,000 people received Paxlovid during the week that ended April 22, up from 8,000 a week two months earlier.
Unlike covid vaccinations or cases, HHS doesn't track the race, ethnicity, age, or neighborhood of people getting treatments. Vaccination numbers, initially published by a handful of states, allowed KHN to reveal stark racial disparities just weeks into the rollout. Federal data showed that Black, Native, and Hispanic Americans have died at higher rates than non-Hispanic white Americans.
Los Angeles County's Department of Public Health has worked to ensure its 10 million residents, especially the most vulnerable, have access to treatment. When Paxlovid supply was limited in the winter, officials there made sure that pharmacies in hard-hit communities were well stocked, according to Dr. Seira Kurian, a regional health officer in the department. In April, the county launched its own telehealth service to assess residents for treatment free of charge, a model that avoids many of the hurdles that make treatment at for-profit pharmacy-based clinics difficult for uninsured, rural, or disabled patients to use.
But without federal data, they don't know how many county residents have gotten the pills.
Real-time data would show whether a neighborhood is filling prescriptions as expected during a surge, or which communities public health workers should target for educational campaigns. Without access to the federal systems, Los Angeles County, which serves more residents than the health departments of 40 entire states, has to use the limited public inventory data that HHS publishes.
That dataset contains only a slice of information and in some cases shows months-old information. And because the data excludes certain types of providers, such as nursing homes and Veterans Health Administration facilities, county officials can't tell if patients there have taken the pills.

Because so little data is available, Kurian's team created its own survey, asking providers to report the ZIP codes of patients who have received the covid therapies. With the survey, it's now easier to figure out which pharmacies and clinics need more supplies. But not everyone completes it, she said: "Oftentimes, we have to still do some guesstimating."

In Atlanta, staff at Good Samaritan Health Center would use detailed information to direct low-income patients to pharmacies with Paxlovid. Though the drug wasn't readily available during the first omicron surge, the next one will be "a new frontier," said Breanna Lathrop, the center's chief operating officer. Ideally, she said, her staff would be able to see "everything you need to know in one spot" — including which pharmacies have the pills in stock, when they're open, and whether they offer home delivery. Student volunteers built the center a similar database for covid testing earlier in the pandemic.

Paxlovid and molnupiravir became available in the U.S. in late December. They have quickly become the go-to treatments for non-hospitalized patients, replacing nearly all the monoclonal antibody infusions, which are less effective against current covid strains. Though the government doesn't record Paxlovid use by race and ethnicity, researchers tracked those trends for the first-generation infusions.

Amy Feehan, co-author of a CDC-funded study and a clinical research scientist at Ochsner Health in Louisiana, found that Black and Hispanic patients with covid were significantly less likely than white and non-Hispanic patients to receive those initial outpatient treatments. Other researchers found that language difficulties, lack of transportation, and not knowing the treatments existed all contributed to the disparities. Feehan's study, using data from 41 medical systems, found no large discrepancies for hospitalized patients, who didn't have to seek out the drugs themselves. Patients at Atlanta's Good Samaritan Health Center often don't know that if they get tested quickly they can receive treatment, Lathrop said. Some assume they don't qualify or can't afford it. Others wonder if the pills work or are safe. There are "just a lot of questions in people's minds," Lathrop said, about whether "it benefits them." When Dr. Jeffrey Klausner was a deputy officer at the San Francisco Department of Public Health, "our first priority was transparency and data sharing," he said. "It's important to build trust, and to engage with the community." Now a professor at the University of Southern California, he said federal and state officials should share the data they have and also collect detailed information about patients receiving treatment — race, ethnicity, age, illness severity — so that they can correct for any inequities.

Public health officials and researchers who spoke with KHN said that HHS officials may not think the data is accurate or have adequate staff to analyze it. The head of HHS' therapeutics distribution effort, Dr. Derek Eisnor, suggested as much during an April 27 meeting with state and local health officials. One local official asked the federal agency to share local numbers so they could increase outreach in communities with low usage. Eisnor responded that because HHS doesn't require providers to say how much they use, the reporting "is kind of mediocre at best," adding that he didn't think it was his agency's role to share that information.

Eisnor also said that state health departments should now be able to see local orders and usage from pharmacy chains like CVS, and that the agency hopes to soon release weekly national data online. But counties like Los Angeles — which has requested access to the federal systems with no success — still don't have access to the data they need to focus outreach efforts or spot emerging disparities. Spokesperson Tim Granholm said that HHS is looking into ways to share additional data with the public.

Recordings of the weekly meetings, in which HHS officials share updates about distribution plans and answer questions from public health workers, pharmacists, and clinicians, were posted online until March. HHS' media office has since repeatedly declined to grant KHN access, saying "the recordings are not open to press." That's because HHS wants to encourage open conversation during the meetings, according to Granholm. He did not say what legal authority allows the department to bar media from the public meetings. KHN obtained the public records through Freedom of Information Act requests.

A senior White House official said that the Biden administration is attempting to collect accurate data on how many people receive Paxlovid and other treatments but said it doesn't define success by how many people do so. Its focus, the official said, is on making sure the public knows treatments are available and that doctors and other providers understand which patients are eligible for them. We still need to know where the pills are going, Feehan said. "We need that data as soon as humanly possible."

Until then, Los Angeles County's Kurian and her peers will keep "guesstimating" where residents need more help. "If someone can just give us a report that has that information," she said, "of course, that makes it easier."

New Data Show Transplanting Kidneys From Donors With COVID-19 Is Safe

Source: https://consultqd.clevelandclinic.org/new-data-show-transplanting-kidneys-from-donors-with-covid-19-is-safe/

May 13 – In the transplant community, controversy continues about donation of extrapulmonary organs from deceased donors with COVID-19, despite mounting evidence that transplantation incurs little to no risk for disease transmission or worse outcomes.

Alvin Wee, MD, MBA, Surgical Director of the Kidney Transplant Program in Cleveland Clinic's Glickman Urological & Kidney Institute, and colleagues published their initial case series in the *American Journal of Transplantation.* Here they reported that 10 kidneys from five donors were successfully transplanted, all with good outcomes.

Since then, the research team has gathered additional data from donors and recipients that reinforce the initial findings. Dr. Wee says they've completed more than 100 cases to date, all with excellent outcomes and no post-transplant COVID-19-related complications.

At the 2022 American Urological Association (AUA) annual meeting, they presented data collected from February 2021 to October 2021, including 55 patients who underwent kidney transplantation from 34 COVID-19 positive donors.

The transplant team: Evaluating cases collaboratively

Dr. Wee says the selection criterion and guidelines were established collaboratively by a multidisciplinary team of transplant surgeons, nephrologists and infectious disease specialists approved by Cleveland Clinic Transplant Council.

Initially, they evaluated cases more conservatively. In their previously published report, none of the five donors died from COVID-19-related complications. Causes of death included asphyxia, cardiac arrest, drug overdose and drowning.

As the team continued to observe good results, they broadened their criteria selection to better utilize kidneys for transplant, even in deceased donors with more severe disease. In the data presented at the AUA meeting, the physicians report 38.2% (N = 13) died from COVID-19- related causes.

Dr. Wee says these findings show that "generally speaking, as long as kidney function is good, the organ is viable for transplant."

A summary of donor and recipient characteristics

The median donor age was 35 years (range: 6-57) with a median Kidney Donor Profile Index (KDPI) of 39% (range: 3%-82%). Additionally, all donors had at least one positive COVID-19 test obtained using a nasopharyngeal ribonucleic swab. Prior to death, six of 34 donors underwent ECMO. And median initial and terminal creatinine levels were 0.9 mg/dL (range: 0.3-1.9 mg/dL) and 0.8 mg/dL (range: 0.2-5.7 mg/dL).

Among the recipients, 36 were male and 19 were female. The median age was 55 years (range: 24-70). Two-third of the recipients were receiving dialysis at the time of transplant, and two-thirds of the patients were fully vaccinated at the time of transplantation.

Following transplantation, none of the recipients tested positive for COVID-19. All of the kidneys were functioning, although delayed graft function was found in 19.6% of the recipients, and one kidney was lost due to a vascular complication from infection not related to COVID-19.

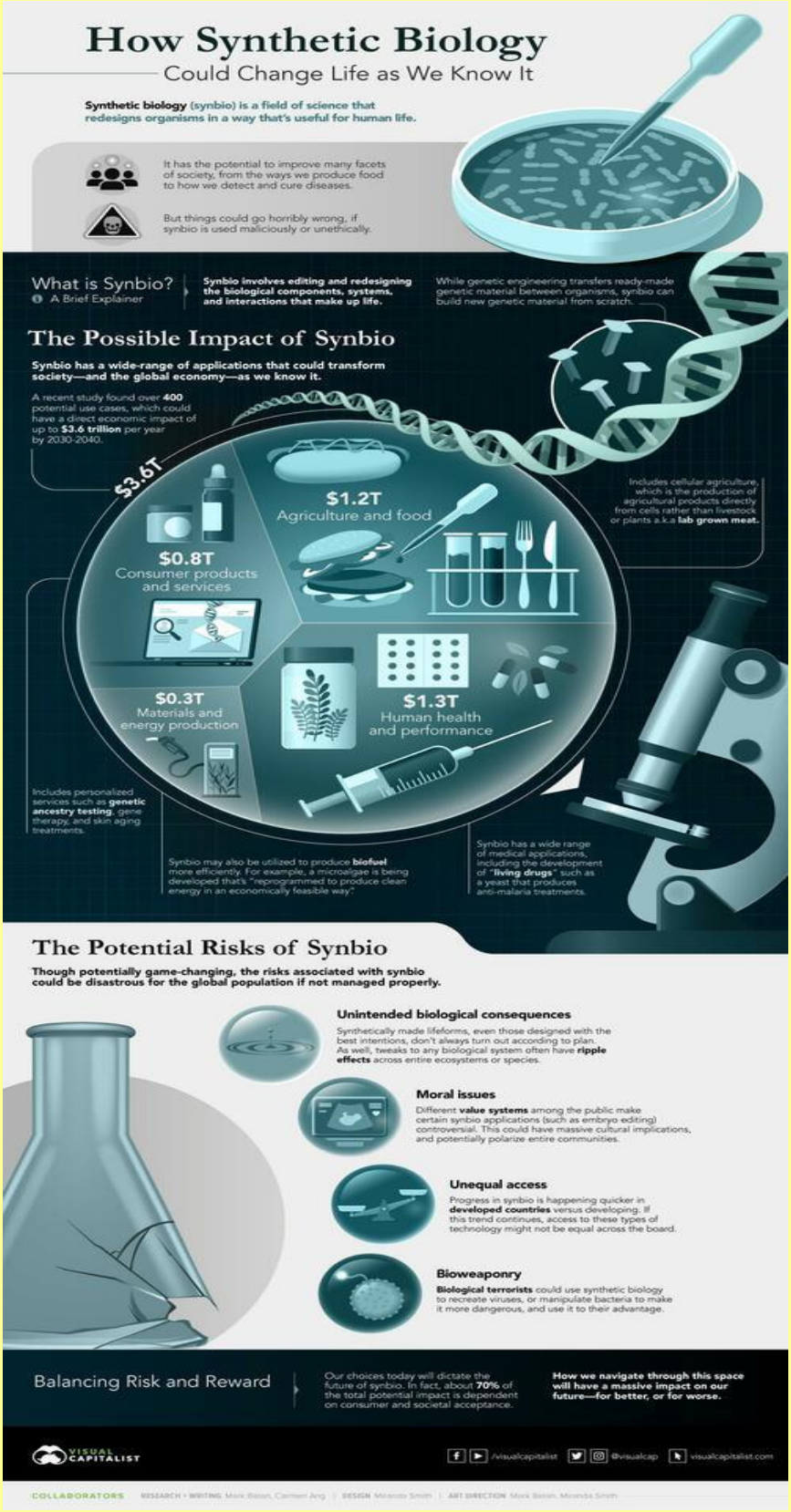
Better utilization of organs for transplant

Despite a record-number of kidney transplants completed in 2021 — both at Cleveland Clinic and nationwide — there is still a discrepancy between people on the waitlist and available kidneys for transplant.

Dr. Wee is hopeful that data like these will soon alter industry standards on transplant guidelines for donors with COVID-19 and support better utilization of extrapulmonary organs for transplant.

"Balancing the risk of accepting an organ with dying on the waitlist is always part of the decision when it comes to transplant, and the pandemic has made that even more complicated," says Dr. Wee.

"But, just think about it, this approach has enabled more than 100 kidney transplants, a lifesaving intervention for patients on the waitlist, which may have otherwise been discounted. It also offers a glimmer of hope and meaning to the family members of these patients who died fro



Regulation and management of the biosecurity for synthetic biology

By XiaomeiZeng, Hailun Jiang, Guangying Yang et al

Synthetic and Systems Biotechnology; Volume 7(2), June 2022, pp. 784-790

Source

Abstract

Synthetic biology (SynBio) is a high-profile interdisciplinary combining engineering with science. As a dual-purpose discipline, SynBio is bringing large changes to many fields and providing great benefits to humans. However, due to its characteristic of complexity and uncertainty, SynBio also presents potential biosafety and biosecurity risks. Biosecurity risks refer to unauthorized access, loss, theft, misuse, diversion or intentional release. If a biosecurity accident happens, it would pose a huge threat to humans and nature. Therefore, it is crucial to establish a set of regulations and management practices for the biosecurity risks of SynBio. In this paper, we summarized the sources of the biosecurity risks of SynBio, from its research materials, products, technologies, and information to Do-it-yourself synthetic biology. We reviewed and analyzed the current situation of regulation and management of biosecurity for SynBio in the international community and in China. We found that in most countries and regions, SynBio risks commonly follow the regulation and management of Genetically Modified Organisms which has loopholes if applied to the regulation for SynBio without any amendments. Here, we proposed suggestions for the Chinese-featured regulation and management of biosecurity for SynBio, including a top-to-bottom governing framework, a think-tank implementation mechanism, a Synthetic Biology Laboratory Biosecurity Manual safeguarding system, and strengthening biosecurity education on synthetic biology and self-regulation awareness among relevant personnel. Through this work, we aim to improve the standardized process of biosecurity regulation and management for SynBio in China and thereby map out a peaceful, profitable, and practical development path for synthetic biology.

●▶ **Read also:**
https://ec.europa.eu/health/scientific_committees/emerging/docs/scenihr_o_050.pdf

World Health Organization Is Preparing Vote To Strip The US, And 194 Other Nations, Of Its Sovereignty And Give Them TOTAL CONTROL Of The World

Source: https://en-volve.com/2022/04/26/world-health-organization-is-preparing-vote-to-strip-the-us-and-194-other-nations-of-its-sovereignty-and-give-them-total-control-of-the-world/

On May 22nd, the World Health Organization (WHO) will vote on whether or not to strip 194 countries, including the United States, of their sovereignty.

As part of the World Economic Forum's Great Reset goal, the WHO is aiming to alter a treaty that would give them global control over human health.

The WHO World Health Assembly will vote on the issue from May 22 to 28.

In a new video, The Pulse's Joe Martino interviews Shabnam Palesa Mohamed, a member of the steering committee of the World Council for Health, who points out that the treaty gives the WHO:

"… an inordinate amount of power to make decisions in sovereign countries as to how people live and how they deal with pandemics, from lockdowns to mandates overtreatment."

In an open letter on the WHO's pandemic treaty, the World Council for Health writes, in part:

"The proposed WHO agreement is unnecessary, and is a threat to sovereignty and inalienable rights. It increases the WHO's suffocating power to declare unjustified pandemics, impose dehumanizing lockdowns, and enforce expensive, unsafe, and ineffective treatments against the will of the people.

It's the usual Marxist one-size-fits-all approach. Everyone will be on the same page and science will cater to GLOBAL political whims. It will cost millions of dollars or more and money will be laundered by them and their pickpockets.

The WHO appears to want to push the treaty through quickly without public participation and input.

"It is undemocratic, it is unconstitutional and therefore it makes the treaty invalid and unlawful," Mohamed says. She also made note of the many WHO health policy failures due to their "conflicts of interest."

It is much worse than we thought. The rule change includes very dangerous amendments – 13 of them. Investigative reporter Leo Hohmann reports that these amendments will NOT require approval by 2/3 of the United States Senate. It's not called a treaty. It's amending a treaty we are a part of. If they are approved (as submitted by the United States) by a simple majority of the 194 member countries of the World Health Assembly countries), these amendments would enter into force as international law just six months later (November 2022). The details of this are not crystal clear. Our administration is actively destroying the Constitution by making us part of a global new world order. "It essentially wipes out 194 nation's sovereignty," says investigative reporter James Roguski. Mr. Roguski has a website with information at Don'tYouDare.info.

STAMINA

EU-sponsored project | 2020-2022

Source: https://stamina-project.eu/

Infectious diseases have the potential to result in serious cross-border public health threats. Management of this type of crisis remains a serious challenge due to number of people involved, the different legal, administrative, professional and political cultures, and the lack of transboundary crisis management infrastructures. STAMINA helps to overcome these challenges by providing improved decision-making technology to pandemic crisis management practitioners at a regional, national and European level. The project will target two stages of the emergency management cycle: Preparedness and Response. The STAMINA solution provides national planners, regional crisis management agencies, first responders and citizens with new tools as well as a clear guide to how they can be used in line with international standards and legislation.

The STAMINA vision has been designed through a user perspective, with five main objectives:

- Create a set of guidelines and best practices to improve preparedness and response.
- Provide stakeholders with novel, easy-to-use software tools that complement EU-level systems.
- Increase diagnostic capability.
- Improve cooperation between and within the EU Member States and neighboring countries.
- Ensure the sustainability of the STAMINA solution.

First at-home test for flu, COVID and RSV authorized by the FDA

Source: https://newatlas.com/health-wellbeing/labcorp-flu-covid-rsv-test-fda-approval/

May 16 – A new direct-to-consumer test designed to detect a number of different respiratory viruses, including COVID-19 and influenza, has been authorized by the US Food and Drug Administration (FDA). The test is the first of its kind to be approved by the FDA that gives consumers access to these kinds of diagnostics without going through a doctor or needing a prescription.

The COVID-19 pandemic has fundamentally changed how we access diagnostic tests. Rapid antigen tests for COVID-19 allowed people to test for a SARS-CoV-2 infection without going to a doctor. And now the FDA has authorized the first at-home test that can differentiate several respiratory viruses.

The test is from life sciences company Labcorp and looks for traces of influenza A and B, SARS-CoV-2 and respiratory syncytial virus (RSV).

Unlike common rapid antigen tests, this new test uses more traditional PCR (polymerase chain reaction) technology. This means it involves sending a nasal swab out to a lab for analysis.

The kit is called the Labcorp Seasonal Respiratory Virus RT-PCR DTC Test and it will be available in stores or online without the need for a prescription. Users will complete a nasal swab at home, send the sample off to the closest Labcorp lab, and access results through an online platform within one to three days of the sample being received at a lab.

"While the FDA has now authorized many COVID-19 tests without a prescription, this is the first test authorized for flu and RSV, along with COVID-19, where an individual can self-identify their need for a test, order it, collect their sample and send it to the lab for testing, without consulting a health care professional," said director of FDA's Center for Devices and Radiological Health, Jeff Shuren.

The test obviously won't be able to return tests fast enough to guide immediate treatment or isolation decisions but knowing whether an infection is either COVID, the flu or even RSV, will be valuable in the long-term.

Shuren said the FDA is looking to expand direct-to-consumer diagnostics such as this one, and in the future it is hoped rapid versions of the tests will be available for people to self-diagnose immediately at home.

"The rapid advances being made in consumer access to diagnostic tests, including the ability to collect your sample at home for flu and RSV without a prescription, brings us one step closer to tests for these viruses that could be performed entirely at home," said Shuren.

It is unclear how much the test will cost but similar tests from Labcorp cost US$169.

Here's How The Next 5 Years Might Look: Scientists Outline 3 Likely Pandemic Outcomes

Source: https://www.sciencealert.com/this-is-what-the-next-5-years-of-the-pandemic-might-look-like

May 16 – The global pandemic is not yet over. Public health experts suspect it will last at least another five years, but how this ongoing crisis plays out is ultimately up to us.

A new report from the International Science Council (ISC), an international organization who's aim is to unite scientific bodies around the world, has laid out three scenarios that could occur by 2027.

The report was written by a panel of 20 experts on public health, virology, economics, behavioral science, ethics, and sociology.

While their commentary isn't an attempt to predict the future, their report helps narrow down and illustrate some of the possible actions the world can take to minimize the pandemic's impact going forward.
In the coming years, improving vaccine development and distribution could help the SARS-CoV-2 virus reach low endemic levels, with only limited, controlled transmission in most countries.

Scenario one

If the percentage of people fully vaccinated against COVID-19 increases from roughly 61 percent of all adults to over 80 percent globally, many lives could be saved and the risk of emerging variants could be reduced. In turn, there could also be benefits for mental health, the economy and sustainable development.
Even in this optimistic scenario, the coronavirus won't disappear, but its spread will become far more manageable.
In all likelihood, however, that's not where we're headed. The ISC report argues that governments have so far prolonged the pandemic, by focusing on national strategies instead of international collaboration.

Scenario two

Our lack of action so far instead suggests a more likely result is that vaccination rates are below 70 percent worldwide. If they don't increase, the novel coronavirus could become endemic with seasonal surges that would overwhelm hospitals in multiple countries and require "updated vaccines and the use of antiviral pharmaceuticals".
By 2027, the ISC report finds the most likely scenario is "an exacerbation of global inequalities". The United Nations' Sustainable Development Goals will be set back by a decade.
"The key lessons are, nonetheless, very clear. Even if the acute phase of the pandemic is winding towards an end in those countries with high vaccination rates, the risks will remain high while many in the world do not have access to an effective vaccine," the report concludes.
"New variants may yet emerge, and vigilance and ongoing vaccine and therapeutic development remain essential.There is no policy domain that remains unaffected, and governments must recognize that the pandemic's myriad impacts will not be resolved quickly. They must not pretend that the crisis is over just because mortality is reduced. For many citizens there will be many years of difficulties and challenges ahead."
Vulnerable people, like women, children and the elderly, will be most impacted. Meanwhile, low-income nations will face future health system collapse and growing food insecurity.

Scenario three

If nationalism and populism keep growing, the authors of the report worry that trust between governments and between states and their people will further deteriorate, reducing vaccine uptake.

They call this the "Missed Recovery" scenario. As geopolitical tensions grow, protectionist policies could seriously hamper global collaboration. The exact opposite of what is needed to deal with an international crisis.
In this worst-case scenario, less than 60 percent of the global population would be fully vaccinated against COVID-19, and low-income countries would still have limited access to initial doses and antiviral medicines.
"As a result, COVID-19 remains largely uncontrolled, with severe recurrences in parts of the world," the report reads.
T o avoid a grim reality like that playing out, experts argue governments need to collaborate and invest in health care systems, integrate scientific advice systems, and address widening inequalities in education and wealth.
The ISC report urges governments to resist the temptation to cut climate targets for short-term gain.
It's possible that increasing climate change and environmental destruction will only make future pandemics more likely in the long run. And no one wants to go through this again.
"The COVID-19 pandemic has demonstrated the value of international scientific cooperation, even in the face of cascading environmental risks and geopolitical tensions," says Mami Mizutori, the United Nations secretary-general for disaster risk reduction.
"We must renew efforts to build a multilateral system that addresses inequalities while preparing us for the next crisis. Whether it be another pandemic, climate change, or conflict, we have the chance to learn from the last two years. If not, the Sustainable Development Goals will slip out of reach."

●▶ **The report was published by the International Science Council.**

Mozambique confirms wild poliovirus outbreak

Source: https://www.aa.com.tr/en/africa/mozambique-confirms-wild-poliovirus-outbreak/2591504

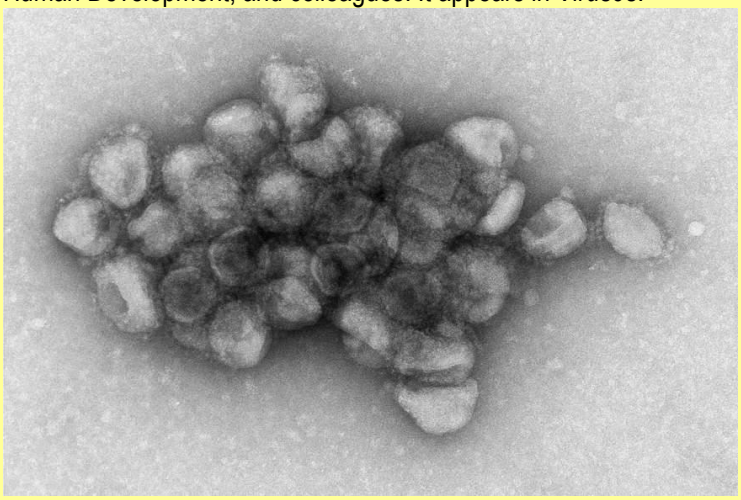
May 18 – Mozambique health authorities declared an outbreak of wild poliovirus on Wednesday, the first in the southern African country in three decades. A case was found in a child in northeastern Tete province, who began experiencing paralysis in late March, according to the World Health Organization (WHO). Just one case in Mozambique has been detected, the country's first since 1992, the WHO said in a statement, marking the second imported case of wild poliovirus in southern Africa in 2022, following an outbreak in Malawi in February. "The detection of another case of wild poliovirus in Africa is greatly concerning, even if it's unsurprising given the **recent outbreak in Malawi**. However, it shows how dangerous this virus is and how quickly it can spread," said WHO Regional Director for Africa Matshidiso Moeti. "We are supporting southern African governments to step up the polio fight including carrying out large-scale, effective vaccination campaigns to halt the virus and protect children from its damaging impact," she added.
Genomic sequencing analysis indicates that the newly confirmed case is linked to a strain that had been circulating in Pakistan in 2019, similar to the one reported in Malawi earlier this year.
The WHO said investigations are underway in Mozambique to determine the extent of the risk posed by the case after preliminary analysis of samples collected from three contacts of the patient were all negative for wild poliovirus type 1. **Globally, wild poliovirus is endemic only in Afghanistan and Pakistan. The highly infectious disease largely affects children younger than 5 years of age.** Mozambique health authorities carried out two mass vaccination campaigns following the Malawi outbreak, in which 4.2 million children were vaccinated. Africa was declared free of indigenous wild polio in August 2020 after eliminating all forms of wild polio from the region. Recent cases on the continent do not affect Africa's wild poliovirus-free certification since the virus strain is not indigenous, according to the WHO.

Unique binding of Delta variant may explain high transmissibility

Source: https://www.nih.gov/news-events/news-releases/unique-binding-delta-variant-may-explain-high-transmissibility

May 13 – Unlike other SARS-CoV-2 variants, the Delta variant can attach to copies of itself, forming larger aggregations, or clumps, of viral particles, suggests a study by scientists at the National Institutes of Health. The researchers theorize that this linking property may have played a role in the ability of the Delta variant to spread more rapidly than all the variants that preceded it.

The study was conducted by Jennifer D. Petersen, Ph.D., of NIH's *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and colleagues. It appears in *Viruses*.



The Delta spike protein enables the virus to bind to cells and begin the process of infecting them. In laboratory studies, the researchers observed this action by using leukemia viruses from mice that were stripped of disease-causing genes but engineered to have the spike protein on their surface, known as pseudotyped Delta particles. The scientists watched the spike proteins binding to one another to form aggregations, which previous research suggests increases the chances of viral spread.

Electron microscopy image of an aggregate of pseudotyped viral particles bearing the SARS-CoV-2 Delta variant spike proteinNICHD

Viruses deep inside the aggregation are protected from drying out, from antiviral drugs and from the host immune system. Moreover, large viral aggregations have the potential to a bring a greater number of viruses in contact with target cells, thereby increasing the chances of infection. The authors note that future studies are needed to confirm whether the SARS-CoV-2 Delta variant can form aggregations similar to those of the Delta pseudo particles. The researchers also found that engineered particles of the Omicron variant, which has since replaced the Delta variant, do not form aggregations. However, the researchers believe that learning how Delta aggregates — and how to develop drugs that can reach viruses inside the aggregation—may prove useful if a future variant capable of aggregation arises.

Climate Change Could Spark the Next Pandemic

Source: https://www.homelandsecuritynewswire.com/dr20220518-climate-change-could-spark-the-next-pandemic

May 18 – As the Earth's climate continues to warm, researchers predict wild animals will be forced to relocate their habitats — likely to regions with large human populations — dramatically increasing the risk of a viral jump to humans that could lead to the next pandemic.

This link between climate change and viral transmission is described by an international research team led by scientists at Georgetown Universityand is published in *Nature* ("Climate Change Increases Cross-species Viral Transmission Risk," doi:10.1038/s41586-022-04788-w).

In their study, the scientists conducted the first comprehensive assessment of how climate change will restructure the global mammalian virome. The work focuses on geographic range shifts — the journeys that species will undertake as they follow their habitats into new areas. As they encounter other mammals for the first time, the study projects they will share thousands of viruses. The scientists say these shifts bring greater opportunities for viruses like Ebola or coronaviruses to emerge in new areas, making them harder to track, and into new types of animals, making it easier for viruses to jump across a "stepping stone" species into humans.

"The closest analogy is actually the risks we see in the wildlife trade," says the study's lead author Colin Carlson, PhD, an assistant research professor at the Center for Global Health Science and Security at Georgetown University Medical Center. "We worry about markets because bringing unhealthy animals together in unnatural combinations creates opportunities for this stepwise process of emergence — like how SARS jumped from bats to civets, then civets to people. But markets aren't special anymore; in a changing climate, that kind of process will be the reality in nature just about everywhere."

Of concern is that animal habitats will move disproportionately in the same places as human settlements, creating new hotspots of spillover risk. Much of this process may already be underway in today's 1.2 degrees warmer world, and efforts to reduce greenhouse gas emissions may not stop these events from unfolding.

An additional important finding is the impact rising temperatures will have on bats, which account for the majority of novel viral-sharing. Their ability to fly will allow them to travel long distances and share the most viruses. Because of their central role in viral emergence, the greatest impacts are projected in southeast Asia, a global hotspot of bat diversity.

"At every step," said Carlson, "our simulations have taken us by surprise. We've spent years double-checking those results, with different data and different assumptions, but the models always lead us to these conclusions. It's a really stunning example of just how well we can, actually, predict the future if we try."

As viruses start to jump between host species at unprecedented rates, the authors say that the impacts on conservation and human health could be stunning.

"This mechanism adds yet another layer to how climate change will threaten human and animal health," says the study's co-lead author, Gregory Albery, PhD, a postdoctoral fellow in the Department of Biology in the Georgetown College.

"It's unclear exactly how these new viruses might affect the species involved, but it's likely that many of them will translate to new conservation risks and fuel the emergence of novel outbreaks in humans."

Altogether, the study suggests that climate change will become the biggest upstream risk factor for disease emergence — exceeding higher-profile issues like deforestation, wildlife trade and industrial agriculture. The authors say the solution is to pair wildlife disease surveillance with real-time studies of environmental change.

"When a Brazilian free-tailed bat makes it all the way to Appalachia, we should be invested in knowing what viruses are tagging along," says Carlson. "Trying to spot these host jumps in real-time is the only way we'll be able to prevent this process from leading to more spillovers and more pandemics."

"We're closer to predicting and preventing the next pandemic than ever," says Carlson. "This is a big step towards prediction — now we have to start working on the harder half of the problem."

"The COVID-19 pandemic, and the previous spread of SARS, Ebola, and Zika, show how a virus jumping from animals to humans can have massive effects. To predict their jump to humans, we need to know about their spread among other animals," said Sam Scheiner, a program director with the U.S. National Science Foundation (NSF), which funded the research. "This research shows how animal movements and interactions due to a warming climate might increase the number of viruses jumping between species."

Mixed results for real-world COVID-sniffer dog airport trial

Source: https://newatlas.com/science/mixed-results-covid19-sniffer-dog-airport-trial/

May 18 – As soon as the pandemic kicked off in early 2020 researchers started looking at whether dogs could be used to sniff out patients with COVID-19. Now, a new study published in the journal *BMJ Global Health*, has reported on a robust, real-world investigation into this novel method of viral detection, finding it is potentially effective, at least in detecting COVID-negative people.

Despite only patchy evidence from studies in laboratory settings, COVID-sniffing dogs were commercially deployed within months of SARS-CoV-2 emerging. Reports have emerged of bands such as Metallica using the animals backstage to maintain bubbles of protection, constantly on the lookout for infected individuals.

This new research reports on a long real-world test investigating the accuracy of COVID-sniffing dogs at an airport. The airport experiment spanned six months, across the end of 2020 and into 2021.

Out of 303 passengers tested in the study the dogs matched PCR results 98 percent of the time. Certainly an impressive result, however, only three of the 303 cases were found to be PCR positive to SARS-CoV-2, and the dogs missed all three of those cases.

Follow-up PCR testing on those three positive cases found only one of the cases was a true infectious positive, while the other two were either false negatives or in a post-infectious

period. So really, only one of the 303 cases in the airport study was a true symptomatic positive, and they were missed by the COVID-sniffing dogs.
However, the researchers did consistently present the dogs with COVID-positive samples across the course of the study in order to maintain their skills. The dogs effectively detected 155 of these COVID-positive samples across the course of study.
What this means is the researchers are generally confident the dogs have a high accuracy in detecting COVID-negative people. However, because of the low prevalence of COVID-positive cases in the study the researchers were unable to assess the dogs' ability to catch those with SARS-CoV-2 infections.
"In our real-life setting with a very low prevalence, the performance in identifying negative samples was very good (98.7 percent)," the researchers write in the study. "Unfortunately, because of a low number of confirmed positive cases, accuracy with respect to positive samples could not be reliably assessed. However, ad hoc analysis also calculating the positive spike swabs showed a real-life performance of 98.5 percent for detecting positive samples."
One interesting side note in the study is that the PCR-positive infectious case the dogs missed turned out to be a case with the Alpha variant of SARS-CoV-2. The researchers note the dogs were trained to detect the original type of the coronavirus. It may be possible that scent-profiles of subsequent emerging variants are different to the original SARS-CoV-2, meaning the dogs need to be retrained to target whatever viral variant is circulating at any given moment.
Ultimately, the study is a reminder there can be quite a gap between testing a dog's sniffing ability in laboratory settings and translating that into a real-world environment such as an airport. In this case the study reported that in lab settings these dogs were 90 percent effective at distinguishing COVID-positive and -negative samples, but in real-world situations with a low-prevalence of cases the animals may be less accurate.
The researchers indicate their findings highlight the potential need to constantly retrain dogs to target specific viral variants. Plus, these dogs may be of use when large-scale rapid screening of big crowds is required and other rapid forms of testing are insufficient or unavailable.

●▶ **The new study was published in the journal** *BMJ Global Health*.

Link between COVID-19 and Parkinson's disease risk grows with new findings

Source: https://newatlas.com/science/covid19-parkinsons-disease-mouse-study-inflammation-brain/

May 18 – A few years after the 1918 Spanish Flu pandemic doctors around the world began to notice an increase in new Parkinson's disease cases. This link between viral infection and increased Parkinson's risk has been an ongoing mystery to scientists for well over a century. And the association isn't just limited to the H1N1 influenza virus behind the 1918 pandemic. A variety of other viral infections have been linked to increased Parkinson's risk, from Japanese encephalitis to HIV.
Early in 2020, as the novel coronavirus SARS-CoV-2 swept across the world, scientists warned of a potential spike in neurodegenerative disease in the coming years. Around five years after the 1918 pandemic new Parkinson's diagnoses had almost tripled, and considering how pervasive COVID-19 infections have been even just a mild increase in Parkinson's cases could lead to tens of millions of extra diagnoses over the coming decade. A new study, from researchers at Thomas Jefferson University and New York University, is trying to understand how SARS-CoV-2 could increase a person's risk of Parkinson's disease. Richard Smeyne, first author on the study, said the most common explanation is called the "multi-hit hypothesis." A viral infection doesn't directly cause neurodegenerative disease, but instead it makes the brain more susceptible to other risk factors that can trigger disease.
"We think about a 'multi-hit' hypothesis for Parkinson's – the virus itself does not kill the neurons, but it does makes them more susceptible to a 'second hit', such as a toxin or bacteria or even an underlying genetic mutation," said Smeyne.
A previous study by Smeyne found mice infected with the H1N1 influenza virus were more likely to experience neurodegeneration when exposed to MPTP, a molecule used to simulate

Parkinson's-like neurodegeneration in animal models. MPTP particularly targets dopamine-producing neurons in the basal ganglia so it has been used consistently for several years as a way of modeling Parkinson's degeneration in animal studies.
The new research looked to a novel mouse model, engineered with certain human receptors to allow it to be infected with SARS-CoV-2. The animals were exposed to a dose of the virus that corresponded with a mild COVID-19 infection in humans.
The animals were allowed to recover from the acute viral infection, and then about one month later were injected with a small dose of MPTP. The dose of MPTP was so low that healthy control mice not exposed to SARS-CoV-2 did not display any neuron damage. However, in the animals exposed to the coronavirus, the MPTP was enough to trigger a pattern of neuron damage in the basal ganglia similar to what is seen in Parkinson's disease. The animals exposed to SARS-CoV-2 were as sensitive to MPTP damage as those animals in the prior H1N1 study.
So how could a SARS-CoV-2 infection make these neurons more susceptible to the neurodegeneration associated with Parkinson's disease? That's the big unanswered question.
There is still debate over whether the neurological symptoms of this novel coronavirus are the result of it directly encountering brain cells. Some research has found traces of SARS-CoV-2 in human brains but it's unclear whether this is what could be causing issues such as the brain fog or cognitive decline associated with COVID-19.
Interestingly, prior work with a variant of H1N1 has found that virus does not directly infect neurons in the central nervous system, yet it still does heighten Parkinson's risk in MPTP experiments. This suggests an indirect neuroinflammatory mechanism may be what is sensitizing neurons to the effect of the Parkinson's-causing toxins, at least in the case of H1N1 infection.
In this new study the researchers did detect increased volumes of microglia in the basal ganglia of the coronavirus-infected mice. Microglia are a type of brain immune cell than can cause damage when they are abnormally activated.
So Smeyne and his colleagues speculate this neuroinflammation triggered by a SARS-CoV-2 infection could make certain neurons more vulnerable to subsequent attack, heightening a person's Parkinson's risk. But Smeyne is cautious to make clear it is way too soon to say this is definitely happening in humans.
"First of all, this is preclinical work," Smeyne noted. "It is too soon to say whether we would see the same thing in humans, given that there seems to a 5-10 year lag between any changes in clinical manifestation of Parkinson's in humans. If it does turn out that COVID-19 increases the risk of Parkinson's, it will be a major burden on our society and healthcare system. But we can anticipate that challenge by advancing our knowledge of potential 'second hits' and mitigating strategies."

●▶ **The new study was published in the journal** *Movement Disorders*.

Will a Weaponized Bird Flu Become the Next Pandemic?

By Dr. Joseph Mercola[6]
Source: https://www.globalresearch.ca/will-weaponized-bird-flu-become-next-pandemic/5780617

May 18 – As news of the COVID pandemic winds down around the world, we're suddenly seeing warnings of another pandemic brewing — bird flu, aka avian influenza (H5N1). In a March 30, 2022, CenterPoint interview, former Director for the U.S. Centers for Disease Control and Prevention, **Dr. Robert Redfield**, stated:[1]
"I believe the great pandemic still in the future, and that's going to be a bird flu pandemic for man. It's going to have significant mortality in the 10 to 50% range. It's going to be trouble."
Anyone who knows a little about bird flu is likely to wonder where Redfield and other "experts" are getting their predictions from, as natural bird flu is notoriously harmless to humans.
In early April 2022, news of a highly pathogenic bird flu ripping through chicken and turkey flocks in the U.S., triggering the slaughter of millions of these animals, was reported.[2,3] Historically, however, the bird flu has never posed a threat to mankind — that is until scientists started tinkering with it, creating a hybrid with human pandemic potential.

[6] More about the author

Natural Bird Flu Has Never Posed a Human Threat

As reported by Alexis Baden-Mayer, political director for the Organic Consumers Association:[4]

"H5N1 kills more than half of the people who get it, but H5N1 has circled the globe for decades and there have only ever been 860 human infections worldwide …

H5N1 isn't transmitted person-to-person[5] … There are no food safety risks associated with H5N1. If farm workers and meat packers don't get bird flu in filthy factory farms or slaughterhouses, it's no surprise the rest of us don't get bird flu from eating raw eggs or handling raw chicken."

Despite that, the U.S. and other countries have already started stockpiling H5N1 vaccine, and the H5N1 vaccine Audenz is being marketed "for 2022."[6] The approval for this vaccine was granted by the U.S. Food and Drug Administration in January 2020, followed by a supplemental approval in 2021. As if on cue, the first-ever H5N1-positive case was identified in the U.S. at the end of April 2022.[7]

Bird Flu Has Already Been Weaponized

By the looks of it, the only way a human bird flu would appear would be if it was created, and wouldn't you know it, Dr. Anthony Fauci, Director of the National Institutes of Allergy and Infectious Diseases (NIAID) has funded gain of function research with the intention to make H5N1 transmissible to humans, as has global vaccine profiteer Bill Gates, Baden-Mayer notes.[8]

Some of that research has been undertaken in Pentagon-funded biolabs in Ukraine.[9,10,11] For more details on this, be sure to read Baden-Mayer's extensive article.[12] Not surprisingly, Gates has warned that another pandemic will emerge — something other than coronavirus — and that this yet-to-come pandemic "will get attention this time."[13]

In the featured video, Christian Westbrook, aka the Ice Age Farmer,[14] details Gates' funding of Dr. Yoshihiro Kawaoka in Wisconsin, to identify mutations in various bird flu viruses that might have pandemic potential. Fauci has also funded Kawaoka's work since 1990.[15]

In one experiment, Kawaoka mixed bird flu virus with the Spanish flu virus, resulting in a highly lethal respiratory virus with human transmission capability. Kawaoka has also played around with mixtures of H5N1 and the 2009 H1N1 (swine flu) virus, creating an airborne hybrid[16,17,18] capable of completely evading the human immune system, effectively rendering humans defenseless against it.[19] On a side note, this extremely risky research was done at a biosafety level 2 lab![20]

The bird flu has been manipulated and tinkered with in a variety of different ways, making it both airborne (which it was not initially) and capable of cross-species infection.

Around the same time, another team of Dutch researchers, led by virologist Ron Fouchier, also created an airborne version of the bird flu, using a combination of genetic engineering and serial infection of ferrets.[21] Fouchier's work was also funded by Fauci.

So, the bird flu has been manipulated and tinkered with in a variety of different ways, making it both airborne (which it was not initially) and capable of cross-species infection.

A decade ago, the work of Kawaoka and others sparked widespread concern about gain of function research, as it was readily recognized that it could accidentally CAUSE a human pandemic.[22,23] As a result, the U.S. government in 2014 issued a temporary ban on gain of function research on certain viruses, which remained in place until December 2017.[24]

We've recently discovered that this ban was circumvented by Fauci, who continued to fund gain of function research on coronaviruses in China during those years. And, today, it looks as though weaponized bird flu might eventually be intentionally released to achieve the geopolitical aims of the technocratic elite, to which Gates belongs.

A Ploy to Force-Eliminate Meat Consumption?

Westbrook (the Ice Age Farmer), suspects weaponized bird flu may be released to usher in The Great Reset and Fourth Industrial Revolution, which includes the elimination of traditional farming and meat consumption in favor of patented lab-created "foods."

Indeed, millions of poultry are currently being culled in the name of food safety, and deer — a popular food among hunters — are being targeted for COVID vaccination to prevent cross-species transfer of a mutated virus.[25,26] Not surprisingly, the test being used to identify these outbreaks is the fraudulent PCR test that allowed for the fabrication of COVID "cases."

In early April 2022, North Carolina chick sellers were told they will not even be permitted to restock.[27] They're allowed to sell the chicks they already have on hand, but that's it. How long that restriction is supposed to remain in place is unclear, but the way things are going, it may well be permanent.

Jacob Thompson of Wine Press News also believes bird flu is being used as a convenient excuse to rid the market of natural beef and poultry:[28]

"… did you catch that little subtle influence and propaganda of COVID in animals transmitting to us? It is becoming clearer that that is where the narrative is heading … The wicked

handlers need to get the masses off of meats, and so, the 'solution' will be to artificially kill them off, vaccinate them to death, and mandate it be taken off the shelves."

Controlled Demolition of the Protein Supply

As noted by Westbrook, we now have mainstream media warning we may one day soon face "an apocalyptic bird flu" capable of wiping out half the world's population. Meanwhile, Gates and others have funded the creation of just such a pathogen for the last 15 years, and the U.S. Department of Defense has funded research to figure out how to attach viruses to migratory birds.[29]

Yet we're being indoctrinated to believe that lethal human bird flu, if it does emerge, did so through natural evolution. Don't be fooled. To quote Westbrook, what we're looking at is "a controlled demolition of the protein supply." There's nothing accidental or natural about it.

Fertilizer shortages are also having a devastating impact on our food supply by limiting the amount of corn and soy that can be planted this year, and these shortages in turn mean farmers cannot feed their livestock, including chickens, so egg shortages are now looming on the horizon as well.

If you still struggle to put the puzzle pieces of manufactured food scarcity, famine and The Great Reset together, just consider how easy it will be for the global cabal to control populations when they're starving to death. In a global famine, they can then present themselves as the "saviors" and hand out digital IDs that will allow you to collect a ration of processed food.

Of course, that digital ID will also function as a vaccine passport, so to get your food you'll have to take whatever vaccine they tell you to, and it will be connected to a centrally controlled programmable currency that can be confiscated if you fail to comply. The end game is simply to create such widespread calamity that the people of the world willingly surrender all rights and freedoms.

Past Bird Flu Hoaxes

In 2005, President George Bush and U.S. officials warned bird flu would kill 2 million Americans and 150 million globally. It was a ridiculous threat that never materialized, but it did further the bioweapons industrial complex. Gain of function research was funded to the tune of billions of dollars and justified as "necessary" for the development of vaccines.

However, it was really a dual use program to create bioweapons that could then enrich Big Pharma. In 2006, I became so convinced by the evidence AGAINST the possibility of a bird flu pandemic that I wrote the book "The Great Bird Flu Hoax," detailing the massive fraud involved. The book went on to become a New York Times bestseller. In it, I explained how:

- Multinational drug companies and food corporations pour billions into manipulating your perception of health and the daily news, just to increase their profits, and the health threats (and ethics breaches) they are really responsible for.
- Scientists are bought by drug companies and other big business to report whatever "research findings" they have been paid to report.
- Government is more than just complicit — it actively works with the drug companies and other stalwarts of the conventional health care paradigm, and are directly responsible for raising false alarms in order to draw your attention away from the real public health and safety issues they perpetuate.

In the years since, threats of a bird flu (or swine flu) pandemic have emerged several times, yet the outcome is always the same: Nothing. In 2009, pandemic experts used fear to hype the swine flu, causing millions to roll up their sleeves for the fast-tracked 2009 H1N1 vaccine.

It was exceptionally reactive, harming far more people than the virus itself. (Still, the injuries from the H1N1 vaccine are a drop in the bucket compared to the injuries caused by the experimental mRNA COVID shots.)

In 2013, mutated bird flu was back again, with the World Health Organization calling it "one of the most lethal" strains. But while it reportedly killed 22 in China, researchers could find no evidence of sustained transmission between people, which is a prerequisite for a pandemic flu virus. In the end, the pandemic narrative went nowhere.

May 6, 2022, I was contacted by Associated Press reporter David Klepper, who asked whether I still feel the avian flu was a hoax, (based on my NYT bestselling book "The Great Bird Flu Hoax") and whether I've changed my mind about the possibility of a human bird flu pandemic, in light of our recent experience with COVID-19 and the current outbreaks in poultry. The short answer is no, I have not.

Bird flu is heavily present in the U.S., and millions of birds are currently being culled, but the natural virus is not very transmissible or lethal to humans. If we do end up with a lethal human bird flu, there's every reason to suspect it was manmade. There's also every reason to suspect a bird flu vaccine will be either ineffective, hazardous or both. As I told Klepper in my emailed response:

"The truth is dangerous in an empire of lies … The NIH and FDA are both responsible for the development and leak of this virus [SARS-CoV-2], as well as failing to provide basic and inexpensive information that would have saved people's lives.
A two-dose injection of genetic code was promised to be 95% effective at stopping transmission of the virus, yet today four doses completely fail at preventing anyone from getting or spreading COVID-19 … Americans clearly understand that the federal government and major media have lied to them repeatedly, and are completely corrupted by the pharmaceutical companies.
The federal government has completely failed the American people and has continued to lie about gain of function research. Hundreds of bioweapons laboratories are operating around the world, and US researchers are collaborating with them utilizing NIH taxpayer funds.
They are jeopardizing millions of lives while enriching themselves and the pharmaceutical companies. Vaccine passports will be leveraged to roll out a long planned digital identification system combined with digital currencies; it will allow for complete control of transactions based on compliance and behavior.
If the bird flu becomes highly transmissible and lethal to humans, it will be an engineered virus from U.S. or Chinese government-funded biolabs."

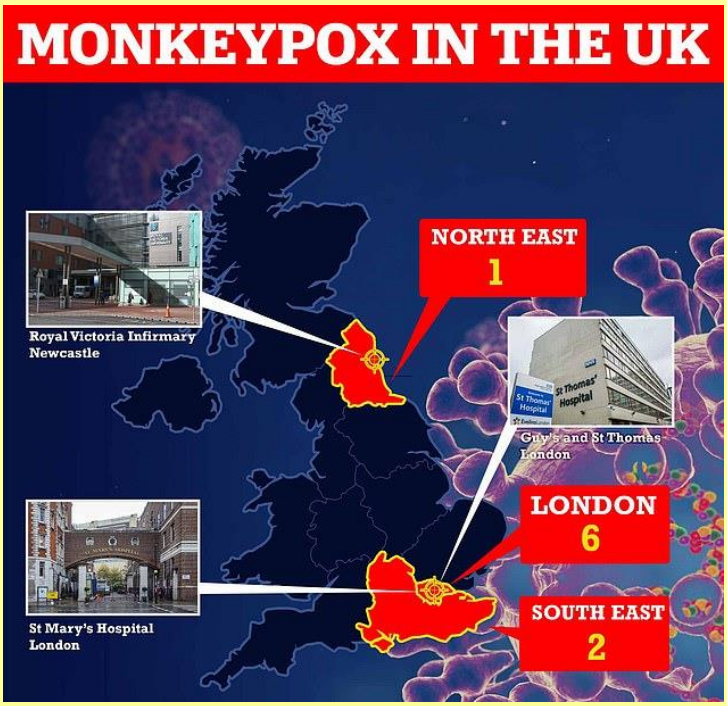
Omicron Infections, Without Vaccinations, Provide Little Immunity

In unvaccinated people, infection with the Omicron variant of SARS-CoV-2 provides little long-term immunity against other variants according to a new study. In experiments using mice and blood samples from donors who were infected with Omicron, the findings show that the Omicron variant induces only a weak immune response. In vaccinated individuals, this response-while weak-helped strengthen overall protection against a variety of COVID-19 strains. **+ MORE**

Over 40 New Monkeypox Cases Have Been Detected in Europe, Health Officials

Source: https://www.sciencealert.com/cases-of-rarely-seen-monkeypox-are-now-showing-up-in-spain-and-portugal

May 19 – Spain and Portugal have detected over 40 suspected cases of monkeypox, a viral infection rarely seen in Europe, with both outbreaks concentrated in the Madrid and Lisbon areas, officials said Wednesday.
The announcement came just days after the British health authorities said they had detected seven cases so far this month, with the World Health Organization working with the government to investigate the outbreak.



Health officials have noted some of these infections may be through sexual contact – in this instance among gay or bisexual men – which would be a new development in understanding how the virus is transmitted.

In a statement, health authorities in the Madrid region said they had detected "23 possible cases of monkeypox", indicating all of them were believed to have been transmitted through sexual activity.

"In general, its transmission is via respiratory drops but the characteristics of the 23 suspected infections point to it being passed on through bodily fluids during sex relations," the statement said, without giving further details.

"All of them are young adult males and most of them are men who have sexual relations with other men, but not all of them," Elena Andradas, head of public health in the Madrid region, told Cadena Ser radio.

Another 20 suspected cases of monkeypox – endemic in parts of Central and Western Africa – have been detected in the Lisbon region, Portugal's health ministry said in a statement.

"The cases were all among males, the majority of them young, who had ulcerated lesions," it said.

Sy mptoms of monkeypox in humans include a rash which often starts on the face then moves to other parts of the body, fever, muscle ache and chills. Most people recover from the illness within several weeks.

Transmission is usually via close contact with infected animals such as rodents and monkeys, and is limited between people. It has only been fatal in rare cases.

The UK Health Security Agency (UKHSA), a public health protection body, on Monday said it had detected four new cases after registering three cases earlier in May.

All four of the additional cases were men who have sex with men or self-identify as gay or bisexual, it said.

None have known connections with the three earlier confirmed cases, the first of which was linked to travel from Nigeria, raising fears of community spread of the virus. (**UPDATE 20/5**: 1 case in Australia; 1 suspect case | 21 cases in Spain)

Hate your face mask? There's hope

ByJon Cohen

Source: https://www.science.org/content/article/hate-your-face-mask-there-s-hope

The Airgami face mask is a twist on a popular origami design, the magic ball—also known as the dragon's egg—sliced in half. It has a large breathing space and fits tightly on the face.

May 18 — In the shipping room of his factory here, Richard Gordon pulls open the drawer of a restaurant-style convection oven to show off a tray filled with his company's new, freshly sterilized product: multicolored face masks that feature an origami design.

"I thought masks were a total horror," Gordon says. "They looked awful, felt awful, were hard to breathe in, were hot, and leaked." So he and Min Xiao, his wife, started a company named Air99 in 2016 to produce something much better.

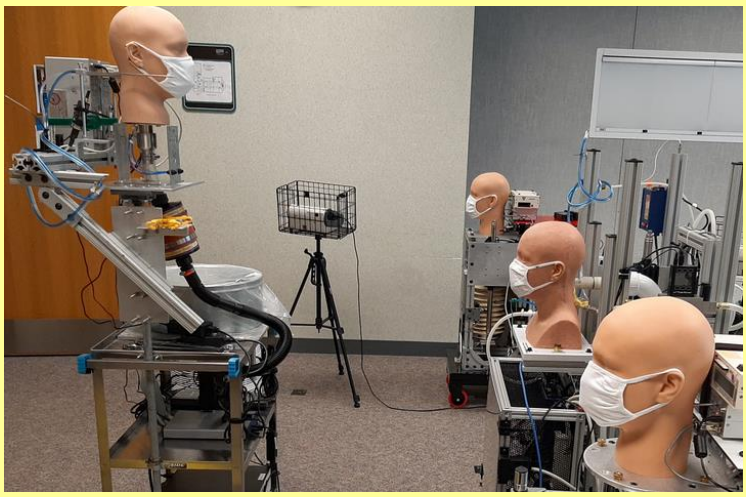
Now, their mask, named the Airgami, is vying for part of the half-million dollar purse in the final phase of the Mask Innovation Challenge, run by the U.S. Biomedical Advanced Research and Development Authority (BARDA). The contest aims to promote masks that have a better fit, function, and look than existing designs and to nurture the "rather underfunded and a little stagnant" ecosystem of mask development, says Kumiko Lippold, a BARDA pharmacologist and toxicologist who organizes the challenge.

Lippold acknowledges the contest may seem "a little bit behind the curve," given that the pandemic has a bated and many countries have dropped masking requirements. Still, there's

"a significant appetite for mask innovation," she says. SARS-CoV-2 may have surprises in store that will require people to mask up again—and there will likely be other pandemics. "We're building tomorrow's mask," Lippold says.

The 10 finalists, selected from 1448 entrants, include mom-and-pop innovators like Air99, a team at Georgetown University, and industrial giants Amazon and Levi Strauss & Co. To evaluate the masks, BARDA has teamed up with the National Institute for Occupational Safety and Health (NIOSH)—which tests and approves N95 "respirators," the type that snugly fit the face and have a high filtration efficiency—and the National Institute of Standards and Technology (NIST). BARDA plans to announce a winner in October.

With billions of people donning face masks for the first time in 2020—and complaining about their shortcomings—the pandemic has triggered a surge in mask research. In a study published in June 2021, for example, NIOSH engineer and aerosol researcher William Lindsley and colleagues compared 19 widely used face coverings by attaching them to a respiratory aerosol simulator, a mannequin headform that breathes and coughs.



William Lindsley of the National Institute for Occupational Safety and Health uses mannequin headforms to test masks. This setup simulates a classroom.National Institute for Occupational Safety and Health

All masks help, Lindsley stresses: "The two biggest misconceptions are that they don't work and that they're magic and you're protected, no matter what." But bandanas are "terrible" at both filtering inhaled air and capturing aerosols when people exhale and cough, the study found. Cloths, neck gaiters, and medical masks are much better, but still pale in comparison to NIOSH-approved N95 masks. (In Europe, the equivalent of N95s are known as FFP2 masks.)

The finalists in the BARDA challenge each offer unique improvements. In Airgami's case, beauty is important, says Gordon, an electrical and computer engineer—but that's not why he and Xiao entered the field. Their quest began well before the pandemic, when they moved to Suzhou, China, in 2011 for Xiao's new job. Pollution there was horrible, and the N95 masks they had brought, made by 3M for construction workers, didn't fit their young son. "I immediately started cutting out 3M masks and gluing them and stapling them just to shrink them down to fit him," Gordon says. "Gotta give [the] kid clean air. Very, very simple," he says.

Richard Gordon and Min Xiao decided to develop a new face mask after they couldn't find a good one to protect their young son from air pollution. "I thought masks were a total horror," Gordon says.Richard Gordon

His son's problem, coupled with the discomfort and fit issues he had with his own face coverings, led Gordon to devote himself to designing a better mask after the family moved back to the United States in 2015. He stumbled onto an origami show, *Above the Fold*, that had a "mind-blowing" piece by physicist Robert Lang, a world-renowned origami mathematician and artist. The Airgami is a twist on a popular origami design, the magic ball—also known as the dragon's egg—sliced in half, which creates a large breathing space and fits tightly on the face. The inner of three polypropylene layers has an electrostatic charge to trap particles—the heart of N95 technology. The mask is reusable, can be rinsed or disinfected with heat, and comes in four different sizes and various colorful prints, including rainbows and camouflage.

Lang, who is now on the Air99 board, helped Gordon create a computer program to automate the creasing.

Even so, each mask must be hand-assembled and sells for $29.99. But Gordon says supply can't meet demand. "The world is flooded with $1.50 masks, and there's no way we're going to compete, but they're all ugly and they don't necessarily fit great," says Gordon, who hopes to lower the price with more automation.

Another finalist, Amazon's PerfectFit Mask, also uses an origami design and comes in various fashion patterns and sizes. A company named 4C Air, co-founded by physicist and Nobel laureate Steven Chu, makes the BreSafe Transparent Mask, which aims to improve masked conversations by allowing a listener to see the speaker's lips. The hard-shell AtmoBlue mask, made by Blue Sky Labs, has built-in fans that blow incoming air across high-efficiency particulate absorbing filters and a sensor that monitors air quality for pollution. The Georgetown group developed nanoporous metal foams that are extraordinarily efficient filters, ultralightweight, and also reusable.

The hard-shell AtmoBlue mask has built-in fans that blow incoming air across filters and have a sensor that monitors air quality for pollution.Leandro Rolon

Levi Strauss took a different tack: Its mask, the Veil, offers N95-level protection with a simple design that any garment manufacturer can produce with scissors and a sewing machine—and sports the brand's world-famous logo for added coolness. There is even a face covering especially for toddlers made by PaciMask that allows parents to attach a pacifier and features cartoon characters, animals, and spaceships. (Its slogan: "It's just a mask, baby!")

NIOSH's standard N95 test assesses masks' filtration efficiency by exposing them to aerosolized sodium chloride and measuring the amount that passes through. An N95 rating means a mask filters at least 95% of "nonoily" (hence the N) particles. But for the BARDA challenge, NIOSH devised additional tests. "We got to really think about the testing innovation," says physical chemist Sandeep Patel, who heads the BARDA division overseeing the challenge. Recognizing that mask fit depends on face shape, for example, researchers designed five different-size mannequin headforms, based on the faces of nearly 4000 people. The mask challenge encourages entrants to supply analyses of how their masks fit digital versions of all five.

NIST fluid dynamicist Matthew Staymates will also test the finalists for leakage with schlieren imaging, which uses lenses and mirrors to visualize changes in air temperature. Staymates couples this with high-speed video cameras, which allows him to capture air escaping from the edges of masks when people breathe. The major challenge confronting maskmakers isn't new materials, but design, Staymates says. "We can make fabrics that have amazing filtration efficiency, and the N95 is a great example," he says, but "how can we get smart about designing shapes that can really seal well so my glasses don't fog up?"

Gordon and Xiao see a bright future for their company even after the pandemic ends. "We started out as an antipollution mask, and I think it is still the core business," Xiao says. Still, COVID-19—and becoming a BARDA finalist—has given the company a boost they never imagined, Gordon says: "The pandemic was the greatest marketing awareness campaign of all history."

Jon Cohen earned his B.A. in science writing from the University of California, San Diego. He is a senior correspondent with *Science* and has published widely in other magazines and newspapers—including *The New Yorker*, *The Atlantic*, *The New York Times Magazine*, *Smithsonian*, *Technology Review*, *Outside*, *Slate*, *Wired*, and *Surfer*—as well as publishing four nonfiction books on scientific topics. He specializes in covering biomedicine with a focus on HIV/AIDS, other infectious diseases, immunology, vaccines, and global health, and has reported extensively on genetics, primate research, evolution, bioterrorism, research funding, ethics, reproductive biology, credit battles, and the media itself. He has appeared on several national TV and radio programs, including the *PBS NewsHour*, *Today*, *Larry King Now*, and *NPR's Fresh Air*, *Marketplace*, and *All Things Considered*. Mr. Cohen has received frequent recognition for his contributions to science journalism, and his articles have twice been selected for *The Best American Science and Nature Writing* anthology (2008 and 2011). His books and stories have won awards from the National Association of Science Writers, the Council for the Advancement of Science Writing, the American Society for Microbiology, the American Society of Tropical Medicine and Hygiene, the Global Health Council, the Pan American Health Organization, the National Academy of Sciences, the Treatment Action Group, and the Gaia Vaccine Foundation.

Here's what we know about North Korea's COVID outbreak — and its ability to handle it

Source: https://www.npr.org/2022/05/19/1099877279/north-korea-covid-outbreak

May 19 – It's been more than two years since the pandemic began and in that time North Korea has claimed to have had zero COVID cases. But now the country's government has said it is experiencing its first outbreak, though it is still not labeling what people have as COVID.

Employees spray disinfectant and wipe surfaces as part of preventative measures against the coronavirus at the Pyongyang Children's Department Store in March. (Kim Won Jin/AFP via Getty Images)

On Wednesday, North Korean state media said more than 1.7 million people had experienced fevers and 62 people had died since late April — but those numbers are hard to confirm, according to journalist Jean Lee, who specialized on North Korea.

North Korea does not have enough COVID tests to confirm that all the patients have the virus, and the country of 26 million people has still not reported any official cases to the World Health Organization, Lee said. The lack of tests and the fact that there are no outside observers inside North Korea make getting an accurate picture of what's happening inside the country — and confirming all cases of fever are indeed the coronavirus — extremely difficult.

"Kim Jong Un is painting this as the first outbreak of COVID in North Korea, but I find that very hard to believe because North Korea shares a very long border with China, and there would have been many people going across the border between China and North Korea in

the early weeks of the outbreak in 2019 and early 2020," Lee said. "And so it's hard to imagine that the virus didn't didn't make its way to Pyongyang."

A child's temperature is checked and hands sanitized before entering the Pyongyang Children's Department Store as part of preventative measures against COVID. (Kim Won Jin/AFP via Getty Images)

Why North Korea would admit to an outbreak now

Lee said that acknowledging a COVID outbreak now could be a political move by Kim.

"He has spent his energy shutting the world out during a period when he needed to focus on boosting his legacy, and now I think his attention is shifting," she said. "And part of this might be a calculation to re-engage with the outside world."

It is also possible that COVID has reached a point where it is no longer feasible for North Korea to ignore or deal with it on its own, Lee said. But it could be the case, she added, that Kim sees the election of Yoon Suk Yeol as South Korea's new president, and an upcoming summit between Yoon and President Biden, as an opportunity to re-establish communication, especially if North Korea says it has an outbreak.

North Korea has refused help in the past though. The country declined millions of vaccines that were offered by the U.N.-backed COVAX initiative earlier in the pandemic, and as NPR's Anthony Kuhn reports, the country has not publicly accepted offers of vaccines and medical assistance from China and South Korea since this outbreak began.

"There is speculation that they don't trust the drugs, or they don't want to be seen to be depending on outside help," Kuhn said.

Can North Korea handle an outbreak on its own?

North Korea's government has declared a nationwide emergency, and a lockdown has been instituted within the country as its military is working to distribute medicine.

This, along with outspoken criticism from Kim of how North Korean officials have handled the outbreak, raises questions on whether the country has the medical infrastructure to respond to the crisis.

Previously, North Korean officials have said they are not well-equipped to deal with this, Kuhn said, noting that many hospitals in rural areas of the country lack ventilators and other basic equipment, as well as essential utilities including water and electricity.

There's also the issue of malnutrition in the country, which is a chronic issue facing nearly 40% of the population.

"They don't have the kind of nutrients that the average human being needs to withstand illness, and on top of that they're not vaccinated," Lee said. "It's hard for me to imagine how without vaccination, without medication, without robust health, how they will survive even a milder variant."

Monkeypox outbreak progress

Source: https://docs.google.com/spreadsheets/d/1CEBhao3rMe-qtCbAgJTn5ZKQMRFWeAeaiXFpBY3qbHE/edit#gid=0

Monkeypox: What We Know So Far About the Outbreak

By Julianna LeMieux, PhD (senior science writer for GEN)

Source: https://www.genengnews.com/news/monkeypox-what-we-know-so-far-about-the-outbreak/

May 20 – In the past week, a virus other than SARS-CoV-2 has started making headlines. A monkeypox outbreak, first detected in the U.K. two weeks ago (the first case was reported on May 7), is causing concern among public health officials. Here is what we know so far.

One of the main reasons for alarm is the sharp increase in the number of reported cases. Moritz Kraemer, PhD, associate professor at the University of Oxford and the director of the Oxford Martin Program on pandemic genomics, is part of a group maintaining a running list of monkeypox cases reported around the world. In the afternoon of May 19, the tally was 75 (confirmed and suspected) cases across seven countries (England, Portugal, Spain, United States, Canada, Sweden, Italy). Later that night, the number had jumped to 107.

One case has been reported in the United States (in Massachusetts) and New York City is currently investigating a possible case.

Another cause for concern is that the virus is spreading from person to person. Although the first reported case had recently traveled to Nigeria, an area affected by monkeypox, many of the recently infected people had not traveled. This indicates human-to-human transmission within the community.

Perhaps the biggest question on everyone's mind is how the virus is transmitted from person to person. And, how easily transmissible is it. Andrea McCollum, an epidemiologist in the CDC's Poxvirus and Rabies Branch told *STAT* that the virus is transmitted through contact with a patient's lesions and/or materials that contact the lesions—like clothes and bed linens. It is presumed that the virus spreads through respiratory droplets as well, McCollum estimates, due to lesions in the mouth.

Marion Koopmans, DVM, PhD, head of the Erasmus MC department of viroscience, tweeted that the outbreak is "starting to be worrisome," because the cases are in different countries. This is unusual, she said, because "monkeypox is not that contagious."

Monkeypox and smallpox

Monkeypox is in the orthopoxvirus genus—the same genus that includes variola virus, the causative agent of smallpox.

The last natural outbreak of smallpox in the United States was in 1949. The last cases in the world were in the late 1970s. And, smallpox was declared eradicated during the 33rd World Health Assembly on May 8, 1980.

Monkeypox was first discovered in 1958 when two outbreaks of a pox-like disease occurred in colonies of monkeys kept for research.

The first human case of monkeypox was recorded in 1970 in the Democratic Republic of the Congo.

Because of the similarity in the viruses, the smallpox vaccine should have cross-protection against monkeypox. Some data suggest that the smallpox vaccine is at least 85% effective in preventing monkeypox.

Indeed, the mobilization of smallpox vaccines has already started.

The **Denmark-based vaccine company Bavarian Nordic** announced on May 18, that the U.S. Biomedical Advanced Research and Development Authority (BARDA) has exercised the first options under a contract to manufacture doses of the Jynneos smallpox vaccine.

This will allow the first doses of this version to be manufactured and invoiced in 2023 and 2024.
Experts may not have all of the answers yet. But they seem to agree that the number of cases, and countries reporting monkeypox cases, is bound to increase.
Bill Hanage, PhD, associate professor at Harvard T. H. Chan School of Public Health, tweeted that "the clusters of monkeypox infections that are turning up should be treated with the utmost seriousness."

The basics

Symptoms: Monkeypox begins with fever, headache, muscle aches, backache, swollen lymph nodes, chills, and exhaustion.
Within days after the appearance of fever, the patient develops a rash, often beginning on the face, then spreading to other parts of the body.
The lesions progress through the following stages before falling off: macules, papules, vesicles, pustules, scabs.
The illness typically lasts for 2−4 weeks.
Incubation period: The incubation period (time from infection to symptoms) for monkeypox is usually 7−14 days but can range from 5−21 days.
Mortality rate: Monkeypox has been reported to cause death in as many as **10% who contract the disease, in Africa**.
Natural reservoir: Unknown.

On Biological War

By Al Mauroni
Military Review | May-June 2022
Source: https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/May-June-2022/Mauroni/

Members of the Alabama National Guard's 46th Civil Support Team work a threat scenario created by Dugway Proving Ground's Special Program Division mobile training teams 18 June 2014. (Photo courtesy of the U.S. Army)

In 1990, the U.S. political and military leadership was significantly challenged by the possibility that Iraq, having the fourth largest offensive chemical and biological weapons program in the world at the time, might use those unconventional weapons against U.S. forces and its allies massing in Saudi Arabia. For all practical purposes, there was no real capability to rapidly detect and identify the deliberate release of anthrax spores or other biological weapons, and the U.S. military did not have sufficient vaccines or therapeutics for such an event. Due to this severe neglect to biological defense, former Secretary of State James Baker gave a formal letter to the Iraqi foreign minister stating that Iraq would "pay a terrible price" if it used chemical or biological weapons against the U.S.-led coalition.[1] Had Saddam Hussein decided to use biological weapons, it could have caused thousands of casualties. Fortunately for U.S. forces, he did not have a significant biological weapons capability and there was no use of those weapons.
Despite dark predictions of both nation-states and violent extremist organizations planning biological attacks against the nation, there has been no test of the U.S. military's biodefense capability. A "biological taboo" resulting from decades of arms control discussions has held, despite the lack of a verification regime behind the Biological Weapons Convention (BWC).[2] Concerns about Iraq's biological weapons capability in 2003 evaporated a year later, with nothing substantive to find. Despite concerns about a domestic terrorist biological incident following the anthrax attacks in 2001,

there has never been a mass casualty attack caused by biological organisms in the United States since then. The Nation's recent public health challenges in addressing the 2019 coronavirus pandemic (COVID-19) have caused questions as to whether the U.S. military is sufficiently prepared for an adversary that might be emboldened to use biological weapons against U.S. national security interests.

Despite the lack of any biological attacks or even threat of attacks over the past twenty years, the potential impact of a large-scale use of a contagious disease concerns enough people to call for new national strategies and improved response capabilities for biological threats. Current strategies aim to mitigate natural disease, to regulate biological research associated with the more hazardous biological diseases, and to improve the U.S. public health system to better respond to biological threats.[3] Yet despite the development of four national strategies for national biodefense over the past twenty years, the U.S. government has not significantly advanced its capabilities for protecting against and responding to biological threats, defined as including natural diseases, deliberate biological releases, and laboratory accidents. Despite the high-level attention to this threat, assessments of the Nation's capability to prepare for deliberate biological threats have not, however, been positive.

Unclassified assessments from the State Department and the Department of Defense (DOD) suggest that China and Russia could have a biological weapons capability, as could North Korea and Iran.[4] The lack of any actual use of biological weapons against the United States has perhaps diminished the concern that potential weaknesses exist. In the event of a future conflict with great powers, there is the chance that biological warfare could emerge as a significant threat, perhaps in a form unrecognized from Cold War experiences. Prior to attempting the implementation of yet another strategy to counter biological threats, the Army needs to establish the context of how adversaries would deliberately use biological threats against U.S. national security interests. Once a rational appreciation of the threat is developed, one can then create a defense strategy that directly addresses deliberate biological releases. Importantly, such a strategy needs to be resourced and implemented to address the future challenges of a deliberate biological release, understanding that natural infectious diseases pose a competing priority.

What's the Threat Today?

Counter to the hypothesis that the pandemic outbreak has revealed potential vulnerabilities to biological weapons, COVID-19 has not in fact acted like a biological weapon. As a result, the lessons that apply from this contemporary crisis toward a biological weapons attack are few. A pandemic outbreak, affecting the general population over a year's time, requires a different approach than military forces protecting themselves from a focused deliberate biological attack. COVID-19 is not lethal enough and does not incapacitate people quickly enough to qualify as a potential weapon, despite the more than 750,000 deaths caused over twenty-four months across the United States.[5] A biological disease that does not significantly impact young, healthy people and that is easily countered by a national vaccine program is not prime material for a weapon system. COVID-19 may have slowed down economic activities, but it is not an existential threat to the U.S. government. Despite the potential impact on national security, pandemic diseases are best addressed separately from biological defense concepts.

The U.S. military does anticipate the potential use of biological weapons in combat operations. In that light, the Department of Defense has a counter-weapons of mass destruction (WMD) strategy and chemical, biological, radiological, and nuclear (CBRN) defense concept to guide its efforts to prevent, protect against, and respond to adversaries using biological weapons.[6] The ratification of the BWC has significantly reduced the number of potential adversaries that might use traditional biological warfare (BW) agents, allowing one to focus on particular actors and military scenarios. The traditional biological warfare agents such as anthrax, pneumatic plague, smallpox, and tularemia are still potent candidates for future warfare. However, the employment of said weapons may look very different than envisioned during the Cold War. North Korea may be the exception to this statement, as it is unclear how that nation would use unconventional weapons, but its operational concept for warfare appears to be based in an industrial age, massed firepower approach, similar to what NATO might have anticipated in the 1970s.[7]

China and Iran are assessed as not complying with the BWC, and Russia and North Korea are believed to have retained offensive biological weapons programs.[8] While we can understand the biological warfare model that North Korea might employ, this does not necessarily apply to Russia's and China's concepts of employment for biological weapons. The Cold War model of using massive amounts of biological agents against troop concentrations, major population centers, and large military sites such as air bases and seaports requires large-scale production, storage, and testing capability. As Russia and China have modernized their nuclear and conventional forces, they have also changed their approach toward military confrontations with the United States and partner nations. While preparing for the possibility of total war, both countries have focused on conducting regional operations against U.S. allies using methods that fall below the threshold of open conflict.[9] Their nuclear arsenals cast a coercive shadow over regional operations that allow those nations to aggressively push and attain their political objectives. As a result, a clandestine biological weapons program can offer them a capability to perform single, small-

scale chemical or biological weapons attacks on focused targets (facilities or individuals) while claiming to be compliant with the BWC.[10]

The former Soviet Union had a massive biological warfare program, unmatched by any historical measure. Despite extensive documentation of this program, the Russian Federation has not fully acknowledged the former Soviet Union BW program. The State Department has gone so far as to designate specific Russian government facilities as "acting contrary to the national security or foreign policy interests of the United States" through their association as military defense facilities associated with a BW research program.[11] These are not recent concerns. Analysts will point out that in 2012, then Prime Minister Vladimir Putin talked about creating "weapon systems that use different physical principles … (beam, geophysical, wave, genetic, psychophysical and other types of weapons)."[12] However, it is unclear that this attributed quote referred to a return to developing biological weapons to support military conflict. In 2019, Putin directed a budget of 220 billion rubles (or $3.3 billion) toward the development of genetic technologies that could support a wide range of applications (biomedical, agricultural, or biodefense).[13]

China's People's Liberation Army (PLA) soldiers conduct a nuclear, chemical, and biological warfare exercise November 2021 in the Tibet Military Region, according to PLA news sources. The People's Republic of China has an extensive program for studying virulent biological agents for the reputed purpose of medical research but which also have potential for military use. (Photo courtesy of the PLA)

At the same time, the Russian government has claimed that the United States is building offensive BW laboratories in countries surrounding Russia through the Biological Threat Reduction Program. For instance, the "Lugar Center for Public Health Research" in Tbilisi, Georgia, was funded by U.S. defense funds, but its intent is to promote health security against natural infectious disease outbreaks.[14] In response to U.S. government accusations of China's role in the COVID-19 outbreak, Chinese government officials have recently echoed the same claims that the U.S. government has created biological weapons near their borders.[15] This type of disinformation campaign falls squarely in the "gray zone" set of tools. Both China and Russia have ignored international efforts to prevent the proliferation of unconventional weapons technology and materials.

China's position as one of the leaders of the global bioeconomy increases its potential for realized or latent advanced biological warfare capabilities. Beijing appears committed to becoming a leader in biotechnology, which holds the promise of myriad public health applications. Yet, many biotechnology applications are dual-use, capable of delivering both public health benefits and advances in biological warfare capabilities. As one top U.S. expert noted, China "is pursuing a very aggressive strategy to become the world leader in biotechnology."[16] Sustained public and private investment in synthetic biology technologies needed for DNA sequencing and synthesis as well as gene editing have enabled China to develop a wide array of dual-use biotechnologies in the field of synthetic biology. Many experts anticipate that synthetic biology advances will enable the development of "new and novel biomaterials" to include advanced bioweapons.[17] As a 2020 Brookings Institution study noted, "The determination of China's one-party state to become a leading player in biotechnology is reflected by the rapid growth in investment in the sector. Some estimates claim that collectively, China's central, local, and provincial governments have invested over $100 billion in life sciences research and development."[18] China's sustained and sizeable government investment in domestic biotechnology has created an industrial base capable of developing and manufacturing a range of extant and novel biological warfare agents.

And while the possibility of developing novel biological warfare agents is present, it is more probable that China wants to use its biotechnology lead to produce superior commercial pharmaceuticals and to enhance its military forces. There is always speculation that advances in the life sciences will drive an evolution in biological weapons, making them more lethal, more environmentally hardy, more targeted toward specific populations, or more able to confound contemporary detection systems. This belief used to be rooted in the 1970s rise of biotechnology, and then it was 1990s genetics driving the concerns. Today, it is the promise (and dangers) of synthetic biology. And while it is true that one could always improve

characteristics of certain biological weapons, there are significant drawbacks as to such an approach.[19] Assuming that an adversary might develop altered biological weapons to be more operationally relevant, this would still be a violation of treaty (if it were China or Russia) and international norms. Modifying a biological organism to enhance its resistance to antibiotics might in turn reduce other desired characteristics, such as its lethality or dissemination qualities. Any use of a genetically modified organism would run the risk of direct attribution to a particular source.

Western military forces lack the capability to detect the deliberate use of biological weapons until after exposure. In addition, U.S. forces lack vaccines for a number of traditional biological warfare agents, let alone engineered diseases.[20] Any nation with an advanced industrial capability can easily develop biological agents that can damage or destroy crops or livestock, in addition to targeting humans. There is no need for an overly sophisticated engineered biological warfare agent à la the latest James Bond movie, *No Time to Die*. And even if military forces had tactical biological detectors that could identify all biological warfare agents in a timely enough fashion to put on protective masks, traditional biological weapons would still be an effective strategic weapon against a civilian populace, its livestock, or cropland. There is no possibility that the United States and its Western allies can make biological weapons obsolete.[21] At the same time, we do not need to overexaggerate the threat of biological weapons as some Hollywood scripts portray them.

What's the Right Concept?

There are several options that could be explored. The traditional approach has been to develop chemical and biological defense as a combined operational concept. Both chemical and biological warfare agents use similar delivery systems and target the human body's physiological response to hazards. Under the larger construct of countering WMD threats, the U.S. government can engage in arms control negotiations to limit biological weapons use, use preemptive strikes to target a nation's WMD capability, and respond to its use with protective equipment that limits the impedance of combat operations. None of these options are singular to biological threats. A second option is to task the medical community to identify and respond to both biological warfare attacks and natural disease outbreaks while limiting reliance on biological detectors and technical experts. The U.S. Air Force, for instance, endorses a biological defense concept that is separate from chemical defense and that relies on the medical community for initial detection and identification.[22] This is a very specific focus on biological threats that includes a conscious decision to limit investments in people and equipment in response to a lower probability of deliberate biological attacks. The Air Force concept is a subset of its counter WMD operations, as the Army's CBRN defense efforts are.

New York Army National Guard Sgt. Casey Taylor, 2nd Weapons of Mass Destruction-Civil Support Team (2nd WMD-CST), and New York Air National Guard Master Sgt. Roger Yurko, 109th Airlift Wing emergency manager, investigate possible contamination 14 November 2019 during a training exercise at Stewart Air National Guard Base, New York. The 2nd WMD-CST supports civil authorities at man-made or natural disasters by identifying chemical, biological, radiological, and nuclear substances; assessing the consequences; and advising on response measures. (Photo by Master Sgt. Sara A. Pastorello, U.S. Air National Guard)

The U.S. Army recently released a biological defense strategy that calls for the "synchronized implementation" of both biological warfare defense and infectious natural diseases across the Army.[23] Interestingly, the office responsible for implementing this

strategy is the U.S. Army Nuclear and Countering Weapons of Mass Destruction Agency, not the Army's chemical-biological defense specialists and not the Army's medical experts who respectively own those areas of expertise. It is not immediately clear as to whether this strategy calls for the development of a stand-alone biological defense concept that combines capabilities for both infectious natural diseases and deliberate biological releases, or just a single agency that manages two very different concepts (counter-WMD and force health protection) that have a common scientific origin. The strategy details four "lines of effort" that include

- developing and managing talent and facilities that address biological threats;
- maintaining a biological common operating picture and awareness of biological defense forensics;
- building a readiness posture that includes protection, response, and training for biological defense capabilities; and
- directing modernization efforts for biological defense concepts and doctrine.

Will this new governance structure fundamentally change how the Army does biological defense? Given policy and budget direction, probably not.

This is not the first time a military agency has suggested moving all biodefense activities into a portfolio for medical countermeasures for infectious diseases. There is an almost instinctual movement toward putting medical experts in charge of developing capabilities for countering all biological threats; however, that does not work for two reasons.

First, given a collection of biological threats—whether natural, deliberate, or accidental—medical leaders will always consider infectious natural diseases the most important concerns because of the large numbers of service members and their dependents who get sick from natural diseases. And there are a lot of infectious natural diseases to address. In 1990, the U.S. military found itself without adequate vaccines for anthrax and botulin toxin when it was preparing to face an Iraqi military force that had an active chemical and biological weapons program. This was due to a deliberate decision to deprioritize research and development for biological warfare agents and focus instead on countermeasures for natural diseases such as chikungunya virus and diarrheal diseases.

Second, while the response to biological threats has often had a common core, the prevention and protection against biological threats certainly does not. While one can try to deter adversaries from using biological weapons, Mother Nature cannot be deterred. Protecting military forces from biological weapons during combat operations requires a completely different approach than protecting a military base's population from natural diseases. This requires a level of nuance to understand that a single biodefense concept cannot protect fundamentally different populations with different requirements and facing fundamentally different biological threats. There is a reason why there are different budgets and authorities for dealing with biological warfare agents, natural biological diseases, and biological research laboratory accidents.

Problems with a Centralized Biodefense Enterprise

The primary purposes of any strategy document are to identify a specific mission or program, to identify policy objectives that should drive discrete programs, and to offer a plan to achieve those objectives. In the military, this is called "ends, ways, and means." Ideally, a strategy will also aid decision makers in moving resources toward those goals that require funding to achieve those objectives. So, the problem with a biological defense strategy that aims to address all biological threats—whether at the Army, the DOD, or national level—is that there are multiple agencies with budget elements who are already directed to address specific biological threats. I will argue that at least five biological threat sectors require consideration in any biological defense strategy:

- disease prevention as a function of public health,
- bioterrorism response as a function of homeland security,
- military biodefense as a function as countering WMD,
- biosurety as a function of laboratory practices, and
- biosecurity and biosafety as a function of agricultural and food industries.

None of these are new security concerns. Each has a dedicated government agency that focuses on a distinct threat using a congressionally approved budget. Because each biological threat sector already has a lead agency and agenda to pursue, the question comes as to what a centralized biological defense strategy would change or impact the direction of federal government or military biodefense programs.

Public health efforts addressing infectious biological diseases, to include aspects of disease prevention in the military's force health protection program, have been around for more than one hundred years. One of the challenges in the U.S. public health program is that it is federalized, meaning that states and local jurisdictions implement public health programs while the federal government provides research and funding for specific purposes. The Centers for Disease Control and Prevention (CDC) and the National Institutes of Health represent the largest government agencies in this area, putting tens of billions of dollars against infectious disease research, surveillance, and response. Within the military, the

Army's Medical Research Institute for Infectious Diseases has a research and development program for infectious diseases to address potential biological threats to service members in U.S. and overseas theaters. Top threats include tuberculosis, measles, influenza, pneumonia, and malaria.

Bioterrorism response is a little more nebulous, since we have not seen a terrorist group successfully use a biological hazard to cause mass casualties in the United States since 1984. However, following the 2001 Amerithrax incidents, the concern that they might has thrown a few billion dollars a year toward the Department of Homeland Security and Department of Health and Human Services to develop response plans for the possibility.[24] The DOD needs to consider biological terrorism within its installation force protection plans, but for the most part, it is not an integral part of that effort due to the very low probability of such an incident. The DOD does have a massive CBRN Response Enterprise that would assist states and cities in any federal response to a biological terrorist incident. The top (realistic) biological threats usually include salmonella, ricin, botulinum toxin, sewage, and tainted body fluids.

Military biodefense has focused on protecting U.S. forces from biological warfare agents developed by adversarial nation-states for the purpose of combat operations. We have always envisioned biological weapons attacks as large-area coverage, mass casualty events on the battlefield. Because of technical challenges, military biodefense capabilities were largely lacking during the 1991 Persian Gulf conflict, leading to a crash program in the mid-1990s to develop biological detectors and medical countermeasures for the services. Biological detection and vaccines were more readily available in 2003 as U.S. forces prepared for possible Iraqi biological weapons use. There is a central program office that manages all DOD biological defense programs, receiving maybe a half billion dollars a year for funding. Their top threats include anthrax, pneumonic plague, smallpox, tularemia, and brucellosis. The DOD's Biological Threat Reduction Program, which is more of an effort to secure other nations' laboratories and hospitals than biodefense, accounts for less than a $300 million in annual funding over the past decade.[25]

Biosurety addresses the security and safety of laboratory research labs both across the United States and within the U.S. military. Unlike traditional biodefense efforts, biosurety is more about keeping biologicals safe from humans, as opposed to the other way around. The threat includes both the possibility that a researcher on the inside might deliberately or accidentally release a dangerous biological organism, or that an outsider might try to break in and steal them. There is also the danger of natural disasters or externally derived accidents to consider. The U.S. Army has had biosurety failures that resulted in CDC shutdowns at its Dugway Proving Ground (in 2015 due to anthrax shipments) and Fort Detrick laboratories (in 2019 due to unsafe laboratory practices). While the CDC has some oversight role for a small set of select agents and toxins, in general, the CDC can only provide suggestions on how the U.S. research and development community should implement good business practices. This area is not well funded (maybe $500 million/year) or overseen from the federal level. The top threats for biosurety are too varied for listing, but in general, accidents are largely limited to individual researchers and not the general community surrounding a biological research lab.

Biosecurity and biosafety challenges within the agricultural and food industries have been of two parts. First, many facilities have significantly large amounts of livestock or crops to protect against the introduction of any foreign disease that might wipe out their livelihood. In addition, foreign pests or animals could displace or eliminate native animals and crops. Second, there is the challenge of regulating food products as they are moved from the farm to the table, as the saying goes. Federal regulations aim to ensure that agricultural products used in meal production are both safe and accurately labeled. Both the Food and Drug Administration and U.S. Department of Agriculture have responsibilities to oversee this area, in addition to the Customs and Border Patrol. There is not a significant DOD equity in this area other than ensuring that meals prepared for the field are safe and free of contamination. Because Congress is very interested in ensuring that the public has safe food and a variety of different foods, this area gets funded between $3 billion and $4 billion a year. Its biological threats of concern include foot-and-mouth disease, swine flu, avian flu, wheat rust, and invasive species such as Asian carp, zebra mussels, cane toads, and brown marmorated stink bugs.

This is just the tip of the challenge of trying to address all biological threats—natural, deliberate, and accidental—under one Army, DOD, or national strategy. There are more complex discussions as to what would constitute a national biosurveillance effort—surprisingly, this would not be solely focused on infectious biological diseases to humans, but also include diseases affecting animals and plants, as well as chemical or radiological hazards to any biological organism. There is the challenge of addressing the impact of future technologies such as "gain-of-function" and synthetic biology. Even after we identify all of the potential issues that surround "biological threats," there is the question of who ought to lead the effort. The public health community claims that if it were better funded, it could address all natural disease outbreaks as well as respond to biological terrorism. The national security community feels that it needs to have a larger voice in this effort, given that these are foreign threats that impact the armed forces and other U.S. national security interests. And given the national security community's funding and ability to quickly form new project offices, they could very well dominate the discussion, which could result in different priorities than what the public health community sees as important.

Concluding Thoughts

The military's primary concern should be on deliberate biological threats, but there is no question that it has been distracted by COVID-19 and the general topic of natural disease outbreaks. If the DOD's Chemical-Biological Defense Program decides to move from working on countermeasures to biological warfare agents and focus instead on "threat-agnostic" systems that address all biological threats, the military will not get necessary detectors, protective ensembles, medical vaccines, or decontaminants for biological warfare agents due to the larger number and greater impact of natural infectious diseases. This is, in essence, what happened in the 1980s; because the military medical community was focused on research and development for infectious diseases and not biological warfare agents, U.S. forces were unprepared for biological warfare in 1990.[26]

Military concepts of future war assure us that biological and nuclear warfare are expected threats to U.S. forces.[27] In the case of a conflict with North Korea, it may not look that different than Cold War concepts of massive, large-coverage attacks on U.S. military bases. In the case of China and Russia, it is less clear what the future of biological war will be. As technology such as drone swarms, artificial intelligence, and synthetic biology continue to mature, the shape of biological warfare threats will evolve. One can assume that the traditional biological warfare agents will still be viable candidates, or possibly enhancements on their natural forms. Terrorist use of biological hazards may be limited to crude toxins and improvised delivery systems—still a threat to installation force protection measures, but not necessarily a mass casualty event. This future operating environment requires us to focus on enhancing the survivability of critical infrastructure—in particular, command and control, power projection, and logistics bases—and the resiliency of military operations while impacted by biological weapons.

The only way to succeed in moving forward in a future biological defense posture is not, then, to dilute the Army's efforts by trying to manage the development of defensive capabilities for all natural disease outbreaks and deliberate biological attacks under a single general construct. There needs to be a laser-sharp focus on both pandemic preparedness and biological defense during combat operations. In addition, the DOD needs to ensure that its biological research and development laboratories have the best practices in place to avoid future shutdowns due to biosurety challenges. This is not an either/or discussion nor is it the time to radically revise how military forces accomplish biological defense. Instead, Army leaders need to engage in these discussions, despite the complicated technical nature of the topic, and ensure that future operations can be maintained despite the threat of biological weapons use.

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

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Monkeypox goes global: why scientists are on alert

Source: https://www.nature.com/articles/d41586-022-01421-8

May 20 – The monkeypox virus (shown here in a coloured transmission electron micrograph) is closely related to the smallpox virus.Credit: UK Health Security Agency/Science Photo Library

More than 120 confirmed or suspected cases of monkeypox, a rare viral disease seldom detected outside of Africa, have been reported in at least 11 non-African countries in the past week. The emergence of the virus in separate populations across the world where it doesn't usually appear has alarmed scientists — and sent them racing for answers.

"It's eye-opening to see this kind of spread," says Anne Rimoin, an epidemiologist at the University of California Los Angeles, who has studied monkeypox in the Democratic Republic of the Congo for more than a decade.

Called monkeypox because researchers first detected it in laboratory monkeys in 1958, the virus is thought instead to transmit from wild animals such as rodents to people — or from infected people. In an average year, a few thousand cases occur in Africa, typically in the western and central parts of the continent. But cases outside Africa have been limited to a

handful that are associated with travel to Africa or with the importation of infected animals. The number of cases detected outside of Africa in the past week alone — which is all but certain to increase — has already surpassed the number detected outside the continent since 1970, when the virus was first identified as causing disease in humans. This rapid spread is what has scientists on high alert.

But monkeypox is no SARS-CoV-2, the coronavirus responsible for the COVID-19 pandemic, says Jay Hooper, a virologist at the US Army Medical Research Institute of Infectious Diseases in Fort Detrick, Maryland. It doesn't transmit from person to person as readily, and because it is related to the smallpox virus, there are already treatments and vaccines on hand for curbing its spread. So while scientists are concerned, because any new viral behaviour is worrying — they are not panicked.

Unlike SARS-CoV-2, which spreads through tiny air-borne droplets called aerosols, monkeypox is thought to spread from close contact with bodily fluids, such as saliva from coughing. That means a person with monkeypox is likely to infect far fewer close contacts than someone with SARS-CoV-2, Hooper says. Both viruses can cause flu-like symptoms, but monkeypox also triggers enlarged lymph nodes and, eventually, distinctive fluid-filled lesions on the face, hands and feet. Most people recover from monkeypox in a few weeks without treatment.

On 19 May, researchers in Portugal uploaded the first draft genome of the monkeypox virus that was detected there, but Gustavo Palacios, a virologist at the Icahn School of Medicine at Mount Sinai in New York City, emphasizes that it's still a very early draft, and more work needs to be done before drawing any definitive conclusions.

What researchers can tell from this preliminary genetic data is that the monkeypox virus is related to a viral strain predominantly found in western Africa. This strain causes milder disease and has a lower death rate — about 1% in poor, rural populations — compared with the one that circulates in central Africa. But exactly how much the strain causing the current outbreaks differs from the one in western Africa — and whether the viruses popping up in various countries are linked to one another — remains unknown. Answers to those questions could help determine if the sudden uptick in cases stems from a mutation that allows this monkeypox virus to transmit more readily than those of the past, and if each of the outbreaks traces back to a single origin, says Raina MacIntyre, an infectious disease epidemiologist at the University of New South Wales in Sydney, Australia. Unlike SARS-CoV-2, a rapidly-evolving RNA virus whose variants have regularly eluded immunity from vaccines and prior infection, monkeypox virus is a relatively large DNA virus. DNA viruses are better at detecting and repairing mutations than RNA viruses, which means it's unlikely that the monkeypox virus has suddenly mutated to become adept at human transmission, MacIntyre says.

'Deeply concerning'

Still, for monkeypox to be detected in people with no apparent connection to one another suggests that the virus might have been spreading silently — a fact that Andrea McCollum, an epidemiologist who heads the US Centers for Disease Control and Prevention poxvirus team calls "deeply concerning".

Unlike SARS-CoV-2, which can spread asymptomatically, monkeypox does not usually go unnoticed when it infects a person, in part because of the skin lesions it causes. If monkeypox could spread asymptomatically, it would be especially troubling because it would make the virus harder to track, McCollum says.

Another puzzle is why almost all of the case clusters include men aged 20–50, many of whom are gay, bisexual and have sex with men (GBMSM). Although monkeypox isn't known to be sexually transmitted, sexual activity certainly constitutes close contact, Rimoin says. The most likely explanation for this unexpected pattern of transmission, MacIntyre says, is that the virus was coincidentally introduced into a GBMSM community, and the virus has continued circulating there. Scientists will have a better idea of the origin of the outbreaks and the risk factors for infection once an epidemiological investigation is complete, which can take weeks and involves rigorous contact tracing.

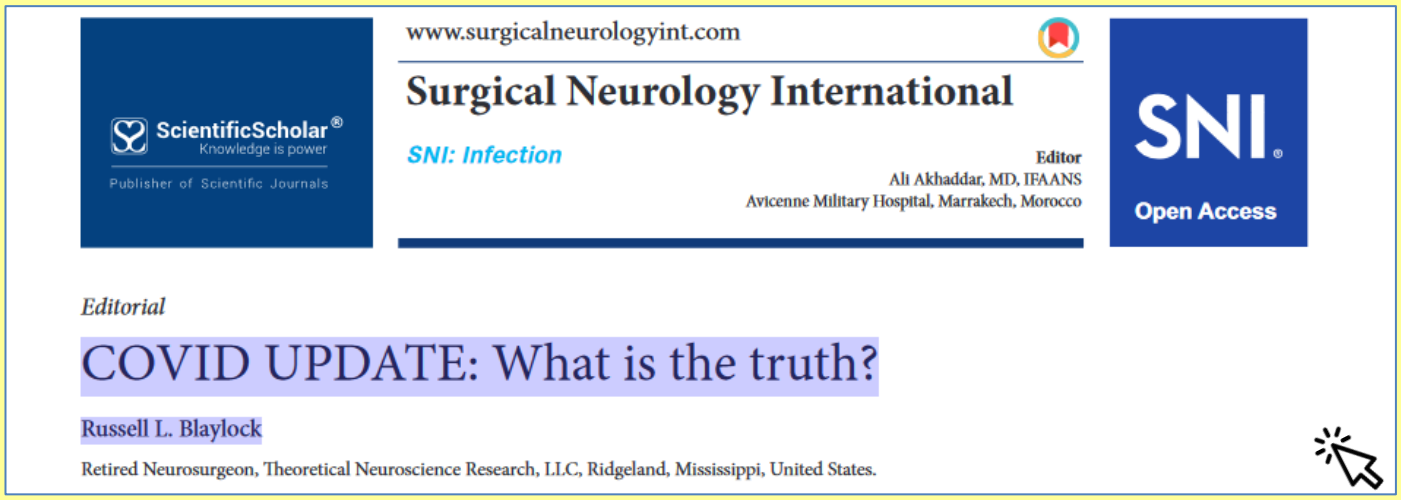
Containment strategies

Scientists have been keeping an eye on monkeypox ever since an eradication campaign for smallpox, its cousin virus, wound down in the 1970s. Once smallpox was no longer a threat thanks to worldwide vaccinations, public-health officials stopped recommending smallpox inoculation — which also kept monkeypox at bay. With each year that has passed since smallpox's eradication, the population with weakened or no immunity to these viruses has grown, MacIntyre says.

There have been a few outbreaks since then. The Democratic Republic of the Congo, for example, has been grappling with monkeypox for decades, and Nigeria has been experiencing a large outbreak, with about 500 suspected and more than 200 confirmed cases, since 2017, when the country reported its first case in more than 39 years. The United States also reported an outbreak in 2003, when a shipment of rodents from Ghana spread the virus to pet prairie dogs in Illinois and infected more than 70 people.

Yet public-health authorities are not powerless against monkeypox. As a precaution against bioterrorism, countries such as the United States maintain a supply of smallpox vaccines, as well as an antiviral treatment thought to be highly effective against the virus. The therapies

probably wouldn't be deployed on a large scale, though, McCollum says. Health-care workers would probably instead use a method called 'ring vaccination' to contain the spread of monkeypox: this would vaccinate the close contacts of people who have been infected with monkeypox to cut off any routes of transmission.
On the basis of the data that she has seen so far, McCollum thinks the current outbreaks probably won't necessitate containment strategies beyond ring vaccination. "Even in areas where monkeypox occurs every day," she says, "it's still a relatively rare infection."



Factsheet for health professionals on monkeypox

Source: https://www.ecdc.europa.eu/en/all-topics-z/monkeypox/factsheet-health-professionals

Human monkeypox (MPX) is a zoonotic viral disease caused by the *Monkeypox virus* (MPXV) [1,2]. The clinical presentation is similar to smallpox. Human monkeypox causes outbreaks in the tropical rainforest regions of Central and West Africa and is not a notifiable disease at the EU/EEA level. Human monkeypox was recognised as a human disease in 1970 [3,4].
The first outbreak of MPX reported outside of Africa [5,6] was an outbreak linked to an importation of infected mammals in 2003 in the United States. More recently, in 2018 and 2019, in the context of a large MPX outbreak in Nigeria, two travellers from the United Kingdom [7], one from Israel [8], and one from Singapore [9,10], all with travel history in Nigeria were diagnosed with MPX. A healthcare worker from the United Kingdom caring for one of the cases was secondarily infected [11]. This was the first time that travellers were associated with MPXV transmission outside of an outbreak setting. These MPX cases serve as a reminder to remain vigilant about emerging zoonoses [12].

The pathogen

Monkeypox virus is an enveloped double-stranded DNA virus with a genome size of around 190 kb. It belongs to the *Orthopoxvirus* genus of the *Poxviridae* family. The *Orthopoxvirus* genus also includes Vaccinia virus, Cowpox virus, Variola virus and several other, animal-related, poxviruses [2]. Two phylogenetically distinct clades of MPXV have been identified through genomic sequencing: the Central African (Congo Basin) clade and the West African clade. Typically, the Central African MPXV is associated with more severe disease, higher mortality, and more frequent human-to-human transmission [2,5,14,15]. Genetic differences between the viral genomes of the two clades might explain differences in viral clearance and pathogenesis [16-18]. Differences in disease severity may also be affected by transmission route, host susceptibility, and the quantity of virus inoculated [14].

Clinical features and sequelae

Human monkeypox often begins with a combination of the following symptoms: fever, headache, chills, exhaustion, asthenia, lymph node swelling, back pain and muscle aches [15,19]. Commonly, within one to three days after onset of fever, the patient develops a rash, which tends to first appear on the face and then spreads to other parts of the body, including hands and feet [2,20-22]. The cutaneous lesions often first present as macules, evolving successively to

papules, vesicles, pustules, crusts and scabs [4]. The number of lesions may range from a few to thousands [23]. Cutaneous lesions generally all appear at the same stage which is a hallmark characteristic of smallpox and MPX, and distinguishes them from chickenpox (varicella). For most people, MPX is a self-limited disease, typically lasting two to four weeks and resulting in complete recovery [21].

The clinical presentation of MPX includes symptoms and lesions that may be difficult to distinguish from smallpox, other orthopoxvirus and parapoxvirus infections, and, to some extent, chickenpox. The main difference between smallpox and MPX is that MPXV causes lymphadenopathy (e.g. in the cervical or inguinal region) while smallpox virus and chickenpox virus usually do not [20]. Other orthopoxviruses (i.e. cowpox virus, camelpox virus buffalopox virus) and parapoxviruses (i.e. Orf virus, pseudocowpox virus bovine papular stomatitis virus) usually cause localised skin lesions in humans, and animal contacts are often identified in the case histories. Although the clinical manifestation of MPX is milder than that of smallpox, the case fatality can still reach up to 11%. Mortality is higher among children and young adults, and immunocompromised individuals are especially at risk of severe disease [22]. Complications such as respiratory distress, secondary bacterial infections and encephalitis, and sequelae were found to be less common in patients vaccinated against smallpox [2]. In addition, the MPX secondary attack rate among household members was significantly lower among those who had had prior smallpox vaccination [24].

People living in or near tropical forested areas may have indirect or low-level exposure to infected animals, possibly leading to subclinical (asymptomatic) infection [21,25].

Epidemiology

Monkeypox is regarded as the most important orthopoxvirus infection in humans since the eradication of smallpox [13]. Human monkeypox virus was first isolated in 1958 from pox lesions during an outbreak of vesicular disease among captive cynomologus macaques imported from Singapore into Denmark for polio-vaccine-related research [22].

Although the disease name suggests that monkeys are the primary host, the specific animal reservoir of MPXV remains unknown [22]. Similar to humans, monkeys are considered disease hosts [22]. In nature, many animal species were found to be infected with MPXV, including rope and tree species of squirrels, Gambian giant rats, striped mice, dormice and primates [1]. Some evidence suggests that native African rodents such as the Gambian giant rats *(Cricetomys gambianus)* and squirrels might be a natural reservoir of the virus [26,27].

In 1970, the first human isolate of MPXV was reported in a child in the equatorial region of the Democratic Republic of the Congo, (DRC), nine months after the eradication of smallpox in that country [4]. Subsequently, sporadic cases were reported from the rainforest areas of central and western Africa, and large outbreaks were identified mainly in the DRC where the disease is currently considered endemic [4,28].

Following the declaration of smallpox eradication in 1980 by the World Health Assembly, the World Health Organization sponsored enhanced MPX surveillance efforts in the central regions of the DRC and some limited animal and human ecologic studies were undertaken [5]. This led to a major increase in the reported incidence of MPX.

In 1996–1997, the largest outbreak of MPX ever was reported in the Kasai Oriental region of the DRC. After a follow-up investigation in 1997, a total of 511 human cases were identified [29]. Analysis of these cases showed that the proportion of secondary cases was much higher and the case fatality was much lower than in earlier surveillance periods [4].

Human monkeypox was reported outside of Africa for the first time in 2003 when a MPX outbreak occurred in the United States [5,6]. Importation of the disease was traced back to rodents from Ghana shipped to Texas, US and housed close to prairie dogs upon importation [6]. All human cases of MPX fell ill following contact with the infected prairie dogs.

While the majority of documented MPX cases have occurred in the DRC, the number of cases in other West and Central African countries have been increasing during the last decade [1]. Since 2016, confirmed MPX cases have been reported from Central African Republic, the DRC, Liberia, Nigeria, the Republic of the Congo and Sierra Leone [1,30,31]. In September 2017, Nigeria experienced its largest outbreak of MPX, with 311 suspected and 132 confirmed cases, 38 years after the last reported case [15,21,32–35].

The increase in reported incidence of MPX may be partly attributable to decreasing herd immunity in the population following the cessation of the smallpox vaccination program in the early 1980s. Other explanatory factors might be changes in the virus itself and modifications of ecosystems that may have caused the natural reservoir's population density to rise [4].

In September 2018, three individual patients in the United Kingdom were diagnosed with MPX; two had recently travelled to Nigeria, and the third case was a healthcare worker caring for one of the cases [7]. The notification of three imported cases in a relatively short period of time could indicate an enhanced circulation of MPXV in western Africa, notably in southern Nigeria in 2017 and 2018. This is supported by continuing reports of sporadic cases in

Nigeria after the 2017 outbreak and by the first notified outbreak in southern Cameroon in 2018 [35,36]. One of the primary cases reported contact with a person with suspected rash at a family gathering and consuming bush meat in Nigeria. The case of the healthcare worker provides indisputable evidence of human-to-human transmission from an infected patient with a MPXV belonging to the West African clade [22]. In October 2018, Israel reported an imported MPX case from Nigeria [8]. In May 2019, an additional case imported from Nigeria was reported by Singapore [9,10].
In December 2019, a new case of MPX imported from Nigeria was reported by the United Kingdom as reported in the ECDC Communicable Disease Threats Report (CDTR), week 49.

Transmission

MPXV is transmitted to humans through contact with an infected animal or human, or with material contaminated with the virus [1,37]. The virus enters the body through broken skin, the respiratory tract or the mucous membranes [37]. The incubation period is typically 6 to 16 days, but can range from 5 to 21 days [6]. Immune markers provided evidence of asymptomatic MPX infections in individuals vaccinated against smallpox and others that had not been vaccinated [38,39].
Virus transmission through direct or indirect contact with live or dead animals is assumed to be the main factor for human MPX infections [22]. This may occur by bite or scratch, bush meat preparation, direct contact with body fluids or lesions from an infected animal or contaminated material (indirect contact) [37]. Eating inadequately cooked meat of an infected animal is an additional possible risk factor [21].
Human-to-human transmission is rare, but serial transmission events have been reported [40]. Similar to smallpox, human-to-human transmission of MPXV occurs mostly through large respiratory droplets during direct and prolonged face-to-face contact. In addition, MPXV can be transmitted by direct contact with body fluids of an infected person or with contaminated objects, such as bedding or clothing [2,21,37].
Other transmission routes, such as mother-to-child transmission [41] or nosocomial infection [11,42] have been documented. While transmission through substances of human origin has never been reported, transmission during pregnancy and through invasive bite or scratch from an ill animal [43] suggest that this transmission mode is theoretically possible.

Diagnostics

The capacity for detection of the MPXV DNA genome from suspected skin lesions by real-time polymerase chain reaction (real-time PCR, known also as quantitative polymerase chain reaction (qPCR)) is well established in several laboratories in Europe (see EVD-LabNet Directory Search) [44]. Scabs, swabs and aspirated lesion fluid are preferable over blood samples, due to limited duration of viremia. Results from these specimens show the best correlation with both infectivity and the clinical course of infection. Recent real-time PCR approaches can discriminate not only MPXV from other orthopoxviruses but also the two MPXV clades described above.
Serology has limited value due to the immunological cross-reactivity between human-pathogenic orthopoxviruses, although it can be useful for excluding recent orthopoxvirus infection. For contact investigations and population serosurveys, IgM and IgG detection by enzyme-linked immunosorbent assay (ELISA) or immunofluorescent antibody assay is available in some laboratories. Immunohistochemistry can be used to identify antigens in biopsy samples and to exclude or identify other suspicious agents.
Diagnostic procedures on, and manipulation of, specimens suspected to contain MPXV should be performed in BSL-2 facilities as a minimum [45,46]. MPXV is classified as a group 3 biological agent. Activities involving the handling of MPVX should therefore only be done in working areas corresponding to at least containment level three [46].

Case management and treatment

There is no specific vaccine or treatment available for MPX. Treatment is symptomatic and supportive, including prevention and treatment of secondary bacterial infections [21]. There is currently no vaccine that is specifically licensed for use against MPX. First- and second-generation smallpox vaccines, comprised of live replication-competent vaccinia virus and administered during the smallpox eradication programme, elicit effective protection against MPX [24,47]. While these vaccines, due to concerns about adverse events [48,49], have generally not been used to control MPX, in the United States in 2003, 30 individuals did receive smallpox vaccine during that outbreak [50]. **A third-generation smallpox vaccine (MVA-BN/Imvanex)** developed for individuals, in which previous versions of smallpox vaccine are contraindicated, is derived from Modified Vaccinia Ankara (MVA), a virus that has lost the ability to replicate in primate cells. This vaccine has a much more favourable safety profile than previous generations of smallpox vaccines. It has been approved in Europe for immunisation against smallpox in adults and was employed in the United Kingdom in 2018 following the identification of MPX cases [7]. Smallpox vaccination was also offered to close contacts in Israel and in Singapore in 2018 and 2019, respectively [51,52].

Public health control measures

Public health control measures are aimed to reduce human-to-human transmission through:

- Early recognition by specialist assessment and laboratory investigation
- Isolation of infected patients
- Implementation of appropriate infection prevention and control measures in healthcare settings (standard, contact, and droplet precautions)
- Early detection of possible new cases by contact tracing in outbreak settings.

Smallpox vaccine can be offered to contacts including i) healthcare workers caring for patients, ii) first-line responders and iii) individuals with close contact exposure to MPX which can be considered in outbreak settings [1,5,7]. The protective effect of smallpox vaccine against MPXV infection has been demonstrated in studies in the 1980s which showed up to 85% effectiveness [2]. WHO suggests that national health authorities should consider offering the smallpox vaccine to healthcare workers and those treating, or exposed to, patients with MPX or their samples [21,53,54]. According to the United States Centers for Disease Control and Prevention (US CDC), early post-exposure vaccination with the smallpox vaccine within 14 days after close contact exposure is an option to consider to reduce symptoms of MPX [54,55].

Following the worldwide eradication of smallpox, the smallpox vaccine is not available to the general public, but vaccine stockpiles are maintained by several countries and WHO [56]. Smallpox vaccines manufactured using older technologies should not be administered to immunocompromised persons [21,56].

To reduce the risk of animal-to-human transmission, control measures should include activities to control the importation of potential carrier species (e.g. limit or ban the movement of suspect species, apply quarantine or discard potentially infected species) [5].

Infection control, personal protection and prevention

The principal mode of transmission is thought to be direct contact with MPX lesions or with the patient's belongings that have been in contact with the lesions. Therefore, caregivers and relatives should avoid touching skin lesions with bare hands, wear disposable gloves, and observe strict hand hygiene.

In healthcare settings, prevention of transmission is based on standard, contact, and droplet infection control precautions during care of symptomatic suspected and confirmed MPX patients [21]. More detailed options are available in guidance documents developed by Public Health England (PHE) during the response to travel- associated MPX cases: 'Monkeypox: information for primary care' [19] and 'Monkeypox: Guidance for environmental cleaning and decontamination' [57].

To reduce animal-to-human transmission in an area with active MPXV circulation, it is recommended that contact with potential animal reservoirs (e.g. rodents and non-human primates) and with materials that have been in contact with a potentially sick animal or animal blood is avoided. Additionally, meat should be appropriately cooked prior to consumption [58].

Substances of Human Origin

Substances of Human Origin (SoHO) safety authorities should be aware that travellers returning from affected areas may pose a risk of MPXV infection. According to EU Directive 2004/33/EC, asymptomatic blood donors returning from malaria risk areas should be deferred from blood donation for at least four months [59]. As there is an overlap between the areas at risk for malaria and MPX, this should also prevent possible blood donations from MPXV-infected travellers. Although donor deferral for malarial risk is not required when the donation is used exclusively for plasma for fractionation, multiple pathogen reduction steps used in the fractionation process have been effectively used for the inactivation of vaccinia virus and may also provide safety assurance against the presence of poxviruses like MPXV in plasma-derived medicinal products. Therefore, deferral of asymptomatic donors of plasma for fractionation who are returning from MPX-affected areas is not recommended by the authorities.

According to EU directives, cell, tissue and organ donors returning from malaria-endemic areas are only deferred when laboratory screening for malaria is positive [60,61]. Therefore, prudent practice would be to defer cell, tissue and organ donors for a minimum of 21 days after returning from an area affected by MPX. Based on the incubation period, the US CDC have recommended that asymptomatic close contacts of infected people or animals be placed under fever surveillance for 21 days [62]. The 21 days would be a minimum deferral from SoHO donation if such contact had occurred.

Recipients of attenuated smallpox vaccine for the prevention of MPXV infection should be deferred from blood donation for eight weeks after vaccination.

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

Britain offers smallpox shot as monkeypox cases spread in Europe

Source: https://www.reuters.com/business/healthcare-pharmaceuticals/britain-offers-smallpox-shot-monkeypox-cases-spread-europe-2022-05-19/

May 19 – A smattering of monkeypox cases in Britain has prompted authorities to offer a smallpox vaccine to some healthcare workers and others who may have been exposed, as a handful more cases were confirmed in parts of Europe.
Monkeypox is a usually mild viral illness, characterised by symptoms of fever as well as a distinctive bumpy rash.
There are two main strains: the **Congo strain**, which is more severe – with up to 10% mortality – and the **West African strain**, which has a fatality rate of about 1%. First identified in monkeys, the viral disease typically spreads through close contact and largely occurs in west and central Africa. It has rarely spread elsewhere, so this fresh spate of cases outside the continent has triggered concern. In the United Kingdom, nine cases of the West African strain have been reported so far. read more
There isn't a specific vaccine for monkeypox, but a smallpox vaccine does offer some protection, a UK Health Security Agency (UKHSA) spokesperson said.

Data shows that vaccines that were used to eradicate smallpox are up to 85% effective against monkeypox, according to the World Health Organization.

"Those who have required the vaccine have been offered it," the UKHSA spokesperson added, without disclosing specifics on how many people have been vaccinated so far. Some countries have large stockpiles of the smallpox vaccine as part of pandemic preparedness, including the United States. Copenhagen-based drugmaker Bavarian Nordic (BAVA.CO) on Thursday said it had secured a contract with an undisclosed European country to supply its smallpox vaccine, Imvanex, in response to the monkeypox outbreak.

CASES

The first European case was confirmed on May 7 in an individual who returned to England from Nigeria, where monkeypox is endemic. Since then, Portugal has logged 14 cases, and Spain has confirmed seven cases. The United States and Sweden have also reported one case each. Italian authorities have confirmed one case, and suspect two more. read more
Several monkeypox outbreaks in Africa have been contained during the COVID pandemic while the world's attention was elsewhere, Africa's top public health agency said on Thursday. "We are however concerned at the multiple countries outside, especially in Europe, that are seeing these outbreaks of monkeypox," the acting director of the Africa Centres for Disease Control and Prevention, Ahmed Ogwell Ouma, said. "It would be very useful for knowledge to be shared regarding what the source of these outbreaks actually are," he said. read more **Meanwhile, in Britain, the UKHSA has highlighted that the recent cases in the country were predominantly among men who self-identified as gay, bisexual or men who have sex with men.**
This unusual spike in cases outside of Africa could suggest a novel means of spread or a change in the virus, said Anne Rimoin, an epidemiology professor at UCLA in California. "But this is all to be determined". "This isn't going to cause a nationwide epidemic like COVID did," cautioned Jimmy Whitworth, professor of international public health at the London School of Hygiene and Tropical Medicine. "But it's a serious outbreak of a serious disease – and we should take it seriously."

Waning smallpox immunity 'established the landscape' for monkeypox resurgence

Source: https://www.healio.com/news/infectious-disease/20220520/waning-smallpox-immunity-established-the-landscape-for-monkeypox-resurgence

May 21 – Waning population immunity against smallpox — a result of discontinued vaccination campaigns for the now-eradicated disease — "has established the landscape for the resurgence of monkeypox," researchers said.

They came to that conclusion after systematically reviewing dozens of studies and other documents for data on the evolution of monkeypox epidemiology over the past 50 years, which revealed that cases have been increasing since routine smallpox vaccination ceased.

Their findings were published in February in *PLoS Neglected Tropical Diseases*, months before a growing number of monkeypox cases were reported in the United States and several other countries.

"Based on initial literature review, we thought there was an increase of number of cases of monkeypox, which was not systematically reported at that moment," Bernard Hoet, MD, vice president of medical strategy at Bavarian Nordic, told Healio. "We thus thought it would be of use to document this formally."

Hoet and colleagues conducted a systematic review of 48 peer-reviewed studies and 18 gray literature sources, looking primarily at the number of cases of monkeypox, age at presentation, mortality and geographical spread.

Overall, the number of human monkeypox cases has been on the rise since the 1970s, they found, most dramatically in the Democratic Republic of the Congo (DRC). The median age at of patients with monkeypox increased from 4 years in the 1970s to 21 years between 2010 and 2019.

Overall, 8.7% of patients with monkeypox died — 10.6% (95% CI, 8.4%-13.3%) of those infected with the Central African clade of the virus and 3.6% (95% CI, 1.7%-6.8%) infected with the West African clade, which has been implicated in the recent cases.

The researchers noted that smallpox vaccination provides some cross-protection against monkeypox. A licensed vaccine that protects against monkeypox and smallpox Bavarian Nordic's Jynneos — was approved by the FDA in 2019 for adults aged 18 years or older in the U.S. The company said in 2020 that the U.S. had ordered millions of doses of the vaccine for the national stockpile.

According to Hoet and colleagues, 21 articles reviewed by the researchers reported smallpox vaccination status. Eleven of them described outbreaks from 10 different countries that included 49 patients with monkeypox — none of whom were vaccinated. In the other 10 articles, which reported data from outbreaks in the DRC and U.S., the proportion of monkeypox cases with a history of prior smallpox vaccination ranged from 4% to 21%. They noted that the highest percentage of vaccinated cases (21%) was found in the U.S. outbreak in 2003 that was linked to imported prairie dogs. "**Monkeypox is not a benign disease**," Hoet said. "This should be taken into account for the preparedness plans of authorities. We have a disease potential which seems to be materializing at the moment for which we have an option. It should raise the attention of health agencies to be prepared."

Smallpox vaccines: Past, present, and future

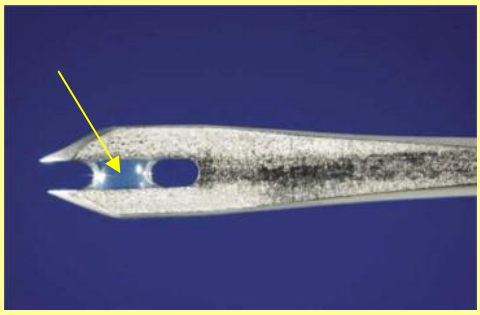
By Janie Parrino, MD and Barney S. Graham, MD, PhD

Basic and clinical immunology| Volume 118, ISSUE 6, P1320-1326, December 01, 2006

Source: https://www.jacionline.org/action/showPdf?pii=S0091-6749%2806%2902013-6

The global eradication of smallpox was a tremendous achievement made possible by the development of an effective vaccine. Routine vaccination of the general population is no longer recommended. However, stocks of variola virus, the causative agent of smallpox, still exist in 2 secure laboratories, and permanent disposal has been controversial. In addition, there is speculation that variola virus may exist outside of these 2 facilities, and there is a concern that the threat of smallpox will be used as a bioterrorist weapon. In 2002, this concern led to a vaccination campaign in US military and civilian healthcare workers and first responders. Although the historical live virus vaccine has proven efficacy, it also is associated with serious adverse events and rare fatal reactions, particularly in the setting of immunodeficiency and atopic eczema. In addition, this vaccine was historically produced using animal intermediaries in a process that was prone to contamination and not acceptable

for current manufacturing standards. Development of alternative poxvirus vaccines is focused on replication-defective viruses, gene-based vectors, and subunit approaches to improve safety and immunogenicity.



Bifurcated needle used for percutaneous application of smallpox vaccine, shown with a droplet of vaccine solution between prongs (arrow). Source: Centers for Disease Control and Prevention.

The conundrum is that in the absence of an intentional release of variola, efficacy evaluation of new candidate vaccines will be limited to animal model testing, which creates new challenges for the vaccine licensure process. Although motivated by the threat of bioterrorism, the hope is for new poxvirus vaccines to have their greatest utility against other pathogenic orthopoxviruses such as monkeypox and for the development of recombinant poxvirus-based vectors to treat and prevent other diseases.

Lacking Vaccines, North Korea Battles COVID With Antibiotics, Home Remedies

Source: https://www.medscape.com/viewarticle/974034

May 17 – Standing tall in bright red hazmat suits, five North Korean health workers stride towards an ambulance to do battle with a COVID-19 outbreak that - in the presumed absence of vaccines - the country is using **antibiotics and home remedies** to treat.
The isolated state is one of only two countries yet to begin a vaccination campaign and, until last week, had insisted it was COVID-free.
Now it is mobilizing forces including the army and a public information campaign to combat what authorities have acknowledged is an "explosive" outbreak.
In an interview on state television on Monday, Vice Minister of Public Health Kim Hyong Hun said the country had switched from a quarantine to a treatment system to handle the hundreds of thousands of suspected "fever" cases reported each day.
The broadcaster showed footage of the hazmat team, and masked workers opening windows, cleaning desks and machines and spraying disinfectant.
To treat COVID and its symptoms, state media have encouraged patients to use painkillers and fever reducers such as ibuprofen, and amoxicillin and other antibiotics - which do not fight viruses but are sometimes prescribed for secondary bacterial infections.
While previously playing down vaccines as "no panacea", media have also recommended gargling salt water, or drinking lonicera japonica tea or willow leaf tea three times a day.
"Traditional treatments are the best!" one woman told state broadcasters as her husband described having their children gargle with salted water every morning and night.
An elderly Pyongyang resident said she had been helped by ginger tea and ventilating her room.
"I was first scared by COVID, but after following the doctors' advice and getting the proper treatments, it turned out not a big deal," she said in a televised interview.

'Lack of understanding'

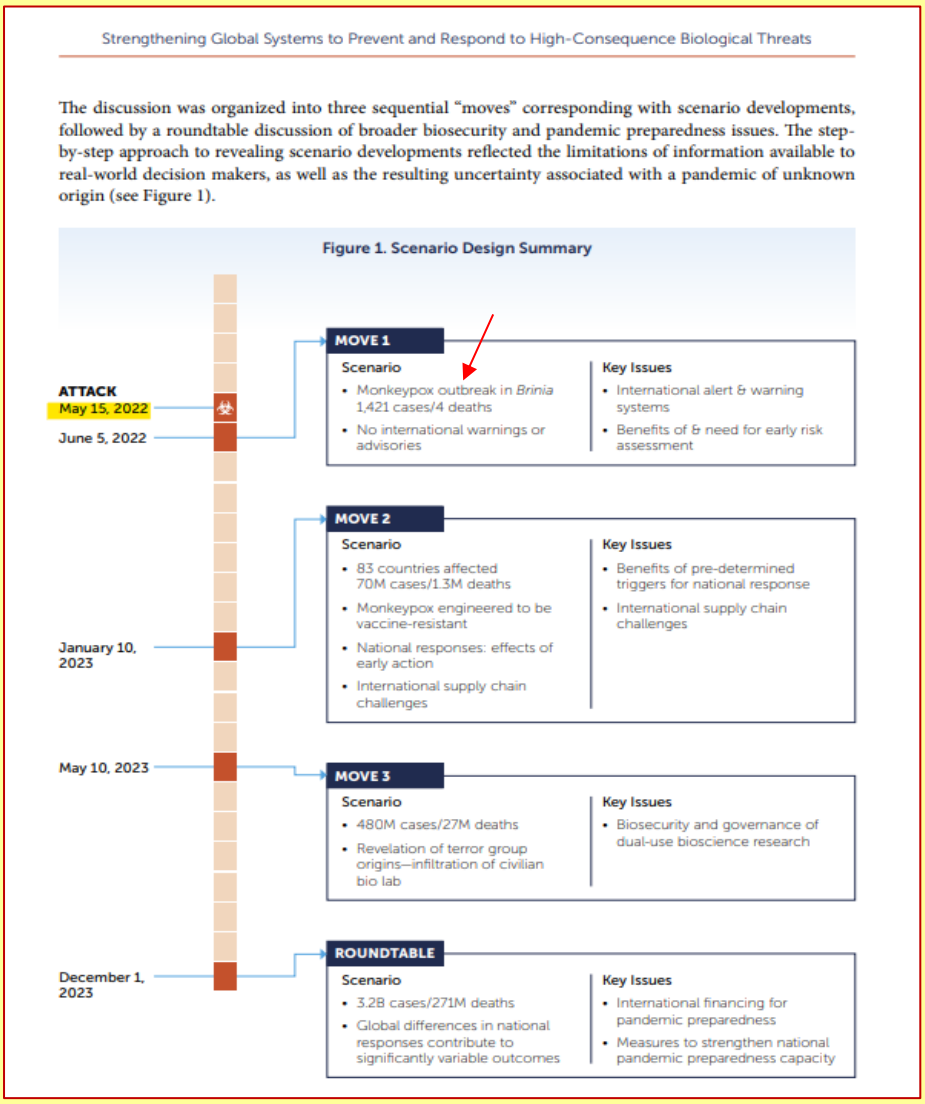
The country's leader, Kim Jong Un, said on Sunday - when state news agency KCNA reported 392,920 more cases of fever and eight more deaths – that drugs reserves were not reaching people, and ordered the army medical corps to help stabilize supplies in Pyongyang, where the outbreak appears to be centred.
KCNA said the cumulative tally of the fever-stricken stood at 1,213,550, with 50 deaths. It did not say how many suspected infections had tested positive for COVID.
Authorities say a large proportion of the deaths have been due to people "careless in taking drugs due to the lack of knowledge and understanding" of the Omicron variant and the correct method for treating it.
The World Health Organization has shipped some health kits and other supplies to North Korea, but has not said what drugs they contain. Neighbours China and South Korea have offered to send aid if Pyongyang requests it.
While not claiming that antibiotics and home remedies will eliminate COVID, **North Korea has a long history of developing scientifically unproven treatments, including an injection made from ginseng grown in rare earth elements it claimed could cure everything from AIDS to impotence.**

Some have roots in traditional medicines, while others have been developed to offset a lack of modern drugs or as "made in North Korea" exports.
Despite a high number of trained doctors and experience mobilizing for health emergencies, North Korea's medical system is woefully under-resourced, experts say.
In a March report, an independent UN human rights investigator said it was plagued by "under-investment in infrastructure, medical personnel, equipment and medicine, irregular power supplies and inadequate water and sanitation facilities".
Kim Myeong-Hee, 40, who left the North for South Korea in 2003, said such shortcomings led many North Koreans to rely on home remedies. "Even if we go to the hospital, there are actually no medicines. There was also no electricity so medical equipment could not be used," she said. When she contracted acute hepatitis, she said she was told to take **minari** - a water parsley made famous by the 2020 film of the same name – every day, and to eat earthworms when afflicted by another, unknown illness.
Home remedies had sometimes failed to prevent loss of life during epidemics in the 1990s, Kim added.

EDITOR'S COMMENT: Unfortunate people that happened to be ruled but a disturbed idle leader …

Monkeypox Was a Table-Top Simulation Only Last Year

By Michael Senger
Source: https://brownstone.org/articles/monkeypox-was-a-table-top-simulation-only-last-year/



Strengthening Global Systems to Prevent and Respond to High-Consequence Biological Threats

The discussion was organized into three sequential "moves" corresponding with scenario developments, followed by a roundtable discussion of broader biosecurity and pandemic preparedness issues. The step-by-step approach to revealing scenario developments reflected the limitations of information available to real-world decision makers, as well as the resulting uncertainty associated with a pandemic of unknown origin (see Figure 1).

Figure 1. Scenario Design Summary

May 20 – Elite media outlets around the world are on red alert over the world's first-ever global outbreak of Monkeypox in mid-May 2022—just one year after an international biosecurity conference in Munich held a simulation of a "global pandemic involving an unusual strain of Monkeypox" beginning in mid-May 2022.
Monkeypox was first identified in 1958, but there's never been a global Monkeypox outbreak outside of Africa until now—in the exact week of the exact month predicted by the biosecurity folks in their pandemic simulation. Take these guys to Vegas!
Ed Yong, who's penned dozens of hysterical articles on Covid for The Atlantic including such gems as COVID-19 Long-Haulers Are Fighting for Their Future, Even Health-Care Workers With Long COVID Are Being Dismissed, How Did This Many Deaths Become Normal? and The Final Pandemic Betrayal, is hot on the scene of the new Monkeypox outbreak.
Eric Feigl-Ding is also all over this.
Epidemiologists Jennifer Nuzzo and Bill Hanage are on the scene—but still no word

from them as to whether they see anything strange about the first-ever global Monkeypox outbreak occurring in mid-May 2022, a year after they acted as advisers on an international biosecurity simulation of a global Monkeypox outbreak occurring in mid-May 2022.

Strengthening Global Systems to Prevent and Respond to High-Consequence Biological Threats

Appendix A. Expert Contributors to Scenario Development

NTI convened a diverse group of experts in December 2020 to advise on the tabletop exercise scenario. These experts participated as individuals—not as representatives of their respective organizations—and they do not necessarily endorse the recommendations in this report.

Dr. Hillary Carter
Senior Advisor in the Countering Weapons of Mass Destruction Office
Department of Homeland Security

Dr. Sarah Carter
Principal
Science Policy Consulting, LLC

Dr. Bradley Dickerson
Senior Manager, Global Chemical and Biological Security
Sandia National Laboratories

Dr. Diane DiEuliis
Senior Fellow
National Defense University

Dr. James Diggans
Director, Data Science and Biosecurity
Twist Biosciences

Dr. Jessica Dymond
Assistant Program Area Manager, Health Protection and Assurance, National Health
John Hopkins Applied Physics Laboratory

Dr. Dylan George
Vice President
Ginkgo Bioworks
Former Vice President, Technical Staff
In-Q-Tel

Dr. John Glass
Professor and Leader, JCVI Synthetic Biology Group
J. Craig Venter Institute

Amanda Glassman
Executive Vice President and Senior Fellow
Center for Global Development

Dr. William Hanage
Associate Professor of Epidemiology
Harvard T.H. Chan School of Public Health

Jeremy Konyndyk
Executive Director of the COVID-19 Task Force and Senior Advisor
United States Agency for International Development (USAID)

Amb. (ret.) Bob Mikulak
Expert Advisor on Chemical and Biological Weapons Issues
U.S. Department of State

Ryan Morhard
Director, Policy and Partnerships, Concentric
Ginkgo Bioworks

Dr. Jennifer Nuzzo
Senior Scholar and Visiting Faculty, Center for Health Security
John Hopkins Bloomberg School of Public Health

Dr. Megan Palmer
Executive Director of Bio Policy & Leadership Initiatives, Department of Bioengineering
Stanford University

Chris Park
Senior Advisor, International Security and Nonproliferation
Office of the Under Secretary for Arms Control and International Security
U.S. Department of State

Carolyn Reynolds
Co-Founder
Pandemic Action Network

Deborah Rosenblum
Executive Vice President
Nuclear Threat Initiative

Jonas Sandbrink
Biosecurity Researcher
Future of Humanity Institute

The US Government is hot on the scene with an order of 13 million Monkeypox vaccine doses from Bavarian Nordic.

The WHO is on the scene.

The global Monkeypox outbreak—occurring on the exact timeline predicted by a biosecurity simulation of a global Monkeypox outbreak a year prior—bears a striking resemblance to the outbreak of COVID-19 just months after Event 201, a simulation of a coronavirus pandemic almost exactly like COVID-19.

Event 201 was hosted in October 2019—just two months before the coronavirus was first revealed in Wuhan—by the Gates Foundation, the World Economic Forum, Bloomberg, and Johns Hopkins. As with the Event 201, the participants at the Monkeypox simulation have thus far been stone silent as to their having participated in a pandemic simulation the facts of which happened to come true in real life just months later.

One person who was present at both Event 201 and the Monkeypox simulation is George Fu Gao, director of the Chinese Center for Disease Control. At event 201, Gao specifically raised the point of countering "misinformation" during a "hypothetical" coronavirus pandemic.

Here's Gao at Event 201 right next to our very own Avril Haines, Director of National Intelligence—technically the highest-level intelligence official in the United States. Look at these cuties. Doesn't that make you feel all warm and fuzzy? Phew. Making Kim Philby jealous.

That said, I won't sit here and debate wild conspiracy theories that there might be anything unusual about a global pandemic occurring just months after a simulation of a global pandemic of exactly that kind, followed shortly after by the first-ever global outbreak of an even-more-obscure virus just months after a simulation of an outbreak of exactly that kind.

If you want to be a good American and make a six-figure salary—or be friends with people who make six-figure salaries—then do as your government tells you: Sit down, shut up, stay home, save lives, take your shots, show your papers, and muzzle your kids.

Michael P Senger is an attorney based in the United States. He has been researching the influence of the Chinese Communist Party on the world's response to COVID-19 since March 2020, and previously authored China's Global Lockdown Propaganda Campaign and The Masked Ball of Cowardice in Tablet Magazine.

Monkeypox outbreak

Source: https://www.politico.eu/article/monkeypox-outbreak-europe-us-uk-disease/

May 19 – What's concerning experts is the unusual spread of the disease. Monkeypox usually circulates in Africa, with occasional individual cases linked to travel detected overseas. But according to the EU's disease control agency, recent cases in Europe appear to have spread from person to person, for the first time, **without** any direct link to Africa. What's more, **health authorities in a number of countries and ECDC have noted that the spread appears to be concentrated among gay or bisexual men.**

EDITOR'S COMMENT: It is not unlikely that we will soon hear/read that this is a conspiracy of the straight against gay and bisexual people! The problem is why the virus decided to visit Europe – unless it was already in a biolab somewhere in Europe.

Monkeypox – Prevention and Treatment

Source: https://www.centerforhealthsecurity.org/our-work/publications/monkeypox

Currently, there are no proven treatments specifically for monkeypox. Instead, cases of monkeypox can be treated with medical countermeasures designed for the closely related smallpox virus.
There are currently 3 smallpox vaccines that could be used in the US, 2 of which are licensed for smallpox and the other could be used for smallpox under an investigational new drug (IND) protocol. The two licensed vaccines for smallpox are JYNNEOS™ (also known as Imvamune or Imvanex) and ACAM2000®, of which JYNNEOS™ is also licensed for monkeypox.

The JYNNEOS™ vaccine is an attenuated live virus vaccine that is replication-deficient. It is administered subcutaneously in 2 doses, given 4 weeks apart.[12] Pre-exposure prophylaxis to monkeypox can be conferred by the smallpox vaccine JYNNEOS™. Data from Africa suggests that the JYNNEOS™ vaccine is at least 85% effective in preventing monkeypox. This conclusion is supported by studies assessing the immunogenicity of this vaccine in humans and efficacy data from animal challenge studies.[13] Additionally, the JYNNEOS™ vaccine is considered to be a potential post-exposure prophylactic to minimize potential development and severity of disease. For post-exposure prophylaxis, the US CDC recommends that the first dose of the vaccine be given within 4 days from the date of exposure to prevent disease onset. If given between 4–14 days after the date of exposure, vaccination may reduce the symptoms of disease but may not prevent disease.[14]
The ACAM2000® vaccine is a replication competent live vaccinia virus vaccine that historically has been given to individuals with high-risk of exposure to poxviruses, such as laboratory staff working with variola virus, smallpox, and monkeypox, and is available for use as post-exposure prophylaxis for monkeypox under an expanded access IND protocol (in 2021, the US CDC Advisory Committee on Immunization Practices recommended the JYNNEOS™ vaccine be used for personnel at high risk of occupational exposure instead of ACAM2000®).[15] The vaccinia virus in this vaccine can be transmitted to contacts of the immunized individual. ACAM2000® is given as a single dose via the multiple puncture technique for percutaneous administration.[12] The vaccination schedule for post-exposure prophylaxis with ACAM2000® is the same as for the first dose of the JYNNEOS™ vaccine.
The third smallpox vaccine in the US Strategic National Stockpile for smallpox is the **Aventis Pasteur Smallpox Vaccine (APSV).** It is a replication-competent vaccinia virus vaccine that could be used under an IND or emergency use authorization (EUA). This vaccine would only be used for smallpox if the licensed vaccines are unavailable or contraindicated.[12] It is unclear if this vaccine could be used for monkeypox.[14] Other vaccines for monkeypox are in development, including VACΔ6 and LC16.[15]

The **antivirals cidofovir and brincidofovir** could be used to treat monkeypox, though there is insufficient data on their effectiveness for monkeypox treatment in humans. However, animal studies have demonstrated effectiveness against monkeypox in certain mammalian species.[16] Brincidofovir and cidofovir work by inhibiting the viral DNA polymerase and have been used to treat other viral infections with varying levels of success.[17,18] Tecovirimat (ST-246) is another antiviral that could be used for monkeypox, though there is no data on its effectiveness in humans. Studies using tecovirimat in animal species have demonstrated its effectiveness in treating a variety of poxvirus-caused infections. Tecovirimat is included in the US Strategic National Stockpile but would need to be used under an IND.[16] Tecovirimat is an inhibitor of the viral envelope protein p37 that blocks the ability of virus particles to be released from infected cells.[19]

Another potential treatment for monkeypox is **vaccinia immune globulin (VIG).** However, use of VIG for monkeypox or smallpox has not been tested in humans and there is no data

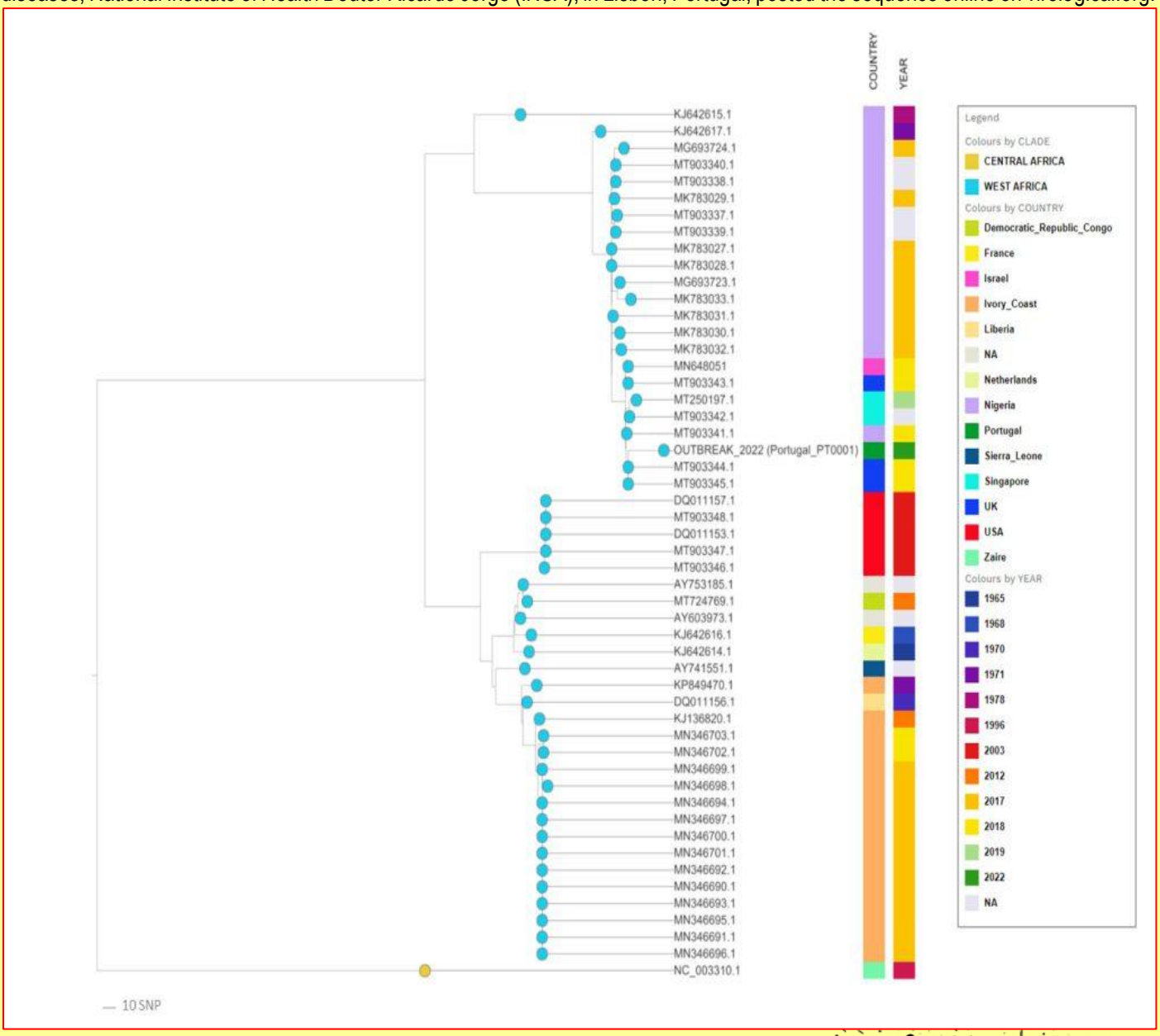
on effectiveness against either virus. VIG for monkeypox treatment would need to be conducted under an IND. However, research is ongoing to develop new immune globulin-based treatments for poxviruses. CDC and their partners have developed 4 new monoclonal antibody mixes that appear to be effective against intracellular and enveloped virion forms of variola and monkeypox viruses in animals.[15]

First Monkeypox Virus Genome Sequence from Patient of Current Outbreak

By Julianna LeMieux, PhD

Source: https://www.genengnews.com/virology/first-monkeypox-virus-genome-sequence-from-patient-of-current-outbreak/

May 23 – The first draft genome sequence of monkeypox virus, from a swab of a confirmed case of the current outbreak, was released late last week. On May 19, a research group led by João Paulo Gomes, PhD, a researcher from the department of infectious diseases, National Institute of Health Doutor Ricardo Jorge (INSA), in Lisbon, Portugal, posted the sequence online on virological.org.



Draft phylogenetic analysis based on a core alignment (955 variant positions in a 137 668 bp alignment) including 52 monkeypox viral sequences. [Isidro et al.]

There are currently almost 200 (confirmed and suspected) cases of monkeypox associated with the recent outbreak across the world. The authors write that, "The determination of the genome sequence of the virus causing these infections will certainly contribute to better understand the epidemiology, sources of infection, and transmission patterns."
The work was celebrated by the scientific community almost immediately after being posted, including Trevor Bedford, PhD, a professor of biostatistics, bioinformatics, and epidemiology program in the vaccine and infectious disease division at the Fred Hutch. The first draft sequence of SARS-CoV-2 was made available in a similar fashion. On January 10, 2020, Eddie Holmes, PhD, a virologist and evolutionary biologist at the University of Sydney, tweeted that the first draft sequence of "the coronavirus associated with the Wuhan outbreak" had been posted. Like the monkeypox sequence, it took only weeks to produce the data and post it online. The SARS-CoV-2 sequence was made possible through the work of Yong-Zhen Zhang, PhD, a virologist at Shanghai's Fudan University. Monkeypox virus is an enveloped double-stranded DNA virus with a genome size of around 190 kb. It belongs to the Orthopoxvirus genus of the Poxviridae family. The paper posted on www.virological.org is the first draft genome sequence of the monkeypox virus associated with the major outbreak affecting multiple countries worldwide. The virus, taken from a swab collected on May 4 from skin lesions from a patient, was sequenced using the Oxford Nanopore MinION.
The team then quickly performed phylogenetic analysis of the virus. In doing so, they found that the 2022 virus belongs to the West African clade. Indeed, the West African clade has now been confirmed in at least six of the cases in the recent outbreak.
There are two clades of monkeypox virus: the West African clade and the Congo Basin (Central African) clade. The West African clade of monkeypox virus infection—which has a lower case fatality ratio (roughly 1%) than the Congo Basin clade (up to 10%)—can lead to severe illness in some individuals. However, the disease typically resolves.
The phylogenetic analysis also suggests that the virus circulating in the outbreak is most closely related to viruses associated with the exportation of monkeypox virus from Nigeria to several countries—the United Kingdom, Israel, and Singapore—in 2018 and 2019. The findings sparked the interest of Tulio de Oliveira, PhD, professor at Stellenbosch University, Western Cape, South Africa and director of the Centre for Epidemic Response & Innovation (CERI), and the KwaZulu-Natal Research Innovation and Sequencing Platform (KRISP).
The authors noted that these data are preliminary, and "will be soon updated upon the release of new genome data." They also said that these future additions will be important to elucidate the origin and international spread of the currently circulating virus.

Combining AI with CT scans Can Help Detect Post-COVID Lung Damage

Source: https://www.insideprecisionmedicine.com/artificial-intelligence/combining-ai-with-ct-scans-can-help-detect-post-covid-lung-damage/

May 23 – Research shows that combining computed tomography (CT) scanning with artificial intelligence (AI) can help to visualize hard to image lung damage caused by respiratory conditions such as COVID-19.
The new method, developed by scientists at King Abdullah University of Science and Technology (KAUST) in Saudi Arabia and NorthEast Forestry University, Harbin Medical University and Mudanjiang Medical University in China, should help clinicians treat patients with such respiratory conditions and also to better predict their long-term prognosis.
Conventional CT scans struggle to pick up some lung abnormalities that result from COVID-19 or other respiratory illnesses. "Survivors who had severe symptoms… have much worse six-months follow-up lung function than the mild-symptom patients, whereas their six-month follow-up CT scans are very similar from almost all aspects," write Xin Gao, a professor at KAUST, and colleagues in the journal *Nature Machine Intelligence*.
To try and help improve imaging for COVID-19 patients and those with other lung conditions, Gao and team created a type of imaging they call Deep-Lung Parenchyma-Enhancing (DLPE). They used AI algorithms to find and enhance hard to visualize lung damage from CT scan data.
"COVID-19 often causes pulmonary parenchyma lesions months after discharge, such as ground glass opacities, consolidations and long-term fibrosis," explain the researchers. By removing non-informative tissues from the scan, DLPE was able to clearly pick up such lung problems.
The researchers first trained and validated their algorithms using data from 3644 CT scans of COVID-19 patients in China. They then tested the technology in a group of over 1000 inpatients with COVID-19 and used it to predict long term outcomes in 219 survivors, 69 of whom initially had severe disease.
"On the inpatient CT dataset, DLPE found novel subvisual lesions that resemble fainter ground-glass opacities, which may reflect mild plasma fluid leakages due to disruption of the epithelium of alveolar," explain the authors.

In the survivor cohort, many sub-visual abnormalities were found using DLPE, most likely reflecting mild pulmonary fibrosis. Before the AI algorithm was applied around 3.5 cm^3 of lesions were found in each survivor on average, after DLPE this increased to 109cm^3.
"These subvisual lesions have strong correlations with sequelae related to fibrosis: more subvisual lesions means lower lung capacity, less alveolar-capillary gas conductance and a worse St George's Respiratory Questionnaire score, which are all typical consequences of pulmonary fibrosis," write the authors, who say the new technique could help explain why many COVID-19 survivors still have respiratory symptoms, despite apparently normal looking lung scans.
Although the first use of DLPE was in COVID-19 patients, the research team also tested the technology in some patients with pneumonia, tuberculosis and lung cancer.
"DLPE can make robust enhancement and critical segmentation for various lung diseases, which demonstrates its generalization power and potential clinical usefulness," they conclude.

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