C²BRNE DIARY

Dedicated to Global First Responders

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PART A

WAR

ВОЙНА

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Editor-in-Chief

BrigGEN (ret.) Ioannis Galatas MD, MSc, MC (Army)
PhD cand
Consultant in Allergy & Clinical Immunology
Medical/Hospital CBRNE Planner & Instructor
Senior Asymmetric Threats Analyst
Manager, CBRN Knowledge Center @ International CBRNE Institute (BE)
Athens, **Greece**

➲ **Contact e-mail:** igalatas@yahoo.com

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History teaches, but it has no pupils

Antonio Gramsci (1891 – 1937)
Italian writer, politician, and political theorist; a founding member
and onetime leader of the Communist Party of Italy.

If even a child in some part of the world dies of starvation or war, then our culture and civilization have failed miserably

Nikos Kazantzakis (1883-1957)
Widely considered a giant of modern Greek literature;
he was nominated for the Nobel Prize in Literature in nine different years.
As of March 20, >100 children killed; more than 100 injured …

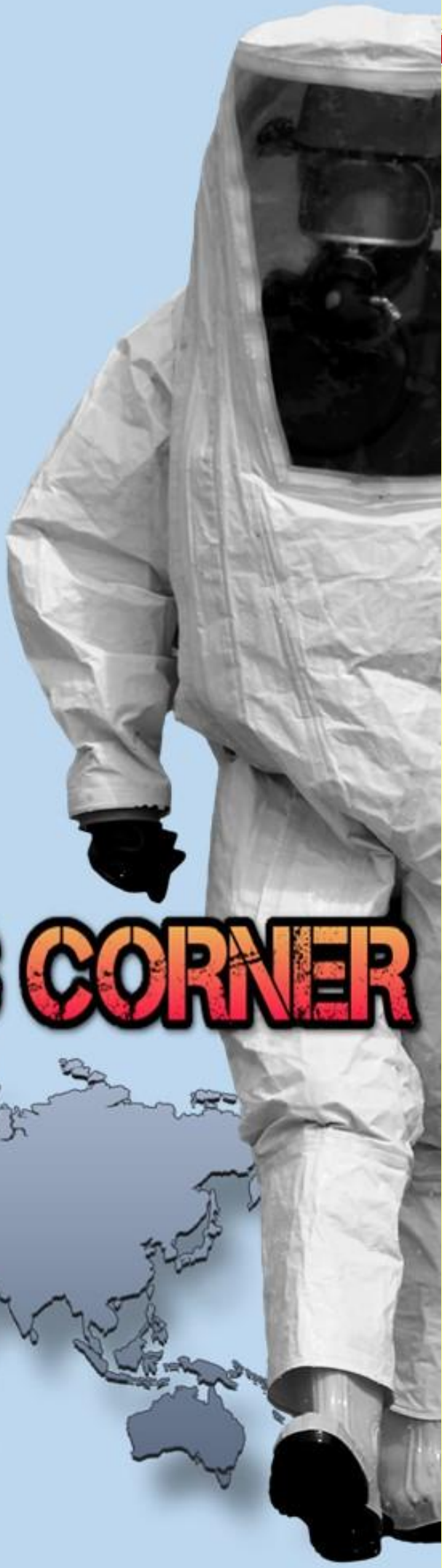
Peace is too serious to be left to politicians!

Military people know how devastating a war is!

International CBRNE Institute

CBRNE-Terrorism Newsletter

C2BRNE DIARY



EDITOR'S CORNER

Editorial

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

Editor-in-Chief
C²BRNE Diary

Dear Colleagues,

War is bad! There is no doubt about it!

But war is not the tool to erase history and human actions. To erase the universal response when Turkey invaded Cyprus (1974) or when NATO warplanes bombed Yugoslavia (1999). It is hypocritical to shed tears for a war supported by the West but the West abandoned Ukraine when the mission was accomplished – when Russia invaded Ukraine. Another sad reminder that there is no friendship and alliance between nations; just profit and national interests. Let us all hope that the war will end as soon as possible and that logic will prevail a possible **CBRN WW3** – there is a shortage of potassium iodide pills in the global market already! In addition, who will be hold responsible for the global financial unreast caused? Who will assist neighboring countries receiving milions of refugees? War in the 21st century … are we serious?

Miraculously, in Greece, the SARS-CoV-2 pandemic was over when Russian troops entered Ukraine! Instead of ten hours daily for +2 years brainwashing on pandemic/vaccination issues, we now have same hours of "live war" on television, and *supposed* journalists changed from being epidemiologists or infectious diseases specialists to strategic analysts, futurists, or philanthropists. Infodemic is again in the front line and it is amazing how many faces it has!

Speaking about the pandemic, the full list of adverse events caused by the Pfizer vaccine was published – yes, the same list that the pharmaceutical company was fighting hard to be available in public after 75 years! Lots of interesting side effects that might answer many unsolved cases and much more questions on the vaccination issue. In addition, a recent study revealed that Pfizer's BioNTech vaccine causes intracellular reverse transcription of BNT162b2 mRNA into human DNA in vitro, renewing concerns that vaccines may introduce spike protein into the nuclei of cells. This is no good! No good at all and someone needs to provide more info on this issue – yesterday!

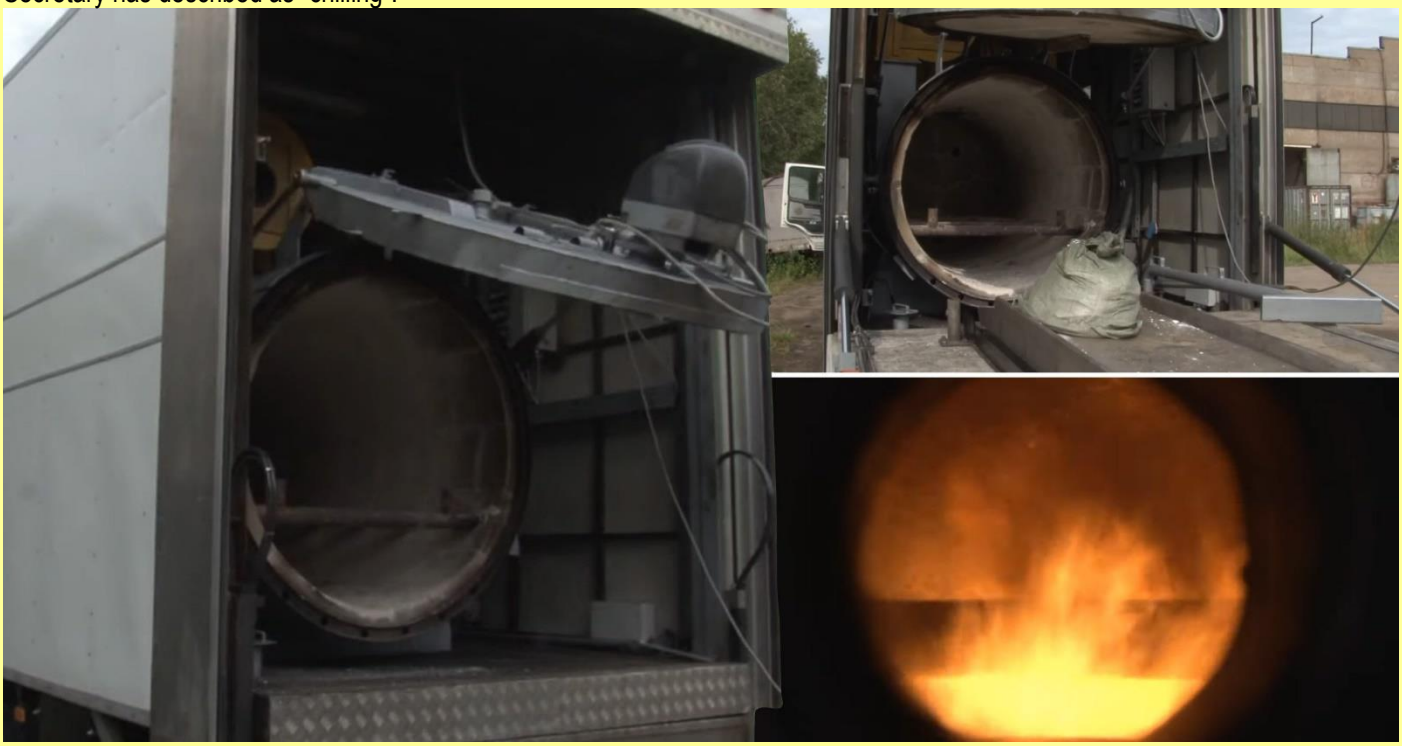
Take care, CBRNe First Responders! Read a lot; practice a lot; be prepared for the unexpected even if it comes from another galaxy!

The Editor-in-Chief

Russia deploys mobile crematoriums to follow its troops into battle

Source: https://www.telegraph.co.uk/world-news/2022/02/23/russia-deploys-mobile-crematorium-follow-troops-battle/

Feb 23 – Russian forces have prepared a mobile crematorium for use in any future conflict with Ukraine in what Britain's Defence Secretary has described as "chilling".



The MoD released footage of a vehicle-mounted crematorium with room to "evaporate" one human body at a time, which has been seen trailing Russian forces and is expected to follow any troops into Ukraine.

Ben Wallace, the Defence Secretary, suggested the use of such a system may be a way for the Kremlin to cover up any future combat losses, fearing a repeat of the criticism at home when Russia first invaded Ukraine in 2014.

Mr Wallace said if Russian forces instigate conflict in Ukraine "we expect to see some of the things they've done previously".

"Previously they've deployed mobile crematoriums to follow troops around the battlefield, which in anyone's book is chilling.

"If I was a soldier and knew that my generals had so little faith in me that they followed me around the battlefield with a mobile crematorium, or I was the mother or father of a son, potentially deployed into a combat zone, and my government thought that the way to cover up loss was mobile crematorium, I'd be deeply, deeply worried.

"It's a very chilling side effect of how the Russians view their forces and for those of you who served, and being a soldier, knowing that trundling behind you is a way to evaporate you if you are killed in battle probably says everything you need to know about the Russian regime."

In the footage released by the MoD, Cyrillic text overlaid on the video says the equipment, which was created specifically for the destruction of hazardous biological waste, comes from a St Petersburg company called Tourmaline. The company's website says it is 'The Russian Incinerator Company'.

Attempts by The Telegraph to contact the company went unanswered.

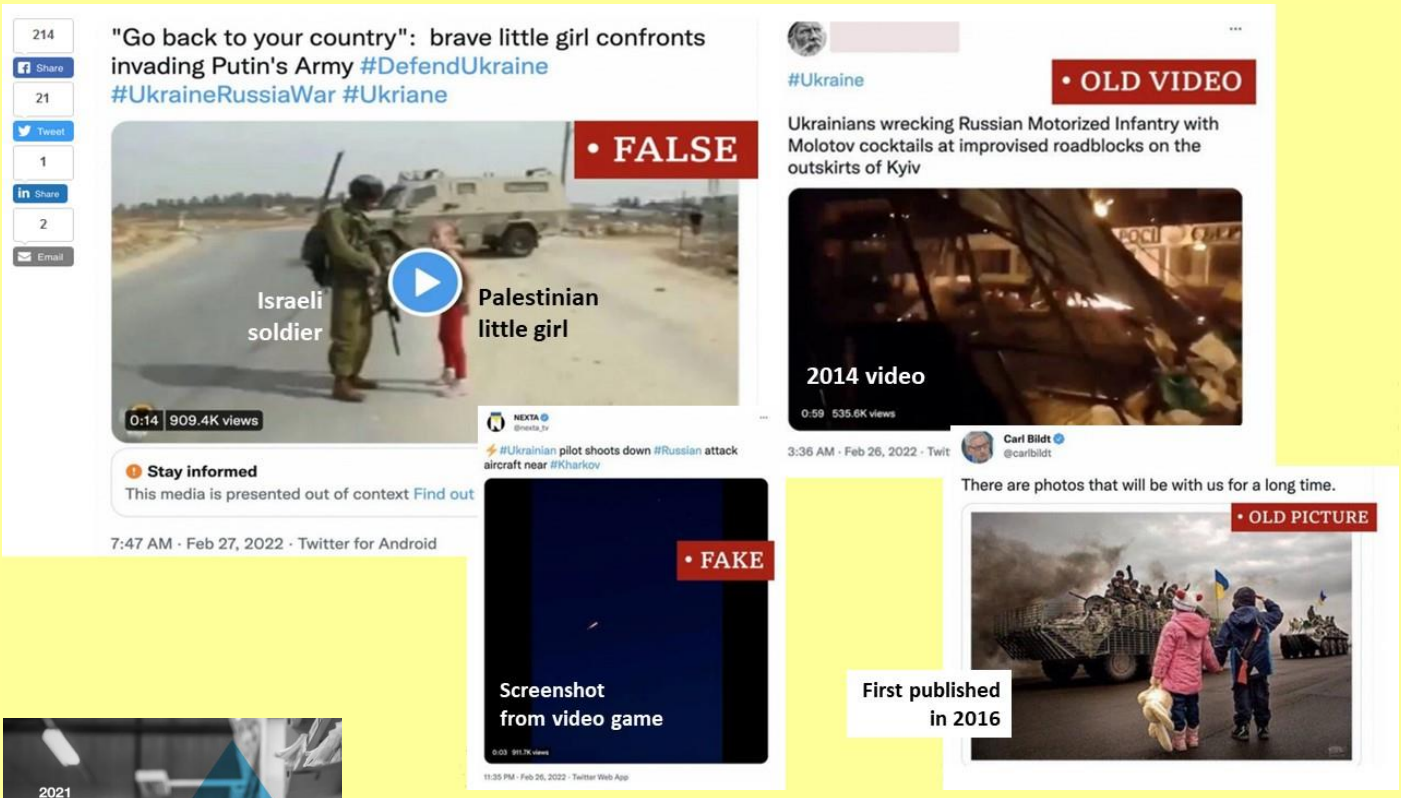
Kremlin cover-up

At the time local and international media outlets, human rights groups and local activists reported Russian soldiers were being buried in unmarked graves in a bid to hide the fact they were operating inside Ukraine.

Protest groups, many formed by mothers of missing and dead soldiers, sprang up across Russia, notably in Moscow, rejecting attempts by the authorities to blame deaths on individuals who had wandered across the border.

One group, the Soldiers' Mothers Committee, blamed Vladimir Putin for violating international law and said Russian military comman ders forced soldiers to fight illegally in Ukraine "while mothers receive coffins with their sons, anonymously," according to the Washington Post.

War infodemic . . .



Report: 57 Percent of Letter Threats in 2021 Contained White-Powder Substances or Illegal Drugs

Source: https://www.hstoday.us/subject-matter-areas/law-enforcement-and-public safety/report-57-percent-of-letter-threats-in-2021-contained-white-powder-substances-or-illegal-drugs/

Feb 23 – RaySecur released the *2021 Annual Mail Threat Report*. This unique report provides a comprehensive view and analysis of mail threats by aggregating official U.S. Government data and cataloging incidents reported in the mass media over the past year to better highlight the prevalence and dangers of mail threats. The 2021 report data reflects the ongoing global discord and conflicts that have resulted from COVID lockdowns, vaccination mandates, and other societal stressors.

Mail security is often overlooked, even though in 2021 the United States Postal Inspection Service (USPIS) and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) analyzed 263,000 pieces of suspicious mail and investigated more than 6,300 mail threat incidents. This is because security executives often lack access to complete mail threat data to help them understand the probability and impact of potential threats, which limits or negates the implementation of security strategies to mitigate these risks.

In addition to the data, events and case studies highlighted in the report cover legitimate powder threats that evaded government security screening. These include ones received by White House Chief Medical Advisor Dr. Anthony Fauci as well as other high profile government officials, a spate of letter bombs targeting businesses in Germany, and insiders sending increasingly harmful powder threats to co-workers and employers. The costs to affected organizations can run into the millions of dollars in facility decontamination and shutdowns from threats that are real or hoaxes.

"The lack of comprehensive data is one of the key reasons mail threats remain one of the largest gaps in physical security," said Alex Sappok, Ph.D., CEO, RaySecur. "Our report is the only resource to compile government data and mass media reporting in one place so that security leaders can proactively plan and implement measures to address these vulnerabilities. It's core to our mission of keeping our customers safe."

Key findings from the report include:

- 59% of suspicious mail threats triggered an emergency response including the police, FBI USPIS, Hazmat, and others, as well as causing disruption and/or harm to the recipient.
- 89% of responded to mail threats were delivered via letters or small parcels, mailed via curbside dropbox and therefore without chain of custody tracking.
- 57% of the letter threats contained white-powder substances or illegal drugs.
- The top 5 most targeted states in the U.S. were
  New York (10%), Texas (9%), Pennsylvania (7%), Georgia (7%), Alabama (7%).
- 64% of international mail threats occurred in Western Europe or Asia.

Military Training of Young Children to fight the Russians

Source: https://www.globalresearch.ca/military-training-for-young-children-at-ukraines-neo-nazi-summer-camp-recruitment-of-ukraines-child-soldiers-financed-by-us-nonlethal-military-aid/5472801

The Azov battalion supported by its Western partners is not only involved in para-military operations in Eastern Ukraine. According to reports including the Kyiv Post (Ukraine mainstream media), it is running a Summer Camp military training project for young children as part of its broader training and indoctrination program.

The text on the banner reads broadly translated: The Idea of the Nation, The Power within You

According to RT: "The camp was established to show the children that there are things in life besides school and mobile devices and to *"give them our love,"* Oleksii, a platoon commander in the Azov battalion and instructor at the camp, told Ukrainian ICTV

channel. *"One has to be strong; has to be courageous to defend the territorial integrity of our motherland,"* he added." (RT report) Western media sources (quoted by the Kyiv Post) confirm that **children as young as six years old** (see images below) are participating in the Azov Summer Camp located in the Vodytsya district outside Kyiv.

Invasions Are Not Contagious

By Oriana Skylar Mastro

Source: https://www.foreignaffairs.com/articles/taiwan/2022-03-03/invasions-are-not-contagious

Mar 03 – As Russian President Vladimir Putin intensifies his assault on Ukraine, a growing number of U.S. military and foreign policy analysts are voicing concern that China may be emboldened by Russia's example and try to take Taiwan by force. "If Russia can grab chunks of Ukraine or install a puppet regime and withstand economic sanctions, that could embolden nationalists in China to look to Taiwan and think they could do the same," Ian Johnson, a China expert at the Council on Foreign Relations, has argued. Representative Michael McCaul, Republican of Texas, made a similar argument in an interview last month, as did retired Army General Jack Keane, who said that Chinese President Xi Jinping sees "weakness in the West and how that can advantage him in terms of his national objectives as well."

Xi is certainly watching events in Ukraine, but his calculus for whether to use force against Taiwan is shaped primarily by domestic factors, not foreign ones. As I have argued in *Foreign Affairs*, Chinese leaders are considering "armed reunification" with Taiwan more seriously than at any time in the last 50 years. But Xi will assert Chinese control over the island only if he is confident his military can conduct a successful amphibious invasion and if he believes the timing is right for his own career.

Shifts in the international environment would be important for Taiwan if they changed Xi's thinking on either count. But the war in Ukraine has not. Xi's views about U.S. power and resolve and about the likely international response to an invasion of Taiwan probably remain unchanged. If anything, China's desire not to invite comparisons with Russia at a time when the world is united against Moscow will lengthen its timeline for taking control of Taiwan, not shorten it.

Too big to sanction?

The economic sanctions that the United States, Canada, and many European countries have imposed on Russia give China little reason for pause. To the contrary, these punitive measures simply confirm Beijing's previous assessments of the possible economic repercussions of using force against Taiwan. Chinese leaders expect the economic costs of an invasion to be heavy but acceptable—partly because of how the international community has responded to Chinese provocations in the past and partly because Beijing's foreign policy is designed to convince countries to stay out of China's "internal" affairs, such as the status of Taiwan.

That is not to say the economic measures Washington and its allies have imposed on Russia in recent days are insignificant. The United States and European countries have blocked Russia's access to most of its foreign currency reserves, making it impossible for

Moscow to intervene to prop up its collapsing currency. They have frozen the assets of senior Russian officials, including Putin himself. And they have moved to exclude big Russian banks from SWIFT, the global financial messaging system.

But the United States and its allies could do more to punish Russia. They could bar all transactions with Russia, whether trade or financial. They could seize all Russian assets within their jurisdictions. Washington could announce secondary sanctions on anyone using U.S. dollars for any transaction with Russia. Most important, the United States could use these and other measures to prevent Russia from exporting oil and gas. Letting Russia continue to export oil and gas would be like letting China sell consumer electronics even after it had taken Taiwan by force.

If the United States and its allies have been cautious in their response to Russia, they are likely to be even more restrained when responding to China—and Beijing knows it. China's ability to retaliate against the West with economic sanctions of its own is much greater than Russia's. Singapore, which announced trade and banking restrictions against Moscow, trades about $2.5 billion worth of goods with Russia each year—but $57 billion worth of goods with China. China's leaders likely do not fear U.S.-led economic sanctions in the event of a Taiwan takeover because they probably think that China's own productive capacity, resources, and friendly partners will allow them to survive on their own, especially since China will soon be the world's largest economy. They are probably right. China could absorb the types of sanctions being imposed on Russia. And given China's ability to inflict pain on Western countries, any measures levied against Beijing would likely be softer than those imposed on Moscow.

Taiwan is not Ukraine

The Western military response to Russia's invasion of Ukraine will have an even smaller impact than sanctions on China's thinking about Taiwan. True, neither the United States nor NATO has deployed troops to fight on Ukraine's behalf. And U.S. military assistance to Ukraine has been modest: late last month, President Joe Biden instructed the State Department to release up to an additional $350 million worth of weapons from U.S. stocks to Ukraine.

But Russia would have to invade a NATO ally without provoking a U.S. military response for Chinese leaders to seriously question Washington's commitment to defending Taiwan. Biden has made clear from the beginning of the crisis that his administration will never send troops to Ukraine—a stark contrast with his rhetoric on Taiwan. Just last week, Biden stated unequivocally that the United States would defend Taiwan in the event of a Chinese attack. As a show of support, he also sent to the island a delegation of former U.S. officials led by Mike Mullen, a former chairman of the Joint Chiefs of Staff.

In any case, Chinese planners largely assume the United States would intervene militarily on behalf of Taiwan. What some of them question is whether the United States could amass enough forces fast enough to blunt a Chinese assault on the island. Ironically, if the United States had launched a military operation in response to Russia's invasion of Ukraine, Chinese leaders would have had further reason to question Washington's ability to thwart a Chinese assault on Taiwan. The United States does not have the resources to fight the Russians in Europe and prepare adequately for a great-power war in Asia.

Of course, these facts have not prevented China from trying to manipulate the narrative to undermine Taiwan's resolve. Chinese state media has been flush with stories about how the United States did not come to Ukraine's aid and therefore won't come to Taiwan's

either. Like much of what appears on Chinese state media, however, these stories reflect what Chinese leaders want the world to believe—not what they believe themselves.

Not the right time

Chinese leaders are without a doubt considering an attack on Taiwan, but now is not the right time. China's military is still honing the capabilities it would need to take and hold the island. And Xi is unlikely to take a dangerous gamble on Taiwan before the next Party Congress in late 2022, when he is widely expected to secure a third term as general secretary of the Chinese Communist Party. Xi is also working hard to lessen China's technological dependence on the West, thus minimizing the impact on any further decoupling after a possible war. For all these reasons, an assault on Taiwan before 2025 is unlikely.

If anything, the crisis in Ukraine creates an additional incentive for China to wait. Beijing does not want the world to equate the two scenarios. From China's perspective, Ukraine is an independent country engaged in a border dispute with Russia. Taiwan, by contrast, "has always been an inalienable part of China's territory," as China's ambassador to the Association of Southeast Asian Nations, Deng Xijun, put it late last month. In other words, linking the two issues would undermine China's claim to the island.

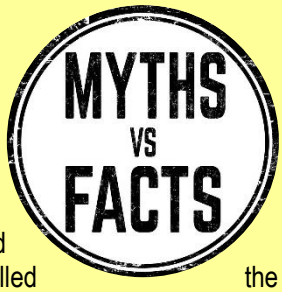
China also understands that moving against Taiwan now would solidify fears in the West of an axis of autocrats. The United States may not have the resolve to fight a protracted war to defend Taiwan. But suddenly faced with a need to defend freedom and democracy against an authoritarian alliance, Washington could muster a greater military response and convince its allies to do the same. Partly for this reason, China has desperately tried to maintain some semblance of neutrality during the Ukrainian crisis.

Russia's invasion of Ukraine has certainly changed aspects of the international order. It has rallied European countries against Russia, prompted Germany to increase defense spending, and even convinced historically neutral countries such as Finland, Sweden, and Switzerland to take a stance against Moscow. From China's perspective, however, nothing Russia or its adversaries have done meaningfully alters the calculus on Taiwan.

Oriana Skylar Mastro is a Center Fellow at the Freeman Spogli Institute for International Studies at Stanford University and a Senior Nonresident Fellow at the American Enterprise Institute.

Top 10 Russia-Ukraine war myths

Source: https://www.newsguardtech.com/special-reports/russian-disinformation-tracking-center/



MYTH: Russian-speaking residents in Donbas have been subjected to genocide

THE FACTS: The International Criminal Court, the Office of the UN High Commissioner for Human Rights, and the Organization for Security and Co-operation in Europe have all said they have found no evidence of genocide in Donbas, the eastern Ukrainian region partly occupied by Russian-backed separatists since 2014. The U.S. mission to the Organization for Security and Co-operation in Europe called the genocide claim a "reprehensible falsehood" in a Feb. 16 2022 post on its official Twitter account. It said that the mission "has complete access to the government controlled areas of Ukraine and HAS NEVER reported anything remotely resembling Russia's claims."

A 2021 Office of the UN High Commissioner for Human Rights report blamed the authorities of the separatist Donetsk and Luhansk republics for various abuses, including severe restrictions on the freedom of movement, forcing people to adopt Russian citizenship, and arbitrary arrests. At the same time, the UN reported three cases of arbitrary detainment and ill-treatment carried out by Ukraine's SBU (secret service), and 13 such cases in the self-proclaimed republics, which the UN said were "usually" carried out by the "ministry of state security" officers, known as MGB.

A 2016 report by the International Criminal Court found that the acts of violence allegedly committed by the Ukrainian authorities in 2013 and 2014 could constitute an "attack directed against a civilian population." However, it also said that "The information available did not provide a reasonable basis to believe that the attack was systematic or widespread."

MYTH: Polish-speaking saboteurs attempted to bomb a chlorine plant in Donbas

THE FACTS: Days before Russia invaded Ukraine, the Russia-backed Donetsk People's Republic in eastern Ukraine shared a video claiming to show that its militia prevented Polish-speaking "saboteurs" from blowing up chlorine containers at a sewage treatment plant near separatist-controlled town Horlivka in Donetsk on Feb. 18, 2022. The Donetsk People's Republic also said that the saboteurs were part of "two special purpose groups of

the VFU [Ukrainian army]." However, the video turned out to be manipulated, and there is no evidence that saboteurs attempted such an attack in Horlivka.

According to investigative news outlet Bellingcat, analysis of the video's metadata revealed that it had been recorded days before the attack was claimed to have happened. The video's metadata, which was reviewed by NewsGuard, confirmed that it was recorded on Feb. 8, 2022, ten days before the attack allegedly happened. Additionally, according to Bellingcat, the audio track had been manipulated with the addition of explosion sounds that appear to have been lifted from a video of Finnish military exercises, which was posted to YouTube in April 2010.

MYTH: Ukrainian forces bombed a kindergarten in Lugansk on Feb. 17, 2022

THE FACTS: Russian news sites claimed that the Ukranian army bombed a kindergarten in the village Novaya Kondrashovka, which they said was located in the Russian separatist-controlled Lugansk republic in eastern Ukraine. However, analysts at Bellingcat reported that both the location of the kindergarten and evidence from the scene indicate that the shelling came from the south, where Russian-separatist frontlines are located. Correctly placing the kindergarten in the Ukrainian village of Novaya Kondrashovka, a few kilometers north of the frontline with the Russia-backed separatists, and analysis of a crater next to the site, shows that "the shell clearly came from the south" according to Bellingcat's Director of Training and Research, Aric Toler.

MYTH: Russia did not target civilian infrastructure in Ukraine

THE FACTS: As Russia launched a full-scale invasion of Ukraine on Feb. 24, 2022, the Russian government claimed that the Russian army was using precision-guided weapons aimed only at military targets, not civilian infrastructure. These claims have been repeated uncritically by various Russian-state news sites.

In fact, Amnesty International has documented multiple attacks by the Russian army against civilian targets in Ukraine. One day after the invasion, Amnesty International said that Russia was carrying out "indiscriminate attacks on civilian areas and strikes on protected objects such as hospitals," after documenting three incidents in the cities of Vuhledar, Kharkiv, and Uman, that it believes to have killed at least six civilians and injured at least 12 more. Agnès Callamard, the group's Secretary General, said the Russian military used "ballistic missiles and other explosive weapons with wide-area effects in densely-populated areas," adding that some of these attacks may constitute war crimes.

MYTH: Nazism is rampant in Ukrainian politics and society, supported by the authorities in Kiev.

THE FACTS: Radical far-right groups do exist in Ukraine and, according to a 2018 Freedom House report, they represent a "threat to the democratic development of Ukraine." However, the report also stated that far-right extremists have poor political representation in Ukraine and no plausible path to power. Indeed, in the 2014 parliamentary elections, the far-right nationalist party Svoboda received 4.7 percent of the vote. In the 2019 presidential election, the Svoboda candidate, Ruslan Koshulynskyy, won just 1.6 percent of the vote, and in the parliamentary elections, Svoboda won 2.2 percent of the vote. Svoboda currently holds one parliamentary seat.

This myth goes hand-in-hand with false claims of widespread anti-semitism in Ukraine. In 2014, Russian President Vladimir Putin said there was a "rampage" of "anti-Semitic forces" in certain parts of Ukraine, a statement that was contradicted by representatives of Ukraine's Jewish community. Jewish community leaders signed an open letter to Putin stating that his assertions about the rise of anti-Semitism did not match "the actual facts." Additionally, a 2018 report by the National Minority Rights Monitoring Group, an NGO which monitors anti-Semitism and xenophobia in Ukraine, said that the number of anti-Semitic incidents has been *declining* in Ukraine in recent years.

Ukrainian President Volodymyr Zelensky, who is Jewish, addressed the Russian public in a Feb. 24, 2022, speech, saying that these claims do not reflect the "real" Ukraine. "You are told we are Nazis. But could people who lost more than 8 million lives in the battle against Nazism support Nazism?"

MYTH: The West staged a coup to overthrow the pro-Russia Ukrainian government in 2014

THE FACTS: There is no evidence supporting the idea that the 2014 Maidan revolution in Ukraine that led to the ouster of then-president Viktor Yanukovych was a coup orchestrated by Western countries. Indeed, it had all the markings of a popular uprising, not a coup.

In November 2013, thousands of Ukrainians flocked to Kyiv's Independence Square ("Maidan Nezalezhnosti") to protest then-President Victor Yanukovych's decision to suspend preparations for the signing of an association and free-trade agreement with the European Union, scheduled for the following week. Over the following months, the

protests, often referred to as "Euromaidan" after the square where they took place, grew in size. Negotiations between the Ukrainian government and the pro-European Union opposition, mediated by the foreign ministers of France, Germany, and Poland, led to an agreement signed on Feb. 21, 2014, giving more power to Ukraine's parliament and planning for a presidential election by the end of the year.

However, angry protesters demanded Yanukovych's immediate resignation, and hundreds of police officers guarding government buildings abandoned their posts. Yanukovych fled the same day the agreement was signed, and protesters took control of several government buildings the next day. The Ukrainian parliament then voted 328-0 to remove Yanukovych from office and scheduled early presidential elections the following May, the BBC reported. These events, often collectively referred to as the "Maidan revolution," were extensively covered by international media organizations with correspondents in Ukraine, including the BBC, the Associated Press, and The New York Times.

MYTH: The U.S. has a network of bioweapons labs in Eastern Europe

THE FACTS: On Feb. 24, 2022, a thread by the Twitter account @WarClandestine suggesting that the Russian invasion of Ukraine was actually targeting U.S. bioweapons laboratories in Ukraine was widely shared on social media using the hashtag #USBiolabs. The thread cited claims by Russian officials that the U.S. maintains a network of bioweapons labs near Russia's borders in Eastern Europe. Russian state-owned media outlets have been making similar claims since at least 2016.

These claims are typically based on a misrepresentation of the U.S. Department of Defense's Biological Threat Reduction Program, which collaborates with partner countries to reduce the threat of outbreaks of dangerous infectious diseases by helping partners to secure dangerous pathogens and to quickly detect outbreaks, according to the U.S. Embassy in Ukraine's website. The U.S. has been providing aid to Ukrainian laboratories since 2005, when the Ukrainian Ministry of Health and U.S. Department of Defense signed an agreement intended to limit the threat of bioterrorism by implementing safeguards on deadly pathogens from Soviet-era biological weapons programs. The Biological Threat Reduction Program has since helped to construct and modernize Ukrainian laboratories. The labs themselves are run and primarily financed by the Ukrainian government. The Security Service of Ukraine (SBU) noted in response to claims about the presence of U.S. military biological laboratories in a May 2020 statement that "no foreign biological laboratories operate in Ukraine."

MYTH: NATO has a military base in Odessa

THE FACTS: In December 2021, various pro-Russia news sites claimed that NATO established a naval base in Odessa, a southern port city in Ukraine.

NATO ships have been increasing their presence on the Black Sea since Russia's annexation of Crimea 2014, according to the news section on NATO's official website in July 2021. The Alliance states that "NATO ships routinely operate in the Black Sea, consistent with international law, usually patrolling the waters for around two-thirds of the year."

In fact, foreign military bases are not permitted in Ukraine, according to article 17 of the country's constitution, and there is no evidence of such a base. NATO's interactive map, which shows where surveillance systems and Alliance training centers are located, shows no NATO base or center or any other military facility in Ukraine. On a page of its website last updated in January 2022, NATO wrote that "Outside NATO territory, the Alliance only has a military presence in Kosovo and Iraq."

MYTH: Crimea joined Russia legally

THE FACTS: At the end of February 2014, troops operating without national insignia seized government facilities and checkpoints in the Ukrainian peninsula of Crimea, including the parliament building in Simferopol. In an April 2014 press conference, Russian President Putin admitted that Russian troops had been deployed to Crimea to support local defense forces, having insisted a month earlier that the armed men were local defense forces. In March 2014, the newly-installed Russian separatist prime minister, Sergei Aksyonov, held a referendum on the status of Crimea, the results of which were overwhelmingly in favor of the peninsula joining Russia. The Russian government has falsely claimed that Crimea legally joined Russia because the referendum was held in compliance with international law.

In fact, the referendum was not legitimate and, as a result, most countries do not recognize Crimea as a part of Russia. The UN Assembly and the Venice Commission, an advisory body of the Council of Europe consisting of legal experts, declared the referendum and its outcome illegitimate for a number of reasons. First, the referendum did not give all of Ukraine's citizens the right to vote on Crimea's status, violating Ukraine's constitution, which requires that any changes to the territory of Ukraine be approved by a referendum of all eligible voters in Ukraine. Moreover, the options on the ballot excluded the possibility for Crimea to maintain the status quo and remain part of Ukraine. The two

options were: Join Russia, or return to the 1992 constitution, which gave the peninsula significant autonomy.
In addition, international law does not recognize a referendum held under armed aggression. As Marc Weller, Professor of International Law at the University of Cambridge, wrote for the BBC in March 2014, "Crimea cannot proceed with a possible secession or even incorporation into Russia while Moscow holds sway on the ground." Igor Strelkov, a leading Russian commander in Crimea in 2014, who is also known as Igor Girkin, said during a 2015 interview on the Russian program "Polit-Ring" that militants under his command "forced" lawmakers to vote in the referendum. "Members of parliament were gathered by the militants and forced into the hall [parliament chamber] to make them vote," he said.

MYTH: Modern ukraine was entirely created by communist Russia

THE FACTS: In Feb. 21, 2022, just three days before Russia launched a full invasion of Ukraine, Russian President Vladimir Putin said "Modern Ukraine was entirely created by Russia, more precisely, Bolshevik, communist Russia," Putin said, lamenting that the communists "gave these republics the right to leave the (Soviet) union without any terms and conditions."
It is true that today's Russia and Ukraine, both former Soviet states, share long periods of history. However, they have spent considerably more time apart than together. Russia and Ukraine's shared heritage dates back more than 1,000 years, when Kiev was the center of the first slavic state, Kievan Rus, a medieval empire founded by Vikings in the 9th century and the birthplace of Ukraine and Russia. The historical reality of Ukraine is a complicated 10-century history of shifting borders and conquest by multiple, competing powers. While parts of modern-day Ukraine existed within the Russian empire for centuries, other parts in the west fell to the control of the Austro-Hungarian empire, Poland, or Lithuania.
Contrary to Putin's claim that "the Bolsheviks invented Ukraine," Ukraine had fought for, and gained, independence in 1918 — a status that lasted only a few years. In 1922, Russian Bolsheviks defeated Ukraine's national government and established the Ukrainian Soviet Socialist Republic. Ukraine would spend the next 69 years as part of the Union.
Putin's claim that Moscow "gave" Ukraine the right to become independent of the Soviet Union "without any terms and conditions," is incorrect because it was the Ukrainians who chose independence in a democratic referendum. In 1991, as the Soviet Union was dissolving, 84 percent of eligible voters in Ukraine went to the polls, and more than 92 percent voted to leave the Soviet Union. Moscow even vowed to respect Ukraine's sovereignty as a condition of Ukraine's giving up its nuclear weapons — which was memorialized in 1994, in an agreement known as the Budapest Memorandum.

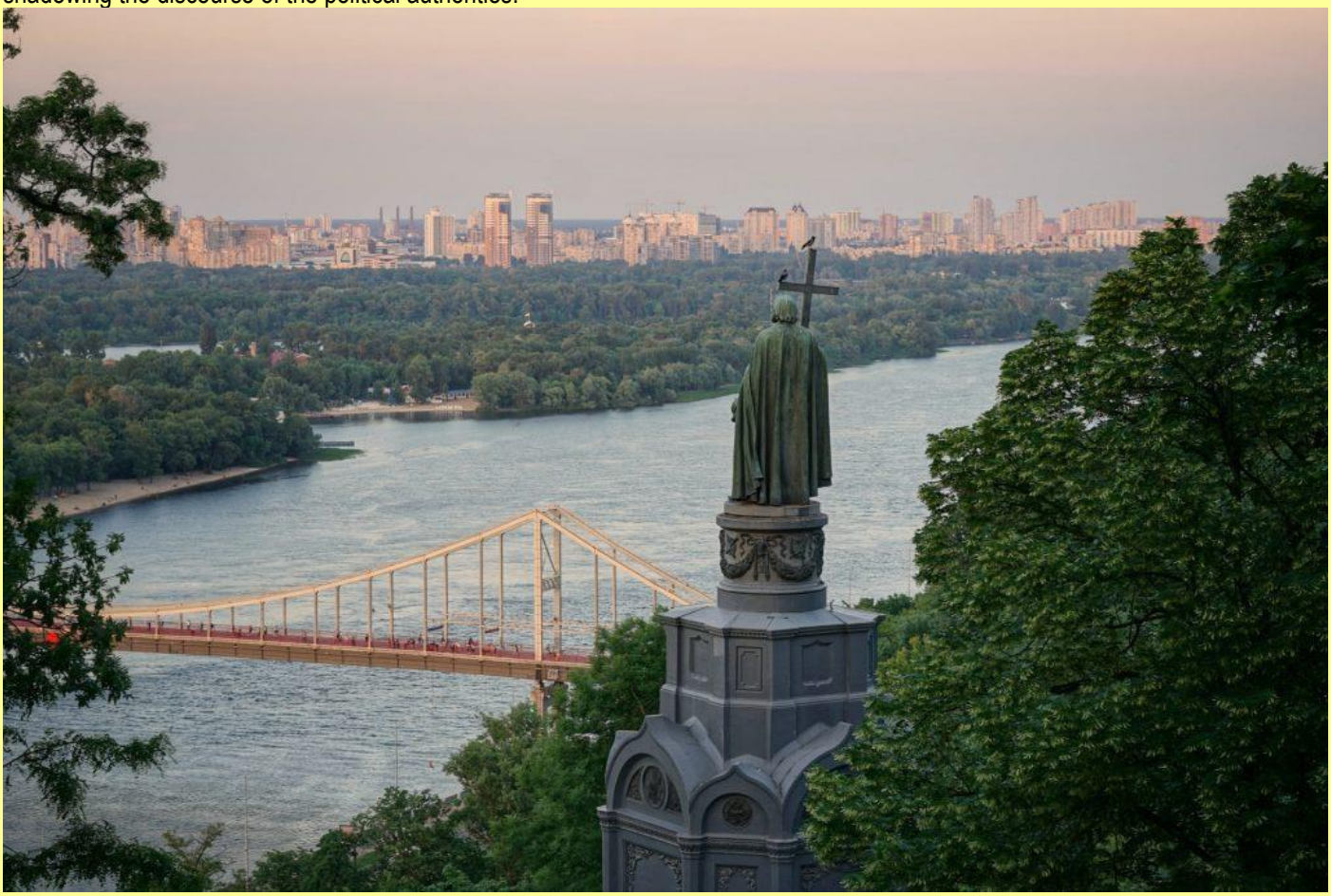
Russia's Invasion of Ukraine: The First Religious War in the 21st Century

Source: https://blogs.lse.ac.uk/religionglobalsociety/2022/03/russias-invasion-of-ukraine-the-first-religious-war-in-the-21st-century/

As the Russian invasion of Ukraine enters its second week, our screens are filled with images of families separating and a country torn apart by war. Yet these divisions exist beyond our tv screens and economic sanctions. In this article, ***Lucian N. Leustean*** *frames the conflict within the context of religious identity and a growing split within the Orthodox Church, which has been in the making since 1990. Leustean articulately explains the extent to which today's war is a religious one and the implications it may have on the future of the global Orthodox Church.*

Mar 06 – Russia's invasion of Ukraine is the first religious war in the 21st century.
At first sight, Russia and Ukraine are both predominantly Eastern Orthodox Christian countries. Ukraine is divided into two main Orthodox churches, the national Orthodox Church of Ukraine, which separated institutionally from the Russian Orthodox Church in 1990, and the Ukrainian Orthodox Church-Moscow Patriarchate, which remains the largest denomination in the country. However, the religious and political mobilization of the main actors show a different picture.
In 2018 and 2019, the Istanbul-based Ecumenical Patriarchate of Constantinople, the *primus inter pares* in the Eastern Orthodox world, recognized the autocephaly (independence) of the Orthodox Church of Ukraine. How could a Church receive national and international recognition in such a short period of time, namely between 1990 and 2019? Direct support of the Ukrainian political authorities towards the establishment of a national Orthodox Church only began to appear publicly after the 2014 Russian invasion of Crimea and the Donbas region. The wider societal mobilisation towards the new ecclesiastical structure can be seen in its military assistance. For example, the Ukrainian Ministry of Defence counted that, in 2014 and 2015, in administering the military troops on the Donbas front line, 295 clergy belonged to the Ukrainian Orthodox Church-Kyiv Patriarchate, 123 clergy to the Ukrainian Greek Catholic Church and only 9 were from the Ukrainian Orthodox Church – Moscow Patriarchate. The Orthodox Church of Ukraine and the Ukrainian Greek Catholic Church, the largest

denomination in the western part of the country, have regularly presented their pro-European Union and pro-NATO stance shadowing the discourse of the political authorities.



Kyiv, Ukraine | Photo: Robert Anasch, Unsplash

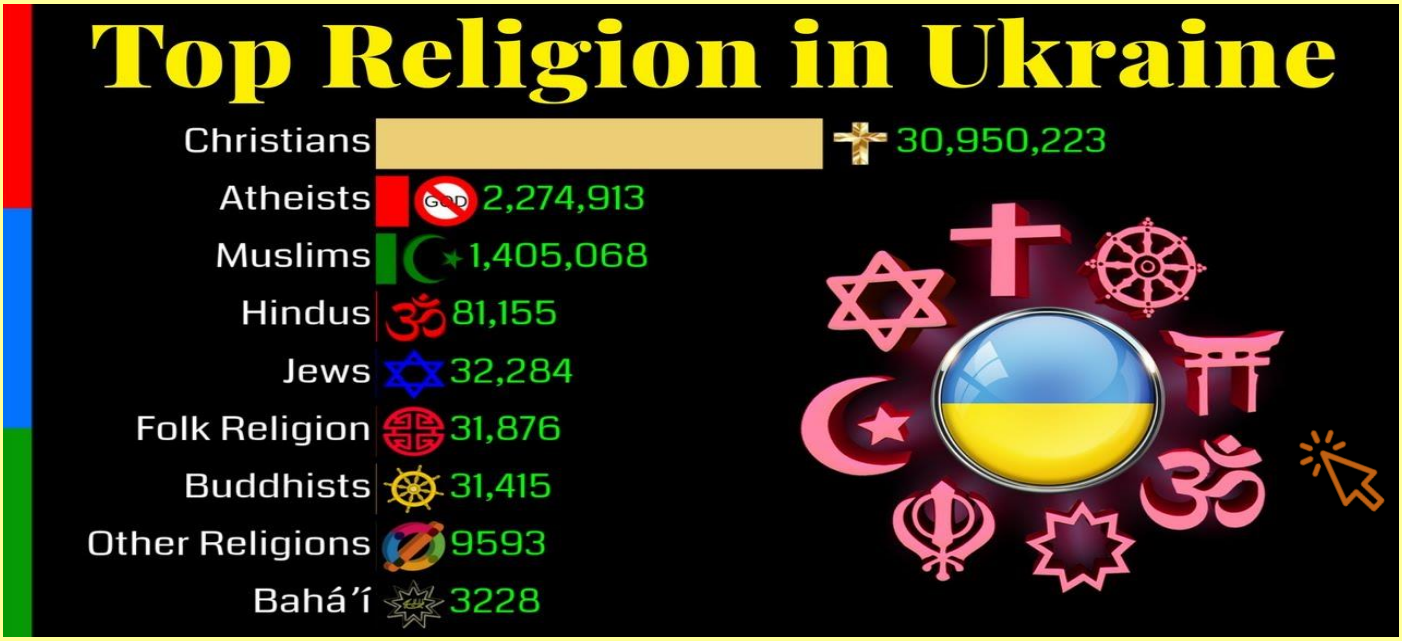
To what extent can Russia's invasion of Ukraine be seen as a religious war and what might be its long-term impact? In religious terms, the war has been characterised by three key features, namely intensity, human security and the emergence of a new world branch in Christianity.

First, post-Second World War conflicts around the world have shown that **when religion is involved, wars become more intense**. Religious passions and eschatological visions of the material and spiritual worlds have a direct role in fostering violence. The close involvement of religion in anticipating the Russia-Ukraine conflict was summarised in President Vladimir Putin's 2021 article 'On the Historical Unity of Russians and Ukrainians' in which he emphasized that Russia and Ukraine are 'the same historical and spiritual space… The spiritual choice made by St. Vladimir, who was both Prince of Novgorod and Grand Prince of Kiev, still largely determines our affinity today'. Russians and Ukrainians were presented not only as the same people but also as sharing key religious figures and sacred sites, all of which are fundamental to their separate or shared identity and state formations. From the start of the military campaign, the political ideologization of religion has been evident in Russia's advancement towards Kyiv, perceived not only as a government centre but also a key religious site.

Second, in the post-Cold War Eastern Europe and the former Soviet states, religious communities play a key role in engaging with populations in need through their own humanitarian networks. **When states fail, religious communities are among the first to act as providers of human security.** As the post-2014 conflict has shown, if the Russia-Ukraine war is prolonged, the Church which is best organised in addressing human security issues towards displaced populations and in working closely with the political authorities will attract an even higher support of the Ukrainian population. It is highly likely that the national Orthodox Church of Ukraine will continue to attract a larger number of faithful to the detriment of the Church under Moscow's jurisdiction. There is even a suggestion that the latter should fully separate from

Moscow and have its own autocephaly, dividing the Eastern Orthodox Church even further, particularly as a significant number of hierarchs refused to mention the Russian Patriarch Kirill in their services. Religious demography changes, transfer of parishes between the two Orthodox churches, and the attempt to implement a new status for key religious sites (Saint Sophia Cathedral, Saint Michael's Golden-Domed Monastery and Kyiv Pechersk Lavra) will only increase violence and emphasise the religious nature of the war.

Click to see the statistics from 1900 to 2100



Third, in positioning themselves in the conflict between the Moscow and the Ecumenical patriarchates, Orthodox clergy outside Ukraine have suggested that, for the first time, the autocephaly recognition of the Russian Orthodox Church should be revoked. This decision would be in response not only to Russia's war in Ukraine but more broadly due to the ways in which the Moscow Patriarchate projects the Kremlin's world geopolitics. An example was the Holy Synod's decision to set up a 'Patriarchal Exarchate in Africa' in December 2021 to bring together religious communities who oppose Ukrainian religious independence and are currently under the jurisdiction of the Patriarchate of Alexandria. Two months later, the Exarchate seemed to attract over 150 clergy in twelve countries, a gesture which denoted the religious factor in advancing Russia's influence in Africa. Disputes could even propagate from Africa to the Middle East with the Moscow Patriarchate setting up a parallel structure in Turkey bypassing the Ecumenical Patriarchate.

The implications could lead to churches refraining from using the word 'Orthodox' in their communication with the Russian Orthodox Church. The immediate implication would be that **Christianity, as a world religion, will be divided even further by acquiring a new branch**, namely Roman Catholicism, Protestantism, Eastern Orthodoxy and **'Christian Traditionalism'** for the Russian Church and those supporting its stance in Ukraine in the latter. The Orthodox Church of Ukraine would thus replace the Russian Orthodox Church in the Eastern Orthodox world while the Moscow Patriarchate would move further outside communion with fellow churches in setting up its own ecclesiastical jurisdictions around the world.

In sum, the longer the conflict takes the wider the religious involvement will become. In finding a diplomatic solution, the Ukrainian political authorities have suggested that a meeting should take place in Jerusalem demonstrating that religion is key not only in shaping conflicts but also in finding solutions. Religious diplomacy remains an unexplored avenue which could provide support not only to people in need but also to reaching diplomatic consensus.

Lucian N. Leustean is a Reader in Politics and International Relations at Aston University, where he has been teaching since 2007. He is a senior fellow of the 'Orthodoxy and Human Rights' project at Fordham University, New York. His recent publications include, as co-editor, with Grace Davie, The Oxford Handbook of Religion and Europe, with Victoria Hudson, Religion and Forced Displacement in Eastern Europe, the Caucasus, and Central Asia and, as editor, Eastern Christianity and Politics in the Twenty-First Century.

War pets

Ukrainian refugees

By the Editor

Millions of Ukrainian refugees fled to Poland and Romania. We read about volunteers in the borders who offer hot food, water, blankets, toys, pet food.

We read about citizens from many other countries that came to the borders to "adopt" a family and keep them safe in their homes.

We did not hear or read a line or two about EU practical and financial assistance to these countries.

Who will pay back national expenses for shelters and people involved in refugees' operations?

Where is the EU? Where is the International Red Cross? Where is the United Nations? Where is the social solidarity of Europe that was the first to send arms to Ukraine and ordered sanctions against Russia?

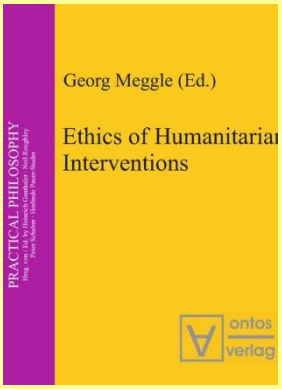
Oh! I forgot to write about the fifty (50) Visas' (only to those having a family in the country) given by the UK! A great movement for a great nation! Even Greece welcomed 5,421 Ukranians (as of 8/3).

Fortunately, numbers have changed because people pressed governments for a more humanitarian approach!

ΔΕΝ ΞΕΧΝΩ!

I WILL NOT FORGET!

УКРАИНА – ВОЙНА – ДРУЗЬЯ!



Ethics of Humanitarian Interventions

Edited by Georg Meggle

Source

pp.348-349

The report of a Spanish NATO pilot, Adolfo Luis Martin de la Hoz, who acted at the time of the war in Yugoslavia, testifies to the bestiality. "*We have destroyed this country, we have bombed it with state-of-the-art weapons, nerve gases, parachute mines exploding as soon as they hit the ground, depleted uranium-containing bombs, black napalm, sterilizing chemicals, poison sprays and poisonous sprays. which until today we did not know existed. At the behest of the North Americans, one of the greatest atrocities against humanity was committed.* "

U.S. Calls for War Crimes Probe into Russia's Invasion of Ukraine

Source: https://www.homelandsecuritynewswire.com/dr20220309-u-s-calls-for-war-crimes-probe-into-russia-s-invasion-of-ukraine

Mar 09 – U.S. Vice President Kamala Harris endorsed calls Thursday from world leaders **for an international war crimes investigation into Russia's invasion of Ukraine and its bombing of civilians, including children and pregnant women at a maternity hospital.**

Harris reiterated a need for the probe before meeting in Warsaw with Polish President Andrzej Duda in a show of U.S. support for NATO's allies in eastern Europe.

Her appeal came one day after a Russian airstrike on a maternity hospital in the Ukrainian city of Mariupol killed at least three people, including a child, according to Ukrainian officials.

"Absolutely there should be an investigation, and we should all be watching," Harris said as she stood alongside President Duda, who said, "It is obvious to us that in Ukraine, Russians are committing war crimes."

Harris also announced in a statement $53 million in new U.S. humanitarian aid "to support innocent civilians affected by Russia's unjustified invasion of Ukraine." Nearly two weeks ago, the U.S. donated about $54 million in aid for medical supplies, food, thermal blankets and other essential humanitarian aid.

On Wednesday, Amnesty International said an investigation it conducted into the March 3 Russian airstrike that reportedly killed 47 civilians in the city of Chernihiv concluded events may constitute a war crime.

The global human rights group said interviews and video analysis indicate unguided aerial bombs known as "dumb bombs" were used to mostly target civilians standing in line for food.

EDITOR'S COMMENT: The proposal is brilliant and I am sure that Russians will accept the challenge provided that the international war crimes investigation will take into consideration the cases of Yugoslavia, Cyprus, Afghanistan, Iraq and Vietnam – because war crimes never statute-barred over time!

Ukraine: What Will End the War? Here's What Research Says

By Douglas B. Atkinson

Source: https://www.homelandsecuritynewswire.com/dr20220309-ukraine-what-will-end-the-war-here-s-what-research-says

Mar 09 – In a matter of days, Russia's invasion of Ukraine has escalated to one of the biggest military conflicts in Europe since the second world war. The fog of war can obscure our view of who is winning, who is losing, and how long all of this will last. While no one can provide definitive answers, academic research on war gives us some insights into how the conflict in Ukraine might unfold.

Research suggests that the path to war resembles a bargaining game, where countries compete over issues like territory and resources to patriotism or the style of governance. Rather than going to war, which is very costly, competing states prefer to settle these disagreements peacefully. Ideally, the two sides do this based upon their relative probabilities of winning a hypothetical war. Sometimes this is not possible and war occurs.

War is, usually, the result of one of three problems. First, states might not have enough information to assess their relative probabilities of success.

Second, the two sides might not trust that an agreement made today will be honored tomorrow. Finally, countries might not be able to settle the contentious issue, especially when ethnic, religious or ideological tensions are involved.
According to this approach, wars will end when the problem that caused the war is resolved by fighting on the battlefield. How long the fighting will last and the form it takes depends on the extent and type of the problem.
In the case of Ukraine, it seems that the two sides did not have accurate information about their relative probabilities of success. Success in war is a product of two critical factors: the ability to fight and the willingness to suffer costs.
It was largely apparent that Russia's army was and is far superior to Ukraine's in terms of stockpiles of weapons and number of personnel. However, what was not apparent to Russia until the fighting began is that the Ukrainian people are far more willing to fight than they anticipated. Russia now knows that they miscalculated the willingness of the Ukrainian people, but to what extent is still unknown. The problem is that it is difficult for Ukraine to demonstrate the extent of its willingness to bear costs, and Russia is likely to mistrust any attempts to communicate this, anticipating that Ukraine will overstate in order to obtain a more favorable agreement. This suggests that the two sides will have difficulty ever resolving the information problem. When this happens, countries often end up fighting wars of attrition that last until one side gives up.
Wars require the tacit approval and support of those on the home front. Regardless of a country's government style, a leader is still dependent upon the support of a group of people, or coalition, to stay in power. Vladimir Putin depends on oligarchs, the Russian mafia and the military for his survival. Although Putin attempted to build up a financial bulwark that would allow him to protect the interests of the oligarchs, the sanctions imposed by the West have undercut most of his efforts.
The war has already become very costly for the oligarchs and these costs will only increase with time. When a sufficient number of Putin's coalition privately turn against the war, this will pressure Putin to end the war or risk his position of power. However, where this line is and if there are any viable alternatives that would better serve the interests of this coalition is questionable.

Costs of War

To a lesser extent, Putin is dependent on the support of the general population. The public is bearing the costs of war in the form of inflation, economic decline and battlefield deaths.

Putin has so far protected himself from these costs in three ways: **First,** he employs a selective system of conscription, which shields him from the full costs of battlefield deaths. **Second,** he controls the state media apparatus and has censored other media organizations, limiting the information available to the general public. **Third,** since there are not free and fair elections, there is no way other than mass mobilization and revolution for the Russian people to overthrow Putin. The calculation for Ukraine is much more straightforward. Ukraine is a democratic country aggressively pursuing European integration. This means that the willingness of the general population to suffer in the face of high costs is of the utmost importance. Without a critical mass of support, resistance to the Russian military will fall apart and Ukraine will lose the war. The fierce determination of the Ukrainian people up to this point suggests that this will not occur any time soon.
As Russian tactics become more aggressive, the Ukrainian people are paying ever higher costs. If we see the average Ukrainian's willingness to suffer and fight lagging, it should give us cause for concern. To this end, Western governments have stepped up humanitarian and defensive aid to Ukraine, in order to ensure that Ukrainian support for the war endures.
Ultimately, it appears that this war will not end quickly, as it will take a considerable amount of time for either side to make the other give up. Either the Russian military's transition to indiscriminate bombing of civilian targets succeeds in eroding Ukrainian resistance, or battlefield casualties and domestic economic woes succeed in defeating Russia's will to fight. Neither outcome is likely in the coming weeks and months, meaning people around the world are left to watch the horrors of war unfold, and wait.

Douglas B. Atkinson is Postdoctoral University Assistant in Political Science @ *University of Salzburg*.
Kevin Fahey is Assistant Professor in Political Science @ *University of Nottingham*.

Armored Transformer Barrier Protects Electric Power Grid

Source: https://www.homelandsecuritynewswire.com/dr20220311-armored-transformer-barrier-protects-electric-power-grid

Mar 11 – A 2013 sniper attack on an electric power substation in Northern California, which caused more than $15 million in damages and destroyed 17 transformers, led Idaho National Laboratory researchers to develop a novel protective solution. Now, the lab's

Armored Transformer Barrier system has been licensed for production by Michigan-based Waltonen Engineering, a full-service design and engineering company.

Made from inexpensive yet rugged military grade steel, the armor package creates a formidable barricade to protect high-valued, critical substations from threats including high-power rifles or vehicles laden with explosives. It even remains stable in Category 2 hurricanes without the need for expensive footings or anchors.

"From the beginning of this project, our goal was to design a simple and cost-effective solution to protect the power grid from physical threats and attacks," said lead designer Henry Chu. "After years of effort, we've thoroughly validated and documented this technology's effectiveness, and we're excited to see it manufactured and put to use."

Each barrier system consists of four components: an A-shaped frame, two armor cassettes that slide into the frame and an optional top-hat armor extension. A separate corner piece locks in to provide seamless 360-degree protection. Each package can be transported unassembled to a substation site on a commercial truck and reassembled on-site with simple hand tools, utility forklifts and lifting cranes.

"We are proud to support INL in the effort of protecting our nation's infrastructure." said Lloyd Brown, president and CEO of Waltonen Engineering, Inc. "As a small business providing design and fabrication, we understand the need for and importance of a reliable power grid. The Armored Transformer Barrier does just that by protecting the often-overlooked physical assets."

Although grid damaging events are rare in the United States, organizations including the Department of Homeland Security, Congressional Research Service and the National Academies of Science have warned of the societal effects from a long-term power outage caused by a physical attack on key parts of the grid. In 2015, Congress passed legislation to develop a strategic reserve of transmission equipment.

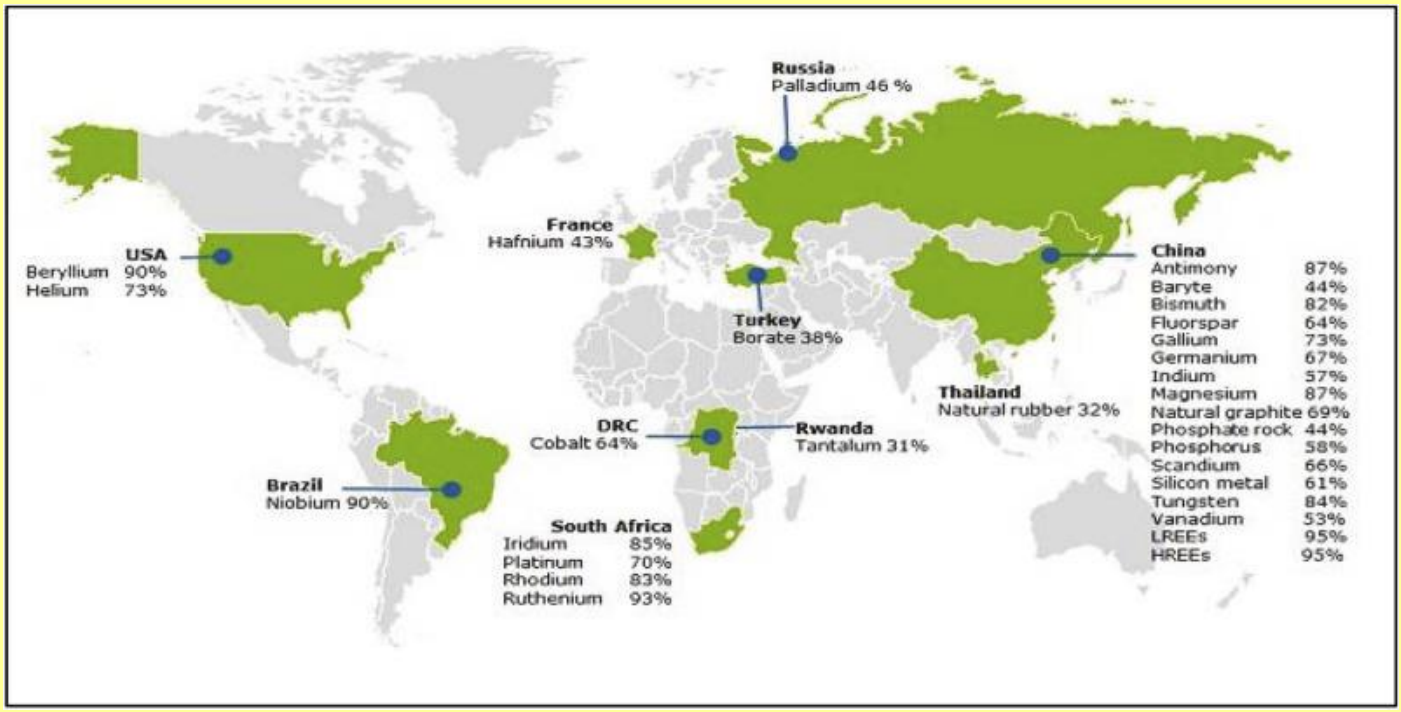
Currently, the U.S. imports about 85% of its high-voltage transformers from other countries. These large, custom-built devices cost $2.5 million to $10 million dollars each. With limited supplies, expensive raw materials and fabrication times of more than a year, the loss of a single piece of equipment could prevent reliable power from being delivered, creating a risk to national security, economic stability and public health.

2022 List of Critical Minerals

Source: https://www.homelandsecuritynewswire.com/dr20220311-2022-list-of-critical-minerals

Mar 11 – The U.S. Geological Survey has released a new list of 50 mineral commodities critical to the U.S. economy and national security after an extensive multi-agency assessment.

The 2022 list of critical minerals was determined using the most up-to-date scientific methods to evaluate mineral criticality. The new list contains 15 more commodities compared to the nation's first list of critical minerals created in 2018. Much of the increase in the new list is the result of splitting the rare earth elements and platinum group elements into individual entries rather than including them as "mineral groups." In addition, the 2022 list of critical minerals adds nickel and zinc to the list while removing helium, potash, rhenium and strontium.



"Critical minerals play a significant role in our national security, economy, renewable energy development and infrastructure," said Tanya Trujillo, Assistant Secretary of the Interior for Water and Science. "USGS data collection and analysis scans the horizon for emerging issues in crucial supply chains, and every three years identifies the nation's current vulnerabilities to potential disruptions."

The new list was created based on directives from the Energy Act of 2020, which indicates that at least every three years, the Department of the Interior must review and update the list of critical minerals, update the methodology used to identify potential critical minerals, take interagency feedback and public comment through the Federal Register, and ultimately finalize the list of critical minerals.

The Energy Act of 2020 defines a "critical mineral" as a non-fuel mineral or mineral material essential to the economic or national security of the U.S. and which has a supply chain vulnerable to disruption. Critical minerals are also characterized as serving an essential function in the manufacturing of a product, the absence of which would have significant consequences for the economy or national security.

The 2022 list of critical minerals, while "final," is not intended as a permanent designation of mineral criticality but will be a dynamic list updated periodically to represent current data on supply, demand, concentration of production and current policy priorities.

"Mineral criticality is not static, but changes over time," said Steven M. Fortier, USGS National Minerals Information Center director. "The 2022 list of critical minerals was created using the most recent available data for non-fuel mineral commodities. However, we're always analyzing mineral markets and developing new methods to determine the various and evolving critical mineral supply chain risks."

Prior to publishing the 2022 list of critical minerals, the USGS completed a thorough review of more than 1,000 comments received from the public, stakeholders and local and state officials. These comments were received in response to the draft critical minerals list the USGS released for public comment in November 2021.

"The USGS appreciates the input we received from the public and stakeholders," Fortier said. "In addition to reviewing each comment for the current methodology, we are also identifying opportunities to include some of the suggestions we received in the next update of the critical minerals list methodology."

The list of critical minerals will be the focus of USGS research quantifying critical mineral potential within the U.S. In President Biden's Bipartisan Infrastructure Law, the USGS received funding for its Earth Mapping Resource Initiative, which will update the Nation's mapping of these minerals, including those still in the ground and those present in mine wastes.

The Energy Act of 2020 directed the USGS to update the list of critical minerals, and the list is timely to provide guidance for use of the Bipartisan Infrastructure Law funds, both for the USGS and other agencies.

The 2022 list of critical minerals includes the following — click a mineral's name to find relevant statistics and publications:

- Aluminum, used in almost all sectors of the economy
- Antimony, used in lead-acid batteries and flame retardants
- Arsenic, used in semi-conductors
- Barite, used in hydrocarbon production.
- Beryllium, used as an alloying agent in aerospace and defense industries
- Bismuth, used in medical and atomic research
- Cerium, used in catalytic converters, ceramics, glass, metallurgy, and polishing compounds
- Cesium, used in research and development
- Chromium, used primarily in stainless steel and other alloys
- Cobalt, used in rechargeable batteries and superalloys
- Dysprosium, used in permanent magnets, data storage devices, and lasers
- Erbium, used in fiber optics, optical amplifiers, lasers, and glass colorants
- Europium, used in phosphors and nuclear control rods
- Fluorspar, used in the manufacture of aluminum, cement, steel, gasoline, and fluorine chemicals
- Gadolinium, used in medical imaging, permanent magnets, and steelmaking
- Gallium, used for integrated circuits and optical devices like LEDs
- Germanium, used for fiber optics and night vision applications
- Graphite , used for lubricants, batteries, and fuel cells
- Hafnium, used for nuclear control rods, alloys, and high-temperature ceramics
- Holmium, used in permanent magnets, nuclear control rods, and lasers
- Indium, used in liquid crystal display screens
- Iridium, used as coating of anodes for electrochemical processes and as a chemical catalyst
- Lanthanum, used to produce catalysts, ceramics, glass, polishing compounds, metallurgy, and batteries
- Lithium, used for rechargeable batteries
- Lutetium, used in scintillators for medical imaging, electronics, and some cancer therapies
- Magnesium, used as an alloy and for reducing metals
- Manganese, used in steelmaking and batteries
- Neodymium, used in permanent magnets, rubber catalysts, and in medical and industrial lasers
- Nickel, used to make stainless steel, superalloys, and rechargeable batteries
- Niobium, used mostly in steel and superalloys
- Palladium, used in catalytic converters and as a catalyst agent
- Platinum, used in catalytic converters
- Praseodymium, used in permanent magnets, batteries, aerospace alloys, ceramics, and colorants
- Rhodium, used in catalytic converters, electrical components, and as a catalyst
- Rubidium, used for research and development in electronics
- Ruthenium, used as catalysts, as well as electrical contacts and chip resistors in computers
- Samarium, used in permanent magnets, as an absorber in nuclear reactors, and in cancer treatments
- Scandium, used for alloys, ceramics, and fuel cells

- Tantalum, used in electronic components, mostly capacitors and in superalloys
- Tellurium, used in solar cells, thermoelectric devices, and as alloying additive
- Terbium, used in permanent magnets, fiber optics, lasers, and solid-state devices
- Thulium, used in various metal alloys and in lasers
- Tin, used as protective coatings and alloys for steel
- Titanium, used as a white pigment or metal alloys
- Tungsten, primarily used to make wear-resistant metals
- Vanadium, primarily used as alloying agent for iron and steel
- Ytterbium, used for catalysts, scintillometers, lasers, and metallurgy
- Yttrium, used for ceramic, catalysts, lasers, metallurgy, and phosphors
- Zinc, primarily used in metallurgy to produce galvanized steel
- Zirconium, used in high-temperature ceramics and corrosion-resistant alloys.

The USGS delivers unbiased science and information on mineral resource potential, production, consumption, disposal, and how minerals interact with the environment. The USGS National Minerals Information Center provides the Nation with data on domestic and global supply, demand, and trade for minerals and materials. This information is essential to understand mineral dependencies across economic sectors, forecast potential disruptions to mineral commodity supply, and evaluate the impacts of such disruptions.

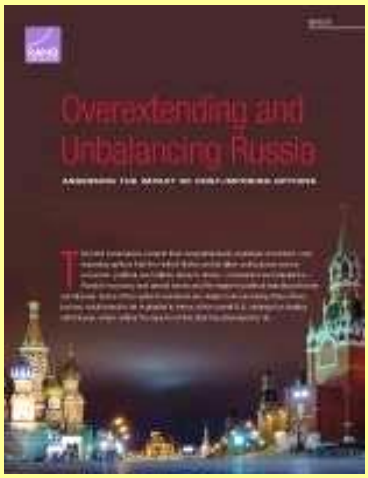
Overextending and Unbalancing Russia

Assessing the Impact of Cost-Imposing Options

By James Dobbins, Raphael S. Cohen, Nathan Chandler, et al.

RAND 2019

Source: https://www.rand.org/pubs/research_briefs/RB10014.html



This brief summarizes a report that comprehensively examines nonviolent, cost-imposing options that the United States and its allies could pursue across economic, political, and military areas to stress—overextend and unbalance—Russia's economy and armed forces and the regime's political standing at home and abroad. Some of the options examined are clearly more promising than others, but any would need to be evaluated in terms of the overall U.S. strategy for dealing with Russia, which neither the report nor this brief has attempted to do.

The maxim that "Russia is never so strong nor so weak as it appears" remains as true in the current century as it was in the 19th and 20th.

Today's Russia suffers from many *vulnerabilities*—oil and gas prices well below peak that have caused a drop in living standards, economic sanctions that have furthered that decline, an aging and soon-to-be-declining population, and increasing authoritarianism under Vladimir Putin's now-continued rule. Such vulnerabilities are coupled with deep-seated (if exaggerated) *anxieties* about the possibility of Western-inspired regime change, loss of great power status, and even military attack.

Despite these vulnerabilities and anxieties, Russia remains a powerful country that still manages to be a U.S. peer competitor in a few key domains. Recognizing that some level of competition with Russia is inevitable, RAND researchers conducted a qualitative assessment of "cost-imposing options" that could unbalance and overextend Russia. Such cost-imposing options could place new burdens on Russia, ideally heavier burdens than would be imposed on the United States for pursuing those options.

The work builds on the concept of long-term strategic competition developed during the Cold War, some of which originated at RAND. A seminal 1972 RAND report posited that the United States needed to shift its strategic thinking away from trying to stay ahead of the Soviet Union in all dimensions and toward trying to control the competition and channel it into areas of U.S. advantage. If this shift could be made successfully, the report concluded, the United States could prompt the Soviet Union to shift its limited resources into areas that posed less of a threat.

The new report applies this concept to today's Russia. A team of RAND experts developed economic, geopolitical, ideological, informational, and military options and qualitatively assessed them in terms of their likelihood of success in extending Russia, their benefits, and their risks and costs.

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

One if by invasion, two if by coercion: US military capacity to protect Taiwan from China

By Owen R. Cote

Source: https://thebulletin.org/premium/2022-03/one-if-by-invasion-two-if-by-coercion-us-military-capacity-to-protect-taiwan-from-china/

Mar 10 – Tension between China and Taiwan could lead to two basic types of military conflict. China could seek to reunify Taiwan with the mainland by brute force invasion, or it could seek to use coercion to achieve the more limited aim of modifying Taiwanese behavior.

Should the United States seek to prevent a Chinese invasion of Taiwan, the island's geography and technology conspire in ways that highly favor such an attempt—while these same two variables also make it much more difficult for the United States to prevent China from causing significant coercive pain to Taiwan. If the United States wishes to counter the Chinese capability to employ coercion against Taiwan, then it needs to make significant changes to current US military doctrine. If made, the resulting anti-coercion would cross a significant non-nuclear escalation threshold: attacking targets in an adversary's homeland, using conventional means—in some cases on a large scale—in a conflict with a nuclear-armed opponent.

This is worrisome because many observers argue that the United States should abandon its traditional policy of ambiguity regarding its commitments to Taiwan and fully commit to come to the island's defense in the event of any attack by China; perhaps the highest-profile example is Richard Hass and David Sacks' essay in *Foreign Affairs*, aptly titled "America's Support for Taiwan Must Be Unambiguous" (Hass and Sacks 2020.)

Given the potential for any US counter-coercion campaign to escalate, the United States should be wary of committing itself in advance of a conflict to defend Taiwan from all forms of Chinese coercion. If the United States does decide to end its policy of ambiguity regarding its commitment to Taiwan, it should do so only partially by committing in advance only to protecting Taiwan from invasion, while continuing to remain ambiguous regarding *how* it would respond to a Chinese coercion campaign that stopped short of invasion. Among the reasons to preserve such ambiguity is to preserve the incentive it gives Taiwan to work harder to obtain the best means of protecting itself from Chinese coercion.

Invasion or coercion

There are a number of reasons for China to be wary of launching an invasion of Taiwan, but the key military reason is that it cannot safeguard a properly sized, seaborne invasion force and the follow-on shipping necessary to support it during multiple transits across the 100-plus mile-wide Taiwan Straits. Protecting such an invasion force would require complete command of the sea surface of the Straits by China, but China cannot now and most likely will not be able in the future to come close to that level of command. This is because it has little or no capability to prevent extremely quiet American nuclear attack submarines (SSNs) from operating in the Straits, nor can it defend against long range, stealthy, anti-ship missiles (ASMs) launched from well east of Taiwan by long range strategic bombers operating from US bases in the Second Island Chain—most commonly defined as the chain of islands that make up the Marianas (most notably Guam), the western Caroline Islands, western New Guinea, and Japan's Bonin Islands. In contrast, the First Island Chain—which is almost half the distance to the Asian mainland—is generally considered to be composed of the Kuril Islands, the Japanese Archipelago, the Ryukyu Islands, Taiwan, and the northwestern portion of the Philippines, finishing towards Borneo. (See Figure 1.)

Matters are quite different when it comes to Chinese capabilities to cause pain in an effort to coerce Taiwan. China's People's Liberation Army (PLA) Air Force strike aircraft, PLA Rocket Force conventional tactical ballistic missiles, and PLA Navy submarines can all be used for coercive purposes against Taiwan. Unfortunately, the United States today can only protect Taiwan from Chinese submarines, and even that capability is somewhat vitiated by the fact that the two major ports which serve Taiwanese ocean shipping are vulnerable to Chinese land-based air and missile attack. Previously, I have argued that the United States can protect Taiwanese shipping from Chinese submarines—as well as the shipping of other members of the First Island Chain—for two basic reasons: The United States has passive acoustic barriers deployed in the exits from the East China Sea and the northern third of the South China Sea that will prevent the covert entrance of Chinese submarines into the Philippine Sea and the southern two-thirds of the South China Sea in a crisis, causing Chinese vessels great attrition passing back and forth through those straits in a conflict. Second, only China's shipping needs to pass through the northern third of the South China Sea; the shipping of all the members of the First Island Chain can avoid the northern third of the South China Sea by using the Philippine Sea (Cote 2019).

Figure 1. First and Second Island Chains, shown in red. Image courtesy of Office of the Secretary of Defense, 2016. Public domain image.

Even if it got fully involved in defending Taiwan, the United States has little or no capability to prevent large-scale attacks against Taiwan by Chinese strike aircraft and conventional tactical ballistic missiles. There are, however, measures that the United States could take to counter such Chinese missiles and aircraft on behalf of Taiwan. All of them have two things in common: They would rely on existing or already planned technology but need a new doctrine for exploiting it; and they would be highly escalatory, involving medium to large-scale conventional strikes against Chinese targets ashore. Consequently, the United States should be cautious about committing itself in advance to coming to Taiwan's aid if China pursues a military campaign of pure coercion—such as a blockade, air and missile bombardment, or anti-satellite warfare. The reasons for this are many: because the future innovations needed to counter such a campaign may not occur; because the escalation that would likely result from their being employed could provoke Chinese nuclear escalation; and because the United States should do nothing to reduce Taiwan's in centives to invest in already existing technologies that would significantly increase its own counter-coercion capabilities—such as advanced, anti-tactical ballistic missile defenses.

That said, while the United State cannot prevent Taiwan from being attacked, the United States should still be able to defend Taiwan militarily from an outright, full-blown invasion by Beijing. This is due to the capabilities of US Navy submarines to successfully operate against Chinese amphibious shipping in the Taiwan Straits despite Chinese anti-submarine warfare forces; the ability of US Air Force bombers armed with long range, stealthy, anti-ship missiles to operate against the same shipping from US-controlled bases in the Marianas Island Chain in the

face of Chinese aircraft and missile attacks; and the unique synergies that arise when US submarines and bombers are used as a team rather than independently. Let us discuss each of these items in turn.

US Navy submarines

Sonar, both active and passive, is the key sensor for anti-submarine weaponry, whether it be for surveillance or for tactical engagements. The enemy of all sonar propagation is shallow water—and because the Asian continental shelf extends far out to sea, any attempt to invade Taiwan across the Taiwan Straits would require Chinese amphibious shipping and the Chinese Navy ships escorting them to operate in very shallow water, mostly less than 600 feet in depth. Beyond that continental shelf, water depths fall sharply away to depths measured in tens of thousands of feet, which is the case both for the Philippine Sea and the southern part of the South China Sea.

In shallow water, acoustic energy tends to reflect repeatedly off the bottom and the surface— whereas in deep water, acoustic energy can find its way into deep sound channels where it is refracted between warmer water near the surface and denser water near the bottom.[1]

Acoustic energy loses much more of its strength when it is reflected because the reflector absorbs energy from the sound wave, whereas with refraction the sound wave is bent without losing energy. In the Cold War a faint Soviet submarine tonal that might propagate for many hundreds of miles in the deep sound channel of the Mid-Atlantic might propagate for only five to 10 miles in the much shallower Barents Sea. At the same time, active sonars encounter a different problem in shallow water: Their powerful signals cause reverberation, or the generation of multiple echoes from the bottom and the surface, which cannot be distinguished from a target echo.

All this is to say that neither China nor the United States will be able to prevent their opponent from operating its submarines in the Taiwan Straits. The key issue is what those submarines can do once deployed in the Taiwan Straits in the event of a Chinese invasion attempt. Chinese submarines cannot be used as direct anti-submarine escorts for amphibious shipping because that would seriously expose them to fratricide at the hands of Chinese Navy surface ships also escorting the invasion fleet, and they cannot be used to form barriers to prevent American nuclear-powered attack submarines from entering the Taiwan Straits because China lacks the ocean surveillance assets needed to enable such a barrier (Cote 2019). As a result, Chinese submarines will not play a major role in preventing American submarines from operating against Chinese invasion shipping.

The primary Chinese anti-submarine weapons in the Straits will be the Chinese Navy surface ships and patrol aircraft, and their capabilities will depend directly on the degree to which American nuclear-powered attack submarines compromise their inherent stealth by aggressively engaging Chinese amphibious shipping and their Chinese Navy escorts with traditional approach and attack tactics that require the subs to close with their targets using organic, hull-mounted sensors and fire on them with torpedoes after a periscope identification. Such attacks are highly "indiscreet" and they create high profile "flaming data"—to use two examples of the undersea warfare vernacular. They therefore significantly reduce the area that must be searched to find the submarine, which inevitably would produce some level of attrition against American submarines operating in such fashion. Even if such attrition was relatively low by historical standards, it would be problematic given the relatively small number of American submarines that would likely be available in many scenarios.

The American submarine force is already taking several steps to reduce this tradeoff between lethality and survivability. A prime example of these efforts is a small, battery-powered unmanned air vehicle that could be launched from a submarine's countermeasure dispenser tubes and be used to search 10-20 miles in advance of the submarine for surface targets (Blake 2020). Once found, surface targets could be identified and torpedoes or anti-ship missiles could be launched against them from well over the horizon—and therefore well over the horizon from the sensors of the target vessels that the submarine is shooting at. In this way, US submarines could "stand off" from the dense but very short-range anti-submarine assets escorting Chinese amphibious shipping without sacrificing the lethality of their weapons—particularly their heavyweight torpedoes, only one of which is needed to break most surface combatants or commercial cargo vessels in half.

US Air Force bombers

In addition to its submarines, US bombers also pose a relatively unanswerable threat against Chinese amphibious shipping, largely because of the unique capabilities of the United States' new Long Range Anti-Ship Missile (LRASM), and the ability of US Air Force bombers to operate from the Second Island Chain—where the volume of potential attack by Chinese aircraft and tactical ballistic missiles is radically reduced compared to the vulnerability of air bases in the First Island Chain.

LRASM is an air-launched anti-ship missile, derived from the Air Force's stealthy, long-range, air-launched, land attack cruise missile known as the JASSM-ER, which has a

range of more than 300 miles. Its stealthiness makes the LRASM essentially immune to Chinese Navy and Air Force air defenses, and allows it to remain at a high altitude during its initial approach to its targets—unlike essentially all other cruise missiles, which drop to extreme low altitude flight well before coming within line-of-sight of their targets and their accompanying air defenses. The ability to remain at higher altitudes for longer enables the second capability that makes LRASM unique: It can use its multispectral sensor imaging suite to search for, locate, and identify all the potential targets in its field of view by literally "measuring" them and comparing the results against a data base of ship types. Thus LRASM, and perhaps more appropriately, a large salvo of LRASMs, can be programmed to choose the best targets in a target-rich environment without the need for high-quality offboard targeting support. In some ways, the LRASM (which entered development in 2007) is one of the first and perhaps most significant indications of when the US military truly began "pivoting" to Asia.

The LRASM achieved its initial operating capability in 2018, when the US Air Force incorporated the missile in its B-1 heavy bomber force; it will also be integrated with B-52s and Navy F-18s and P-8s. One B-1 can carry 24 LRASMs and one B-52 can carry 20. Assuming that more than 50 US bombers are equipped with LRASM for the long haul, we can see that such a force would pose a significant threat to Chinese ships operating essentially anywhere in the Western Pacific, as long as they can safely operate from bases in the Second Island Chain.

Today, the main base used by US bombers in the Second Island Chain is Anderson Air Force Base on the island of Guam in the Marianas Island Chain, approximately 2,000 miles away from the Taiwan Straits.

China currently has two means of launching conventional attacks against this air base; the Chinese rocket force's intermediate-range ballistic missiles armed with conventional warheads, and bombers with conventional, long range, air-launched cruise missiles. The Chinese rocket force has about 200 intermediate-range ballistic missiles in total and its air force has 60 H-6 bombers, but both these forces also have two other missions: anti-ship attack against US Navy ships, and nuclear attack (Office of Secretary of Defense 2020). Conventional and nuclear land attack payloads for intermediate-range ballistic missiles are probably interchangeable, but anti-ship variants are probably dedicated to that mission. H-6s can in theory carry any one of the three different types of air-launched cruise missiles but it is unknown whether H-6 units train for all three missions or whether some are dedicated to one mission at the expense of the others.

This means it is hard to calculate what the threat of a Chinese conventional attack is to targets like Guam's Anderson Air Force Base in the Second Island Chain, but it is clear that the threat pales in comparison to that posed against targets in the First Island Chain, never mind targets in Taiwan. Steps are now being taken to improve the defense of Anderson air base and Guam as a whole against missile attack. If executed in full, they will go far toward dealing with the relatively limited missile threat described above, but that threat might grow in the future, albeit at great cost to both China's rocket force and air force.

In addition to better protecting Anderson, the United States has an additional option to pursue in the Second Island Chain that would be much easier to execute than in the First Island Chain: to apply the concept of agile combat operations that the US Air Force is pursuing for its fighters in the First Island Chain to bombers and tankers operating from the Second Island Chain.

The doctrine of agile combat operations in the First Island Chain envisions each individual fighter squadron simultaneously operating from several austere bases using already existing commercial runways and bringing in the mobile repair, fueling, arming, flight control, and housing facilities needed to turn those runways into minimally functional fighter bases. This creates a sort of shell game for attacking aircraft and missiles.

An agile combat operation in the First Island Chain is challenging for two fundamental reasons (Priebe, Vick, Heim, and Smith 2019). First, it requires significant pre-positioning of equipment in the theater, which is expensive. Second, and more important, it requires the permission of one or two members of the First Island Chain to not only allow the pre-positioning of material on their territory, but it also requires guarantees from the host nation(s) that they will allow US Air Force access to those bases in a war over Taiwan with China.

In practice, the countries in question would be Japan or the Philippines—or perhaps both. It is more possible to imagine Japan providing such guarantees but Japan is geographically much closer to China than most of the Philippines, which consequently makes agile combat operations there more risky. The island of Luzon in the Philippines provides by far the best real estate for such a collaboration but, needless to say, it is highly unlikely that the Philippines will pre-commit anytime soon to allowing the US Air Force to operate from its territory in the event of a war occuring with China over Taiwan.

This dilemma does not hold true for the Second Island Chain, or at least in the Marianas archipelago, because the four Marianas' main islands—Guam, Saipan, Tinian, and Rota—are all US territories. Because of this, the United States has the ability, if it chooses, to construct the infrastructure needed to disperse operations by US bombers, tankers, and airlift aircraft across a very wide area. Combined with the dispersal of some of the active and passive defenses already planned for Anderson Air Force Base and Guam, such a posture would provide a bastion against

conventional missile attack from which US Air Force could safely operate long range aircraft in a conflict with China.
However, there are several potential flaws in the argument to all the above. First, although US submarines will likely not suffer significant losses operating against a Chinese naval invasion force in the Taiwan Straits, their effectiveness would be limited by the size of their torpedo and missile loads, which can only be replenished in port. Second, US bombers carrying LRASMs do not have the organic capability to target their missiles if they are to take full advantage of their 300-mile range. Though the LRASM is highly autonomous compared to other anti-ship missiles, it still needs a rough, initial targeting cue from another source to tell it where to fly to. The United States has a panoply of air and space surveillanceassets that could easily provide such cues, but many of those will not be available in the very high threat environment that would occur over the Taiwan Straits in a conflict.
But here is where the potential synergies of a submarine-bomber team come into play; specifically, tactical synergy and operational synergy.

Submarine-bomber synergies
The tactical synergy is that US Navy submarines can provide targeting cues to US Air Force bombers carrying LRASMs, or to any aircraft carrying LRASMs for that matter (Converse 2020). This addresses both the concern for magazine size and potential attrition for submarines, and the problem of offboard targeting for LRASMs.
The operational synergy is that the submarine-bomber team presents the Chinese navy with a dilemma: It can concentrate its amphibious shipping into escorted convoys to best protect it from attack by lone US submarines, thereby exposing them to large-scale attack by LRASM-equipped US bombers. Or, it can disperse its amphibious shipping into a stream of individual ships presenting a less lucrative target to LRASM-equipped bombers—but also presenting an ideal set of targets for US submarines no longer faced with concentrated, anti-submarine defenses and therefore able to pick and choose the most lucrative individual targets, maximizing the effectiveness of their finite supply of weapons.
One last point: The power of the US submarine/bomber synergies described above apply everywhere, not just in the Taiwan Straits, nor the Western Pacific, but anywhere US submarines and bombers operate—i.e., on a completely global basis.

Countering coercion, as opposed to invasion
Compared to the challenges of mounting an invasion of Taiwan if the United States intervenes on Taiwan's behalf, China can cause a very large amount of pain to Taiwan in a coercion campaign that the United States cannot currently do much to contain. China has three primary potential instruments of coercion against Taiwan: a maritime blockade of Taiwan's shipping by the Chinese navy; conventional strikes against the full range of Taiwanese targets on land by Chinese air force strike aircraft; and use of the Chinese rocket forces' short-ranged conventional tactical ballistic missiles.
Space does not permit a full discussion of how the United States might counter a Chinese coercion campaign using these tools, but countering them would in some cases require significant innovation by the United States in how it uses its existing weaponry; the resulting innovations would in some cases involve crossing significant conventional escalation thresholds. I will briefly discuss one example of this tradeoff in the case of countering Chinese air force strike aircraft attacks against Taiwan.
Geography—or perhaps more accurately, political geography—prevents the United States from either placing its forward air bases in the First Island Chain or rapidly deploying to bases in that region the US Air Force's large and growing fleet of fifth-generation tactical fighters. If the US Air Force were able to replicate the hardened, forward-base posture it enjoyed in Western Europe during the Cold War in the First Island Chain, then it would be able to defeat the Chinese air force in the air and gain command of the air over Taiwan, the Straits, and coastal China itself. The fact that it cannot do this at the outset of a conflict, and that it is the Chinese air force which will likely have command of the air—at least against non-stealthy targets—is the single largest benefit that China derives from geography in a coercion campaign against Taiwan.
The only other way to defeat the Chinese air force early in a conflict is to attack it at its bases, which in US Air Force terminology is called an "offensive counter-air" campaign. Such campaigns against land-based air forces were never considered very effective through the end of the Cold War for largely technical reasons, and they were not an item of speculation and analysis during the post-Cold War era given the absence of peer-to-peer competition or conflict. In the meantime, the technology to conduct relatively efficient offensive counter-air campaigns has been developed and in some cases already deployed. The two key technologies are large payload, all aspect stealth bombers, and cheap, standoff, glide weapons with GPS-independent, precision guidance.
The US Air Force is several years away from beginning to deploy at least 120 B-21s, a follow-on to the now three-decade old B-2 stealth bomber, of which only 21 were originally bought. The B-21's capabilities—such as range and payload—remain classified but estimates are possible. The current building block for measuring US Air Force bomber payloads is the common strategic rotary launcher, of which the B-1 can carry three, the B-2

two, and the B-52 one (the B-52 can also carry weapons under its wings). One rotary launcher can carry 16 of the 500-pound Extended Range Joint Direct Arrack Munitions and 32 of the 250-pound Small Diameter Bombs. These devices are the main examples of the cheap, standoff, precision glide weapons referred to above. If launched from high altitude they can glide for 40 miles (and 10 to 15 miles if launched from low altitude), providing the capability to stand off from dense, terminal air defenses in either case. This means that if the B-21 is provided with two rotary launchers it can deliver from 32 to 64 precision glide weapons per sortie.

One can quickly see how the numbers of targets hit would rapidly escalate if dozens of B-21s were to fly multiple sorties over the course of several days or a week. If we assume that the Chinese air force has approximately 40 bases, each with 24 hardened aircraft shelters within unrefueled range of Taiwan, then that means that there are roughly 960 so-called "aimpoints" representing hardened shelters that could be covered relatively quickly (Heginbotham et al 2015). If these raids also included glide weapons with wide area sub-munition payloads, then Chines aircraft dispersed away from hardened shelters on ramp space within the airfield perimeter could also be attacked.

So far, so straightforward.

Two potential problems loom over this argument. First, there is a doctrinal issue, and second there is the question about conventional escalation. In the interest of conserving space, I will not analyze these issues here but simply flag them so that the reader knows of their existence. From a doctrinal perspective, it is not clear whether the US Air Force would support or resist committing its B-21 force to a large, offensive, counter-air campaign against the Chinese air force. Certainly, it has historically sought to gain command of the air with its fighter force, and has generally sought to use its bombers and other strike aircraft against targets whose destruction would in theory produce independent, strategic or "war-winning" effects, such as the leadership targeting pursued in the First Gulf War (Haun 2021). Thus, even if it is feasible—which I argue it is—a large-scale offensive counter-air campaign may at least initially be rejected by US Air Force.

Second, the question of conventional escalation is fraught in the context of a war between China and the United States over Taiwan. To be specific, massive cyber attacks, attacks against satellites in space, and attacks against targets in the opponents' territory can all be considered rungs in an escalation ladder that stops short of nuclear use, but which expands conflict well beyond attacks against opposing ships at sea or aircraft in the air.

It is possible, if not likely, that political leaders may refrain from crossing some or all of these thresholds because of fears that crossing them might lead to nuclear escalation. On the other hand, it may be that the shade thrown by nuclear weapons over all other types of conflict during the Cold War may be reduced in a Sino-American context, because both sides face disincentives to using nuclear weapons that are even higher than those faced by the United States and the Soviet Union during the Cold War. To put it simply, the United States' stakes in a conflict over Taiwan are vastly lower than they would have been in a conflict over the fate of Western Europe, which essentially eliminates any scenario where the United States would use nuclear weapons first in order to protect Taiwan. By the same token, US nuclear superiority over China is and will remain so vast that even if China uses nuclear weapons first there is no scenario in which China could reduce the essentially infinite amount of damage the United States could cause it in retaliation. The question of how much conventional escalation there would be in a conflict between the United States and China obviously cannot be settled here—but there is no guarantee that a conflict between the United States and China over Taiwan would be characterized by high levels of conventional escalation. At the same time, there are arguments to be made regarding how the United States might counter all the means of coercion of Taiwan available to China, to include its mobile tactical ballistic missiles and its submarines. I do not make them here, but as with the offensive counter-air campaign described above, they would depend on some degree of doctrinal innovation in the use of existing technology, as well as a willingness to cross the escalation threshold of attacking the opponent's homeland. Therefore, ironically, it appears that if the escalation threshold barring attacks against the opponent's homeland is crossed, the more conventional escalation the better for the United States, from a purely military point of view in a counter-coercion campaign. China has essentially no capability to project conventional power against US territory other than US territories in the Marianas. China's main means of conventional escalation appears to lie more in the realms of cyber and anti-satellite warfare, which would have little direct effect on any US effort to defend Taiwan from invasion.

Consequently, there are many uncertainties regarding the United States' ability to defend Taiwan from Chinese coercion. It is for this reason that I argue that the United States should not be in the business of making security guarantees that it might not be able keep in the event they are challenged. The United States cannot currently guarantee Taiwan protection against Chinese coercion. Whether the United States should work hard in the coming years to put itself in the position to do so is among the most important questions decision-makers on US military policy regarding Taiwan and China need to grapple with in the coming years.

Endnotes

[1] Refraction results from changes in the speed of sound in water that vary primarily with pressure and temperature. When the speed of sound is decreasing with depth, acoustic waves bend downward, and when it is increasing with depth, the waves bend upward. The speed of sound increases with both temperature and pressure, and when the two variables are working at cross purposes, i.e. the water temperature is dropping with depth and the pressure is increasing, temperature trumps pressure. A deep ocean basin usually has a surface layer of constant temperature and increasing pressure, a middle layer of decreasing temperature and increasing pressure, and a bottom layer of constant temperature and increasing pressure. Consequently, sound that gets into the middle layer can get trapped there and spread horizontally as its waves keep bending away from the surface and the bottom. This is what is known as the deep sound channel, and its axis is where the global underwater acoustic sensor network known as SOSUS is employed.

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

Owen R. Cote Jr. is the associate director of the MIT Security Studies Program and Co-Editor of the journal International Security. He has written extensively on submarines and anti-submarine warfare, including as the author of The Third Battle: The US Navy's Silent Cold War Struggle With Soviet Submarines (Naval War College Press, Newport, RI: 2003).

●▶ **Read also: Why Taiwan matters to China (and the rest of the world)**

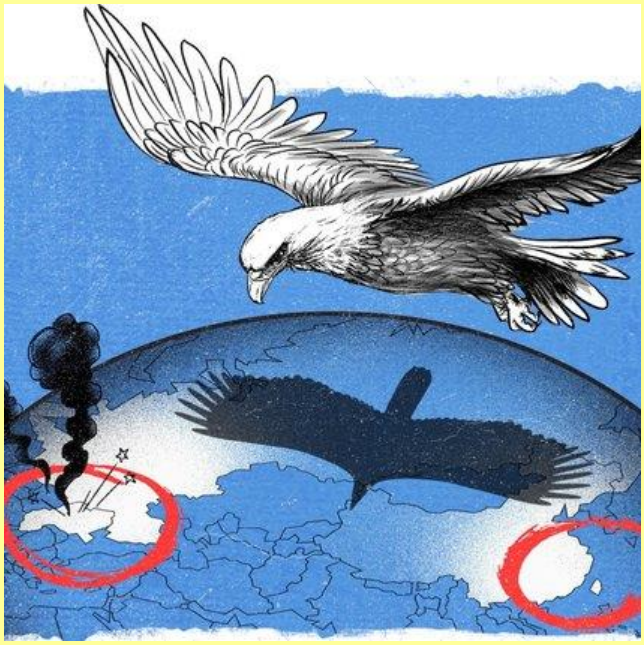
EDITOR'S COMMENT: Submarines and bombers are nice; and so are "allies" sympathy and promises. But the Taiwan Strait is only a 180-kilometer (110 mi; 97 nmi)-wide strait separating the island of Taiwan and China…

Ukraine's Lessons for Taiwan

By Jeffrey W. Hornung

Source: https://warontherocks.com/2022/03/ukraines-lessons-for-taiwan/

Mar 17 – Today, Ukraine is the site of a violent struggle between an embattled democracy and a repressive, irredentist, authoritarian regime bent on subduing it. Tomorrow, Taiwan could be the site of a similar clash. Oriana Skylar Mastro is likely correct in arguing that Russia's assault on Ukraine does not presage a Chinese attack on Taiwan. But applying lessons from the current crisis could nonetheless be critical for defending Taiwan in the future.



While the Ukraine invasion is still in its early days, it has already demonstrated how the United States and its allies can prevent a Chinese invasion from becoming the world's next big crisis. Rather than treat a Chinese victory as inevitable, Washington should begin preparing in peacetime to ensure a rapid, coordinated military and economic response to any potential attack. Policymakers in allied states around the region should also prepare for a dramatic refugee crisis, exacerbated by Taiwan's geography. To strengthen these efforts, America and its allies can target intelligence collection to better assess Beijing's intentions while also trying to anticipate the unexpected ways an invasion could reshape the political landscape from Canberra to Tokyo.

No Surprises

Months prior to its invasion, satellite imagery showed that Russia was building up its forces on Ukraine's border. While many had hoped that Putin would avoid conflict, the West should have seen his buildup as a sign of intent to invade. If China chooses to invade Taiwan, it will likely have to prepare on a scale that will be impossible to conceal. In addition to massing missiles, the Chinese military would likely need to assemble an amphibious

armada, aircraft, paratroopers and infantry, and logistical support capabilities that could be incredibly challenging to hide. But these preparations could either signal the start of a very large exercise or an assault. As a result, maintaining a close watch on military movements will be critical. Distinguishing between efforts geared toward an exercise versus an invasion will be difficult. There are arguably certain logistical preparations that China would conduct for an invasion but not a large-scale exercise, such as amassing greater amounts of food, fuel, and ammunition and assembling a large number of field hospitals. Similarly, it may be the case that for an invasion, some units that rarely participate in East China Sea exercises would be called up and moved east. This suggests that active and real-time intelligence could be the critical factor in alerting the world to an invasion.

The more allies monitor Chinese movements during future exercises, the better they will be able to judge what could potentially be invasion preparations. Taiwan should continue to devote its satellites and other advanced intelligence collection capabilities to this effort while the United States and other like-minded countries should foster robust intelligence links with Taiwan toward this end. By doing so, they can ensure that critical information collected by foreign sources is shared widely to prevent any surprise attacks and to assist with targeting cues in wartime. By the time it becomes apparent that an "exercise" is a ruse for an invasion, it will be difficult to assemble a credible deterrent in the region. Thus, it would benefit the United States and its allies to maintain a robust force posture, including logistical and sustainment support, to make clear that China will not be able to achieve its goals by force, or will at least incur enormous costs in doing so.

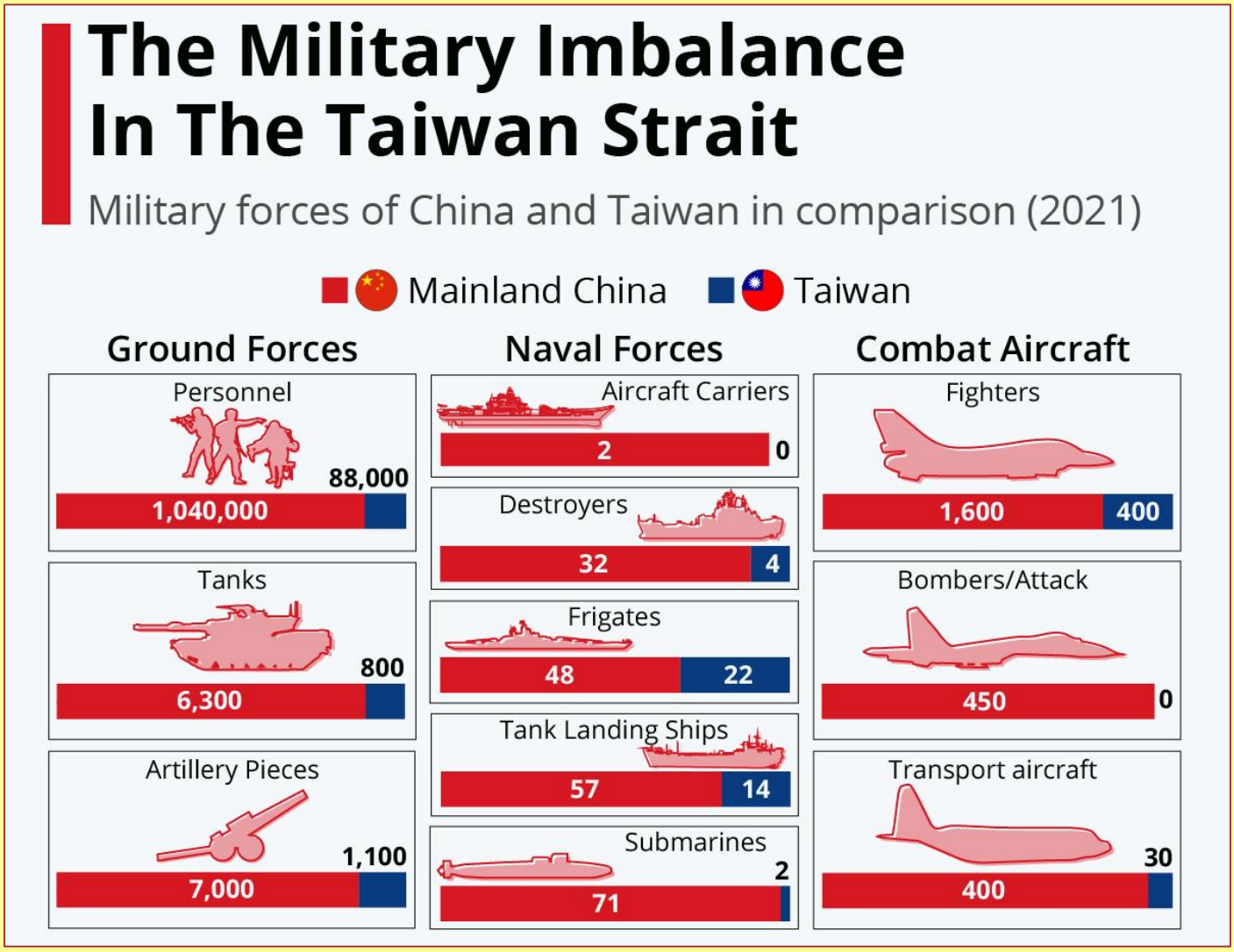
Prepare for a Struggle

It is still too early to draw definitive conclusions, but it has been striking how well the Ukrainians have defended themselves. Facing a quantitively larger and better equipped Russian military, Ukrainian forces have proven stubbornly resistant despite assessments that they would be unable to stop Russia's rapid movement. This underestimation of the Ukrainians' capability and will to fight had disastrous consequences for Russia. The same hubris could bedevil a Chinese invasion of Taiwan. As in Ukraine, national identity could play a factor. An overwhelming number of people in Taiwan see themselves as Taiwanese, distinct from mainland China, which can serve as a powerful motivation to fight. Training these people into some sort of territorial defense force could help make them lethal. Tactically, in advancing from Taiwan's western shore to Taipei, an invasion force could encounter numerous insurgents ready to set ambushes and take out vehicles with the types of anti-tank weapons being used in Ukraine. Rather than engage the People's Liberation Army force-on-force, Taiwan would be better positioned to pursue an asymmetric guerilla war in which civilians and military forces fight from urban areas, where they could hide and restock supplies. Similarly, the same forces could use guerrilla tactics to defend key choke points like bridges or valleys while leveraging mountains or rivers as obstacles. The more effectively teams of citizens and soldiers work together, the more of a challenge the Chinese forces will face. In Ukraine, Russia is already facing these challenges, including resupply issues. The longer Ukrainians hold out, the more challenges Russia will face. The same would be true for China, made worse by the fact that any resupplies would have to be brought from the mainland across the Taiwan Strait.

Just as defenders should not be underestimated, aggressors should not be overestimated. Russia has a large military but proved unable to force Kyiv's quick capitulation. There is still a lot the West does not know about Putin's operational plan and it is unclear which of his generals' assumptions regarding force readiness and training proved false. Ukraine showed that even a prepared invasion, telegraphed in advance, can go off-track quickly. China's military, like, Russia's, is sometimes viewed as a 10-foot giant. But if Russian forces, with recent operational experience in Chechnya and Syria, can struggle, why should we be confident the People's Liberation Army will be successful in what would be its first military operation since its border war with Vietnam in 1979? China may choose a more aggressive and lethal approach from the outset in order ensure victory at any cost, but there is still nothing inevitable about a Chinese conquest of Taiwan.

Launching a successful large-scale amphibious invasion across a maritime strait would require a lot of things to go right, and thus involves a lot of opportunities for things to go wrong. Whether it be rough waters across 100 miles of strait, a botched amphibious landing, stretched supply lines, or battlefield mistakes, the People's Liberation Army has opportunities for tactical failures that could result in operational catastrophes. The more that other countries help Taiwan, the more opportunities there will be for such catastrophes. And the more these allies prepare and coordinate their force postures and capabilities in peacetime, the more effective their help will be.

Taiwan could best prepare for this operation by ensuring the right kind of defense strategy and capabilities. According to Drew Thompson, this means "systems that are short-range and defensive, able to survive an initial bombardment from a larger adversary, and suitable for deployment close to home in defense of the island should it come under blockade or attack." Knowing that an invasion would come largely by sea, a premium could be placed on sea mines and anti-ship cruise missiles. Similarly, in addition to successfully injecting paratroopers into Taiwan, air superiority could be critical for any Chinese amphibious invasion to succeed. This would put a premium on anti-air capabilities. Finally, for everything, passive-defense measures and lots and lots of munitions may be needed. As Michael Hunzeker wrote in *War on the Rocks* last year, Taiwan and the United States should be focusing on stockpiling large numbers of small and cheap asymmetric capabilities, things like coastal defense cruise missiles, short-range mobile air defenses, naval mines, and drones.



Source: US Department of Defense (STATISTA)

Allied countries have been explicit that they would not defend Ukraine given that it is not a NATO member. Instead, European countries have been forthcoming with military assistance meant to bolster Ukraine's defense, with the United Kingdom, France, the Netherlands, and even Germany, among others, providing Ukraine with a variety of weapons. Many European countries may choose to do the same thing if Taiwan is attacked: they do not even formally recognize it, and it is geographically far away. These facts could lead to a situation in which allied states, including some of the European nations that had started to make forays into the Indo-Pacific operationally — such as France, the United Kingdom, or Germany — may be less inclined to provide operational support to Taiwan in a crisis. Were they to still provide

military assistance to Taiwan, such as anti-air missiles, this may be exponentially more difficult because of the distance and the fact that Taiwan is an island. Difficulties will only increase if China establishes air superiority and a maritime quarantine of Taiwan, enabling Chinese forces to intercept or prevent such aid from arriving. As a result, this assistance would be more effective before a war starts. Taiwan should be encouraged to stockpile — or procure — critical capabilities in peacetime.

A Quick and Coordinated Economic Response

Despite some initial disagreements over things like military aid or exclusion from SWIFT, the United States helped to rapidly coordinate an international coalition to punish Russia diplomatically, economically, and financially. It also led the way on providing military assistance to Ukraine. A similarly quick and unified effort would be necessary if Taiwan were attacked. While it is possible the United States, along with Japan and Australia, would intervene to defend Taiwan either directly or indirectly, it is likely that other countries would find it difficult to do so. Yet these countries could still be part of a coordinated international response to punish Beijing.

As the Ukraine crisis demonstrates, war is conducted on two battlefields: one between militaries and one among nations, banks, companies, and individuals. While Russia appears to be increasing its military advantage over Ukraine, Western allies are destroying Russia through financial sanctions and other types of economic penalties. Because of China's global trade and overseas investments, targeted, coordinated sanctions could drastically hurt the Chinese Communist Party, which is heavily involved in the economy. Of course, China's larger economy and greater integration with the world economy means that such steps might have a larger impact on some allied economies than the sanctions on Russia have had. In other words, the consequences for the global economy could be massive — far worse than what we have seen with Russia.

That said, Western countries should be prepared to take many of the same steps they have taken against Russia. These could include cutting off Chinese banks from SWIFT, sanctions on Chinese goods, and secondary sanctions on countries willing to trade with China. In addition, Western countries could ban Chinese planes from their airspace and ships from their ports, forcing Chinese citizens to remain locked in China. For a globally integrated economy like China's, this kind of isolation would dry up international trade and possibly collapse the renminbi, leading to significant economic contraction. The damage done by government sanctions could be further compounded by corporate actions. If global corporations discarded their joint ventures in Chinese companies, ended their business relationships with China, or withheld Western products, the air would be sucked out of the Chinese economy. While none of this is likely to cause China to cease an attack on Taiwan, the pain brought to bear on the government could undermine its legitimacy and authority. As with military aid, Taiwan's allies and partners should coordinate their economic response in advance to ensure they can act as quickly and effectively as possible.

A Greater Humanitarian Challenge

As of 2020, Ukraine's population was approximately 44 million people. The website for the U.N. High Commissioner for Refugees says that almost three million refugees have left Ukraine for neighboring countries such Poland, Hungary, Moldova, Romania, and Slovakia. Millions more are stranded inside the country. There are already growing concerns that the situation is leading to a humanitarian crisis. But Ukraine is surrounded by land, enabling those refugees who can manage it to escape by train, car, or foot. This is not the case for Taiwan. As of January, the population of Taiwan was approximately 23 million people. Should conflict occur, where will these people go? The Philippines and Japan are too far by boat. According to the Ministry of the Interior National Immigration Agency, as of September 2021 there were also approximately 765,000 foreigners on the island. Noncombatant evacuation operations would pose an extra challenge, as there are no good options for getting any of these people off Taiwan during a conflict. And in addition to the large number of people who would want out, there is also the difficulty of getting supplies in. If all Taiwan becomes an active war zone, delivering humanitarian assistance will be more dangerous as well.

Understanding the possible massive scale of a humanitarian crisis, the United States and Taiwan should focus on stockpiling critical resources and relief items. As the most capable ally that is closest to Taiwan, Japan would play a particularly important role. The United States, Japan, and Taiwan should begin discussions in peacetime about how Japan can best receive civilian refugees during a conflict. This would include identifying likely Japanese air- and seaports that could handle large influxes of people and pre-positioning critical supplies there.

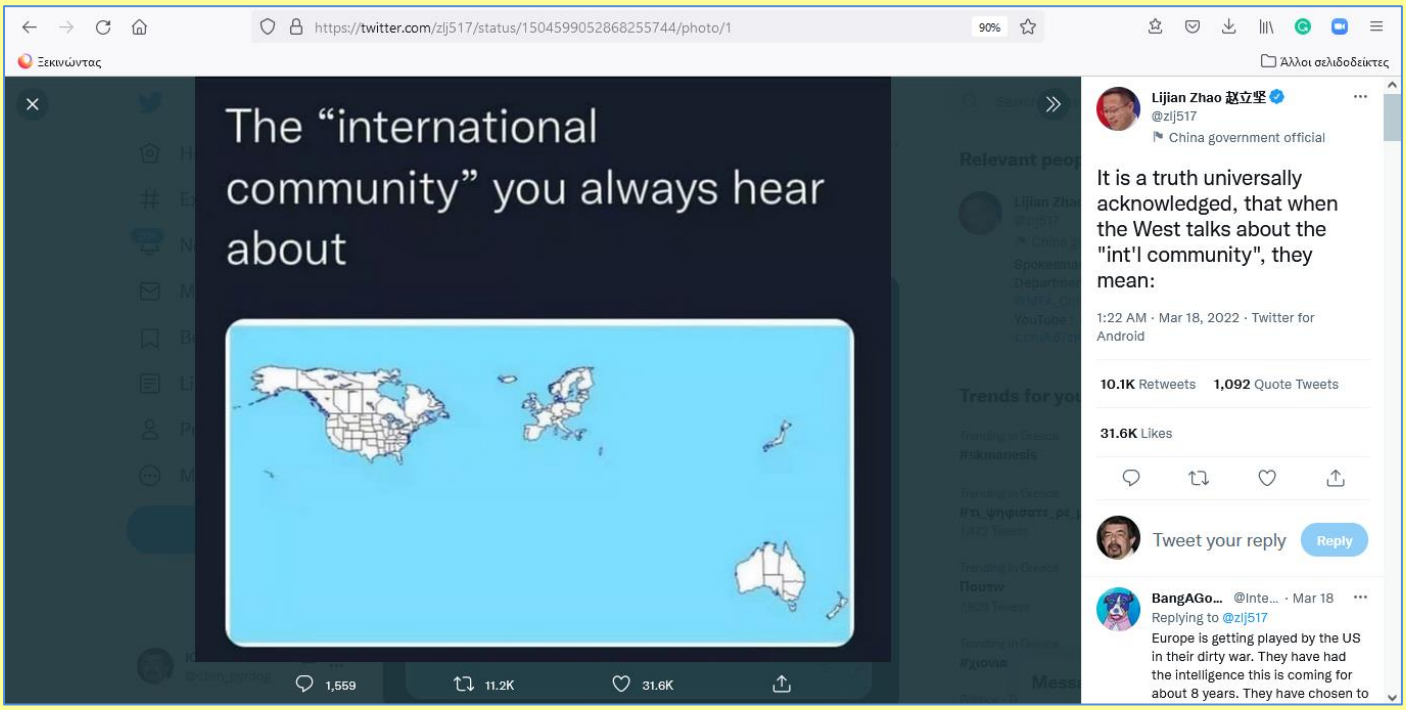
There Will Be Unintended Consequences

While trying to prevent surprises, policymakers should recognize that there will still be unintended consequences. Russia's war has led to dizzying changes that even a month ago seemed impossible. Belarus amended its constitution to allow it to host nuclear weapons. Finland and Sweden have signaled their interest in joining NATO.

And Germany has taken unprecedented steps to increase its defense spending and arm Ukraine.
In response to a Chinese onslaught against Taiwan, regional countries might make similar changes. For example, a Chinese attack could coalesce U.S. partners and allies in the Indo-Pacific. This could create a quasi-alliance between Japan and Australia and also push several states like the Philippines, Thailand, or Vietnam — which have been trying to balance between Washington and Beijing — closer to the United States. Even South Korea may decide that the price of trying to play nice with China is no longer advantageous.
As with Germany, a conflict could force Japan to rethink aspects of its strategic approach to the world. Already, the Ukraine crisis has caused Tokyo to take unprecedented steps to brace for the fallout of Russia's actions. A Taiwan conflict could lead Tokyo to accept its first combat role since WWII and possibly to make rapid changes in its defense policies. Political leaders might prove willing to host U.S. ground-based intermediate-range ballistic missiles or a U.S. Army Multi-Domain Task Force. Given recent chatter among some in Japan's political elite on the need for a nuclear-sharing arrangement with the United States, there is always a possibility that a war with China could push Japan into a position where it feels a nuclear deterrent is necessary.
Chinese leaders are learning from the conflict in Ukraine, not just by observing Russia's actions, but also the West's response. The United States, Taiwan, and other like-minded partners should be learning too. By doing so, they can help ensure that Beijing comes away from the current crisis with a greater appreciation of the risks that attacking Taiwan would entail.

Jeffrey W. Hornung is a senior political scientist at the nonprofit, nonpartisan RAND Corporation.

Visual interpretation of the term "International Community"



The war on children

Source: https://www.savethechildren.net/sites/default/files/waronchildren/pdf/waronchildren.pdf

"All wars, whether just or unjust, disastrous or victorious, are waged against the child."

EGLANTYNE JEBB

British social reformer who founded the Save the Children organisation at the end of the First World War

Mental health effects of Ukraine war zone on children

By Mary Kekatos

Source: https://abcnews.go.com/International/mental-health-effects-ukraine-war-zone-children/story?id=83203801

Mar 03 – As the Russian invasion of Ukraine intensifies, children are experiencing devastating consequences of being caught up in the war zone.

At least seven children have been killed, according to United Nations High Commissioner for Human Rights, and several more have been injured during air strikes and blasts.

Dozens of children are hiding in bomb shelters, basements, metro stations and other underground areas while others have fled their homes for neighboring countries.

Psychologists and other experts say there are also mental health concerns these children face and that it's important they have as much structure as possible to keep a sense of stability in their lives.

And adults can better provide for their children by taking care of their own mental health needs.

"Children are extremely vulnerable to insecurity, not only the physical trauma but the psychological trauma, and it can reverberate and have repercussions for a long time," Dr. Paul Wise, a professor of pediatrics at Stanford University, told ABC News.

Mental health risks for children in war zones

There are physical risks for children that come with living in war zones, such as breathing in smoke and ash from fires and blasts that can affect the nose and lungs. But there are also mental health risks.

Studies have shown that children and families living in or fleeing war regions have an increased risk of suffering from mental health problems.

"We've seen past war situations like what is happening in Ukraine, an increase in depression, anxiety," Dr. Monica Barreto, a clinical psychologist at Orlando Health Arnold Palmer Hospital for Children, told ABC News.
And while not all children will be traumatized, they may react differently to the traumatic situations they're witnessing.
"Some children may be more agitated, they may be harder to calm down, just more unsettled," said Dr. Jack Shonkoff, director for the Center on the Developing Child at Harvard University. "Some children in these circumstances tend to be more withdrawn, they're not crying as much, they're not demanding much attention."
He continued, "Sometimes people might look at that and say, 'This child is managing pretty well.' Sometimes that's a sign of the things to worry about the most because these children are withdrawing, they're internalizing a lot of what's going on."

Taking care of adults' needs helps children
Shonkoff, who is also a professor of child health and development, said one way to ensure a good outcome for children in a war zone is by making sure the adults are being taken care of too.
"The most important factor that determines how children are going to basically survive and go forward after a war experience is the nature of the adults who are caring for them," he said. "If the parents and the caregivers are significantly traumatized, they can't provide that sense of support. The adults' needs become critically important to protect the children."
He likens it to a safety presentation on a flight, when flight attendants tell passengers to secure their own oxygen masks before helping others.
"That's not a way of saying you're more important than your child. It's a way of saying if you pass out, your child won't be OK," Shonkoff said.
As for babies, he explained they are highly attuned to what's going on and if adults are not engaging with them, it can hurt the babies' development.
"If the parent is so traumatized or depressed, they can't coo back, can't smile back. That signals danger to the brain even though the baby doesn't know what's going on. That can create excessive stress in the body, raise inflammation and blood pressure levels," Shonkoff said.
Wise adds that children look to adults not only for protection but also for how frightened they should be and "for understanding what's happening to them in a time of profound insecurity, and children will feel the best protected with a strong, coherent community life and family life."

Children need as much as structure as possible

The experts say it's important to make sure that children are provided structure as much as possible while living in war zones to help with their development and well-being.

Barreto mentioned videos she's seen online of Ukrainian families in bunkers trying to provide play and teachers trying to teach lessons.

"Children are no longer in school, they're no longer in a safe environment," she said. "Maintaining some of that structure can be very helpful and protective during these times."

Barreto added that the same recommendations apply for children in refugee camps, making sure they are set up with their families and that some time is provided so they can experience "normality" whether that is playtime or having lessons.

Iraq War: World will never forget atrocities

Source: https://www.dailysabah.com/world/mid-east/iraq-war-world-will-never-forget-atrocities

Former U.S. President George W. Bush (R) presents Britain's former Prime Minister Tony Blair with the Presidential Medal of Freedom, on the last days of his presidency, at the White House, Washington, D.C., U.S., Jan. 13, 2009. (Reuters Photo)

Mar 20 – The United States invaded Iraq on March 19, 2003, on the premise that there were weapons of mass destruction in the country, which ultimately turned out to be false.

This marks the 19th anniversary of Operation Iraqi Freedom, a moment that strikes home with Zaid al-Mahdawi, an Iraqi living in Houston who was in Baghdad when the war began.

"Most of the people in my country knew before the U.S. invasion that (weapons of mass destruction) was a pretext, a false flag, that the U.S. and Allied Forces used to make the ends justify the means," al-Mahdawi told Anadolu Agency (AA).

Al-Mahdawi was a political officer for the United Nations Assistance Mission of Iraq at the time.

"There was a lot of sadness when the war began because of all that happened to our people," he said. "There was a humanitarian cost. Whole cities were destroyed. Many innocent people were killed," he added.

The basis of the war hinged on the 16 words uttered by former U.S. President George W. Bush at his State of the Union address on Jan. 8, 2003.

"The British Government has learned that Saddam Hussein recently sought significant quantities of uranium from Africa," he said, referring to the then-president of Iraq.

"The statement was based on faulty intelligence from a compromised source that was itself caught up in the politicization of intelligence to provide a basis for taking action against Saddam," said professor Kristian Coates Ulrichsen, a fellow for Middle East studies at Rice University's Baker Institute.

"The U.S. and Britain went to war to eliminate weapons of mass destruction which Iraq was presumed, erroneously, to have retained," Coates Ulrichsen told AA. "The Bush administration also believed there was a link between Saddam Hussein and al-Qaida, which British officials tried unsuccessfully to counter, as no such link existed," he added.
The invasion led to the capture of Saddam in December 2003. He was handed over to a court for trial, found guilty and executed in 2006.

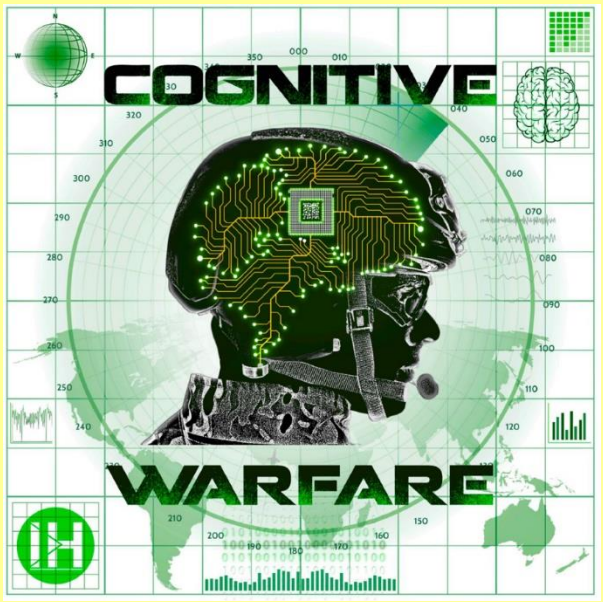
But political turmoil in Iraq, the U.S. military's continued presence in the region and no trace of chemical weapons being found created a firestorm of criticism against the U.S., as to why they invaded Iraq in the first place.
"The Bush administration initially attributed much of the early resistance to U.S.-led forces in Iraq to 'regime dead-enders,'" said Coates Ulrichsen, "but the fact that the war continued long after Saddam's capture and execution indicated that the insurgency had far greater depth than was at first assumed," he explained. Nearly two decades later, Iraqis like al-Mahdawi are still frustrated and angry about a war they believe should never have happened. "The U.S. spent billions and billions of dollars for nothing," said al-Mahdawi. "Just because you are stronger, doesn't mean you are smarter. The U.S. felt it knew everything but didn't want to listen to anyone else. They removed the regime, but they couldn't control the country," he said.
Due to the false pretenses that led to the war and the fact that no chemical weapons or weapons of mass destruction were ever found, the U.S. has since been seen in a different light by the rest of the world.
"The invasion of Iraq caused immense damage to the American and British image in the Middle East," said Coates Ulrichsen, "which was comparable in the British case to the fallout from the Suez Crisis in 1956 and which took a generation to recover from."
"The Iraqi people suffered a decade of internal displacement caused by the multiple and overlapping conflicts triggered by the invasion and the insurgency and which culminated in the horror of the emergence of ISIS and its capture of large areas of Iraq between 2014 and 2017," he added, using a different acronym for the Deash terrorist group.
"That war was a huge historical mistake," emphasized al-Mahdawi, "The U.S. lost credibility and made things worse. This will have a long-term effect, with people always saying, 'Hey, Iraq, remember what the U.S. did?'" But there is a double-edged sword to the war that al-Mahdawi does not want to let go unnoticed or unrecognized. He moved to Houston with his family in 2015 to find a better life and live in a free country. "The system helped me and is really great," said al-Mahdawi, who applied for American citizenship in 2022. "(The U.S.) has really provided me an alternative home with open arms," he said. "They don't treat me differently because I am from a different culture or have a different religion or have an accent when I speak," he added.
Like many Iraqis and Iraqi-Americans, al-Mahdawi said the world will never forget the atrocities of the war.
"It was a huge mistake that can't just be struck from the record," he said. But al-Mahdawi believes lessons can be learned from history and hopes the U.S. will not make the same mistake. "We accept the things we can't change because it's out of our control," he said. "I have hope that the U.S. will find good solutions and make important and significant

changes in how they deal with other countries." "We must move on, be realistic that we cannot change the past, and go forward to the future," added al-Mahdawi.

EDITOR'S COMMENT: According to the United Nations, a war crime is a serious breach of international law committed against civilians or "enemy combatants" during an international or domestic armed conflict. A war crime occurs when superfluous injury or unnecessary suffering is inflicted upon an enemy. Despite the outrage caused by the bombing of a school or a country's TV station, such actions do not necessarily amount to war crimes. Such bombing will only be a war crime if the extent of civilian casualties resulting from the attack is excessive compared to the military advantage gained from the attack. In contrast with genocide and crimes against humanity, war crimes have to occur in the context of armed conflict. Article 147 of the Fourth Geneva Convention defines war crimes as "*wilful killing, torture or inhuman treatment, including … wilfully causing great suffering or serious injury to body or health, unlawful deportation or transfer or unlawful confinement of a protected person … taking of hostages and extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly*".
Although I found many definitions of war crimes it was difficult to find articles on the punishment of war crimes in WWI, WWII (partial exception: Nuremberg trials – 177 defendants, 24 were sentenced to death, 20 to lifelong imprisonment, and 98 other prison sentences), Iraq war, Iran-Iran war, Vietnam war, Yugoslavia war (exception: International Criminal Tribunal for the former *Yugoslavia* – ICTY), Syria or for crimes against Kurds.

Countering cognitive warfare: awareness and resilience

Source: https://www.nato.int/docu/review/articles/2021/05/20/countering-cognitive-warfare-awareness-and-resilience/index.html



May 2021 – The Alliance faces a range of challenges in emerging domains of conflict. These domains can arise from the introduction of new and disruptive technologies. The domains of space and cyber, for example, came out of developments in rocket, satellite, computing, telecommunications, and internetworking technologies. The increasingly widespread use of social media, social networking, social messaging, and mobile device technologies is now enabling a new domain: cognitive warfare.
In cognitive warfare, the human mind becomes the battlefield. The aim is to change not only what people think, but how they think and act. Waged successfully, it shapes and influences individual and group beliefs and behaviours to favour an aggressor's tactical or strategic objectives. In its extreme form, it has the potential to fracture and fragment an entire society, so that it no longer has the collective will to resist an adversary's intentions. An opponent could conceivably subdue a society without resorting to outright force or coercion.
The aims of cognitive warfare can be limited, with short time horizons. Or they can be strategic, with campaigns launched over the course of decades. A single campaign could focus on the limited aim of preventing a military manoeuver from taking place as planned, or to force the alteration of a specific public policy. Several successive campaigns could be launched with the long-term objective of disrupting entire societies or alliances, by seeding doubts about governance, subverting democratic processes, triggering civil disturbances, or instigating separatist movements.

Combined arms

In the last century, the innovative integration of mobile infantry, armour, and air resulted in a new and initially irresistible kind of manoeuver warfare. Today, cognitive warfare integrates cyber, information, psychological, and social engineering capabilities to achieve its ends. It takes advantage of the internet and social media to target influential individuals, specific groups, and large numbers of citizens selectively and serially in a society.
It seeks to sow doubt, to introduce conflicting narratives, to polarise opinion, to radicalise groups, and to motivate them to acts that can disrupt or fragment an otherwise cohesive

society. And the widespread use of social media and smart device technologies in Alliance member countries may make them particularly vulnerable to this kind of attack.

Fake news not required

It is useful to note that false information or fake news are not required to achieve the aims of cognitive warfare. An embarrassing government document, hacked from a public official's email account, anonymously leaked into a social media sharing site, or dribbled out selectively to opposition groups in a social network, is sufficient to cause dissension.

A social messaging campaign that inflames the passions of online influencers can cause controversies to go viral. Social media groups may be motivated to organise demonstrations and to take to the street. Official denials or ambiguous public responses in these circumstances can add to confusion and doubt or to entrench conflicting narratives among segments of the populace.

While fake social media accounts and automated messaging "bots" can augment this dynamic, they are not required. (A recent MIT study found that the emotions of suprise and disgust alone make messages go viral – and regular users, not bots, rapidly re-send them.)

Our clever devices

A paper copy of your favorite newspaper does not know what news items you prefer to read. But your tablet computer does. The advertisement you saw in the paper does not know that you went to the store to buy what was advertised; your smartphone does. The editorial you read does not know that you enthusiastically shared it with some of your closest friends. Your social network system does.

Our social media applications track what we like and believe; our smartphones track where we go and who we spend time with; our social networks track who we associate with and whom we exclude. And our search and e-commerce platforms use these tracking data to turn our preferences and beliefs into action – by offering stimuli to encourage us to buy things we might not otherwise have purchased.

Thus far, consumer societies have seen and accepted the benefits. The tablet computer serves us news stories that it knows we will like, because it wants to keep us engaged. Advertisements are displayed that conform to our tastes, based on our previous purchases. Coupons appear on our smartphone to encourage us to stop at the store that, by some apparent coincidence, is on our current route already. Social networks present opinions that we heartily agree with. The friends in our social network circles share these opinions too, as those who do not are quietly "un-friended" or leave on their own.

In short, we increasingly find ourselves in comfortable bubbles, where distasteful or disturbing news items, opinions, offerings, and persons are rapidly excluded – if they appear at all. The danger is that the society at large may fragment into many such bubbles, each blissfully separate from the others. And, as they drift apart, each is more likely to be disturbed or shocked whenever they come into contact.

The regular bustle and commerce of the public square, the open debate in a public forum, the sense of a common res publica (public affairs) of a pluralistic society – these moderating influences may become weakened and attenuated, and our sensibilities more easily disturbed. What once was a vibrant open society becomes instead a collection of multiple closed micro-societies cohabiting the same territory, subject to fracture and disarray.

Our weakened minds

Our cognitive abilities may also be weakened by social media and smart devices. Social media use can enhance the cognitive biases and innate decision errors described in the Nobel-prize winning behaviourist Daniel Kahneman's book Thinking, Fast and Slow.

News feeds and search engines that serve results which align with our preferences increase confirmation bias, whereby we interpret new information to confirm our preconceived beliefs. Social messaging apps rapidly update users with new information, inducing recency bias, whereby we overweight the importance of recent events over those of the past. Social networking sites induce social proofing, wherein we mimic and affirm others' actions and beliefs to fit in with our social groups, which become echo chambers of conformism and groupthink.

The rapid pace of messaging and news releases, and the perceived need to quickly react to them, encourages "thinking fast" (reflexively and emotionally) as opposed to "thinking slow" (rationally and judiciously). Even established and reputable news outlets now post emotional headlines to encourage viral diffusion of their news articles.

People spend less time reading their content, even as they increase the frequency in sharing them. Social messaging systems are optimised to distribute short snippets that

often omit important context and nuance. This can facilitate the spread of both intentionally and unintentionally misinterpreted information or slanted narratives. The brevity of social media posts, in combination with striking visual images, may prevent readers from understanding others' motives and values.

The need for awareness

The advantage in cognitive warfare goes to him who moves first and chooses the time, place, and means of the offensive. Cognitive warfare can be waged using a variety of vectors and media. The openness of social media platforms allows adversaries easily to target individuals, selected groups, and the public via social messaging, social media influencing, selective release of documents, video sharing, etc. Cyber capabilities permit the use of spearfishing, hacking, and tracking of individuals and social networks.

A proper defence requires at the very least an awareness that a cognitive warfare campaign is underway. It requires the ability to observe and orient before decision-makers can decide to act. Technology solutions can provide the means to answer some key questions: Is there a campaign going on? Where did it originate? Who is waging it? What might be its aims? Our research indicates that there are patterns of such campaigns that repeat and can be classified. They may even provide "signatures" unique to specific actors that can help to identify them.

A particularly useful technology solution may be a cognitive warfare monitoring and alert system. Such a system could help to identify cognitive warfare campaigns as they arise, and to track them as they progress. It could include a dashboard that integrates data from a wide range of social media, broadcast media, social messaging, and social networking sites. This would display geographic and social network maps that show the development of suspected campaigns over time.

By identifying the locations, both geographic and virtual, in which social media posts, messages, and news articles originate, the topics under discussion, sentiment and linguistic identifiers, pacing of releases, and other factors, a dashboard could reveal connections and repeating patterns. Links between social media accounts (for example, shares, comments, interactions) and their timing could be observed. The use of machine learning and pattern recognition algorithms could help quickly to identify and classify emerging campaigns without the need for human intervention.

Such a system would allow real-time monitoring and provide timely alerts to NATO and Alliance decision-makers, helping them to formulate appropriate responses to campaigns as they emerge and evolve.

Considerations on resilience

Since the early days of the Alliance, NATO has played an essential role in promoting and enhancing civil preparedness among its member states. Article 3 of the NATO founding treaty establishes the principle of resilience, which requires all Alliance member states to "maintain and develop their individual and collective capacity to resist armed attack." This includes supporting the continuity of government, and the provision of essential services, including resilient civil communications systems.

Some key considerations for NATO at this time are how best to take the lead in defining cognitive attacks, how to help Alliance members maintain awareness, and how to support more robust civil communications infrastructures and public education frameworks in order to enhance the capacity to resist and to respond.

●▶ **Read also: 2020 Cognitive Warfare (Johns Hopkins University)**

French newspaper "L'Equipe" reveals the highest paid player in Paris Saint-Germain

Source: https://pledgetimes.com/french-newspaper-lequipe-reveals-the-highest-paid-player-in-paris-saint-germain/

Mar 22 – It was not surprising that Saint-Germain, which is at the top of the French League, but was knocked out of the Champions League final by Real Madrid, was the most generous club with its players and staff among the French League clubs.

And in the salary arrangement for French Ligue 1 players published by L'Equipe, the first 14 places were for Saint-Germain, which is funded by Qatar Sports Investments, which has owned the Paris club since 2011.

Neymar, who comes to Saint-Germain in 2017, with the largest deal in history (222 million euros), leads this ranking with his total monthly salary (before taxes) of 4,083,000 euros, ahead of Argentine star Lionel Messi, who arrived last summer from Barcelona, (3375,000 euros), Kylian Mbappe (2.2 million euros), who will reach the end of his contract next summer.

We must go down to the fifteenth place to find the first player not to wear the capital's club shirt, Monaco striker Wissam Ben Yedder (650 thousand euros).

According to L'Equipe, the highest paid player in Europe outside France is Cristiano Ronaldo, who with his new-old club, Manchester United, earns 2.6 million euros a month before taxes.

The average salary in Saint-Germain is 990,000 euros per month, while the average salary of all French League clubs is 100,000 euros (67,000 without Saint-Germain).

Marseille comes after Saint-Germain on the list of clubs that spend the most on salaries (average total salary of 226,000 euros per month), then Monaco (185 thousand euros), Nice (130 thousand euros) and Lyon (120 thousand euros), while Clermont occupies last place among The twenty clubs (20 thousand euros).

According to "L'Equipe", the salaries of the French League clubs this season amounted to 1.73 billion euros, compared to 1.38 billion euros in the 2018-2019 season, while the total income of "Ligue 1" decreased by 29% since March 2020 due to the repercussions of the outbreak of the Corona virus in particular and the collapse of the contract. With the broadcaster of the league matches "Mediapro".

Can Russia Be Held Accountable for War Crimes in Ukraine?

By David J. Scheffer

Source: https://www.homelandsecuritynewswire.com/dr20220322-can-russia-be-held-accountable-for-war-crimes-in-ukraine

Mar 22 – U.S. President Joe Biden has called Russian President Vladimir Putin a war criminal for the actions of Russian forces in Ukraine. Could Russian leaders be brought to justice under international law?

What War Crimes Are Being Committed in Ukraine?

Russia's invasion of Ukraine constitutes the crime of aggression under international law. The primary charge against senior leaders of Nazi Germany at the Nuremberg trials and Japan at the Tokyo war crimes trials was "crimes against the peace," meaning the initiation of a war of aggression. These trials resulted in the conviction of three dozen perpetrators for aggression. The 1945 United Nations Charter further embedded the illegality of aggressive war (as opposed to defensive war) in international law.

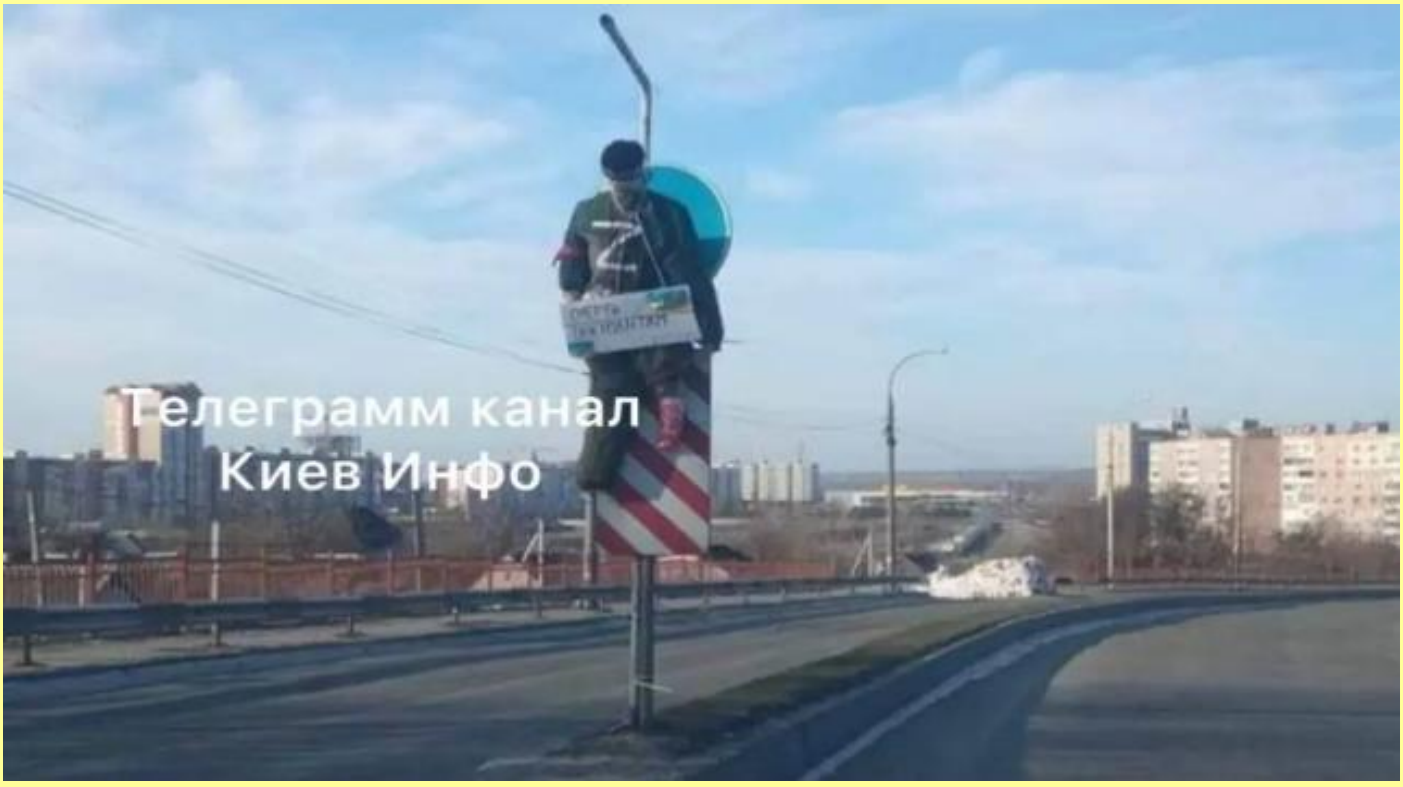
Because they fall under the overarching crime of aggression, all uses of armed force by Russia on Ukrainian territory can be viewed as illegal. Moreover, the Russian military continues to commit various atrocity crimes, a category which includes war crimes, crimes against humanity, and genocide.

War crimes. The unprecedented media coverage of Russia's invasion has recorded the commission of war crimes in real time. The Russian military has targeted civilian infrastructure including apartment buildings, hospitals, factories, stores, churches, schools, and cultural sites. Even where a military target exists, using disproportionate force while knowing that the strike will likely cause death or injury to civilians or damage to civilian structures is a war crime.

Siege tactics to starve civilians into surrender or to force them to flee as refugees, which now number nearly three million, represent clear war crimes, as would any use of cluster munitions or so-called vacuum bombs on civilian areas. The use of a tactical nuclear weapon, which Russian President Vladimir Putin and Foreign Minister Sergei Lavrov have implied is a possibility, would constitute a war crime because of the collateral damage to civilian lives and property. The use of chemical and biological weapons against any target—civilian or military—would as well.

Crimes against humanity. Russia's invasion likely also involves crimes against humanity, which are those committed as part of widespread or systematic attacks directed at a civilian population, with knowledge of those attacks. Such crimes include murder, the forcible transfer of a population, severe deprivation of physical liberty in violation of fundamental rules of international law, persecution against identifiable groups of civilians, sexual violence, and inhumane acts of similar character that intentionally cause great suffering or serious injury to body or to mental or physical health.

Genocide. Prosecutors may also investigate claims of genocide, which requires the intentional destruction of all or part of a national, ethnical, racial, or religious group. Genocide includes not only killing, but also causing serious bodily or mental harm to members of the group (in this case, those of Ukrainian nationality) or deliberately inflicting on the group conditions calculated to bring about its physical destruction in whole or in part. Establishing the genocidal intent of senior Russian leaders, however, could prove difficult.



EDITOR'S COMMENT: Is this a war crime?

How Might Investigations Proceed?

The International Criminal Court (ICC), which has jurisdiction over Ukraine, recently initiated a major investigation after forty countries formally referred the situation to the prosecutor. In addition, the UN Human Rights Council is setting up an investigative commission, and certain governments, the European Union, and nongovernmental organizations are launching their own investigative efforts. This has resulted in the commitment of an unprecedented level of resources for atrocity crimes investigations in a short period of time.

Whatever category of atrocity crimes is ultimately prosecuted, the clear top-down orchestration of the Russian military campaign will lessen the burden of proof for prosecutors. Additionally, ongoing reporting by the media serves as real-time documentation, thus making it difficult for Russian leaders to plead ignorance about atrocity crimes taking place in Ukraine. Nonetheless, they blatantly broadcast their aggressive intentions and, it appears, are doing nothing to prevent such crimes or to punish those who commit them. As a result, building a case against them could be easier.

What Role Could the United States Play in Seeking Accountability?

Although the United States is not a party to the ICC, it could have a major role to play, especially in light of President Joe Biden's recent assertion that Putin is a war criminal. Washington could orchestrate the collection and delivery of information from many sources, including refugees, satellite imagery, and declassified electronic intercepts. In fact, despite long-standing opposition to the ICC from the Republican party, some of its leading senators have introduced a resolution supporting the court's investigative efforts. The U.S. military could also help by analyzing the "order of battle" of Russian troops, which provides useful information for investigators and prosecutors.

Additionally, Washington could support Ukraine in building war crimes cases against Russian soldiers and officers. The Biden administration could immediately lead an initiative at the UN General Assembly for the United Nations to enter into a treaty with the Ukrainian government to establish a special tribunal. This body would be able to prosecute crimes of aggression committed by Russian leaders, which the ICC lacks the jurisdictional authority to carry out. The UN treaties creating the Special Court for Sierra Leone [PDF] and the Extraordinary Chambers in the Courts of Cambodia [PDF] two decades ago serve as models.

What Is Russia's Track Record on Investigating Such Abuses?

The Soviet Union played a major role during and after World War II to investigate and prosecute Nazi war crimes, including the Nazi occupation of Ukrainian cities such as Kharkiv and Kyiv. Between 1943 and 1952, the Soviets prosecuted an estimated eighty-two thousand people as Nazi criminals or collaborators. Soviet officials were also instrumental in creating the Nuremberg tribunal and its prosecution of crimes of aggression. In the 1990s, Russia supported the UN Security Council's creation of the International Criminal Tribunals for the former Yugoslavia and Rwanda.

In recent decades, however, the Kremlin has not pressed for domestic enforcement of the laws and customs of war in connection with its foreign military adventures. As a result, it is implausible to expect Moscow to cooperate with the ICC's investigation of atrocity crimes or with any special tribunal established to prosecute the crime of aggression in the future.

In the Event There Are Indicted Fugitives, Could Sanctions Help Compel Their Surrender?

Economic sanctions will primarily provide leverage to compel the withdrawal of Russian forces and the restoration of Ukraine's sovereignty and territorial integrity. If the sanctions are eventually lifted in stages, it could prove effective to include conditions requiring the surrender of indicted fugitives. This tactic served as a powerful incentive for the surrender of indicted leaders such as Slobodan Milosevic to the tribunal for the former Yugoslavia in The Hague. However, Serbia did not possess nuclear weapons, so attempts to use similar leverage with respect to indicted Russian fugitives shielded by a nuclear power would be risky.

Will Russia Have to Pay Reparations?

The enormous destruction of property and other financial losses will highlight Russia's responsibility to eventually pay for the reconstruction of Ukraine and give compensation to its people. The issue of reparations doubtless will be raised in negotiations to resolve the conflict and as an international condition for resuming any normal relationship with Russia.

Western countries will vigorously challenge any expectation by Russia that other nations will bear the entire cost of rehabilitating Ukraine. While the post–World War II Marshall Plan, which was led by the United States, helped to rebuild a devastated Europe, Russia should not expect such outside help this time. It remains a viable economy and society despite the international sanctions, and it bears direct responsibility as the aggressor nation.

David J. Scheffer is senior fellow at *CFR*.

What War is About?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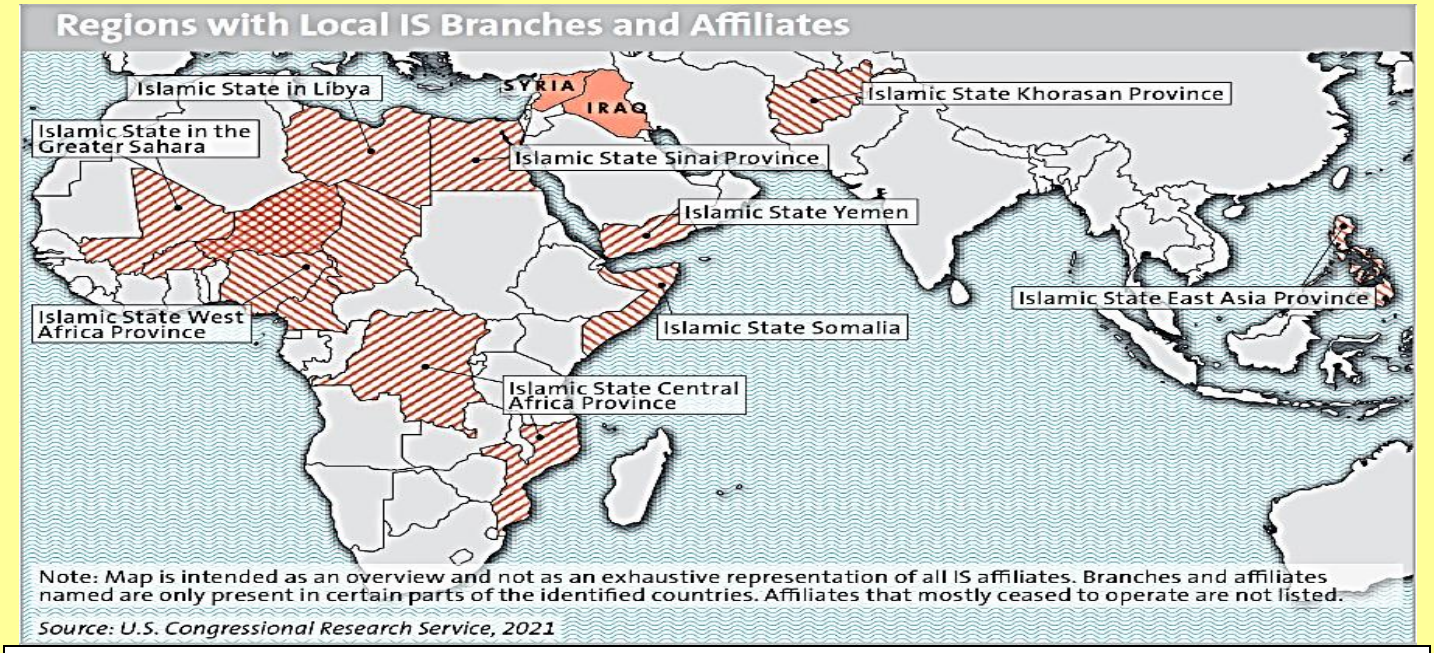
CSS Analyses in Security Policy
No. 299, March 2022
CSS ETH Zürich

The State of the Islamic State

The Islamic State group (IS) seems to have been reduced to a shadow of its former self. Public attention in the West has waned, and the priorities of the international community shifted to other issues. This warrants taking stock of the group's current status and assessing the dangers it still poses.



Fabien Merz is Senior Researcher in the Swiss and Euro-Atlantic Security Team at the Center for Security Studies (CSS) at ETH Zürich.

Perspectives on Terrorism

Volume XVI, Issue 1 | February 2022
Source: https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2022/issue-1/vol-16-issue-1.pdf

The current **Special Issue on Transnational Jihadism** has been guest-edited by *Dino Krause* and *Mona Kanwal Sheikh* from the Danish Institute for International Studies (DIIS). Together with their contributors, they look at jihadism through the conceptual lens of conflict studies. This Special Issue features five **Articles**, in addition to the introduction by the guest-editors. The first, by *Ioana Emy Matesan*, explores varieties of transnational jihadism.The second article by Dino Krause investigates how "transnational" jihadism really is. In the next article, *Mark Juergensmeyer* offers the readers his perspective as to how religious violence ends. *Saer El-Jaichi* and *Joshua Sabih*, in turn, look at the refutation of militant jihad by some leading "formers". Finally, *Mona K. Sheikh* and *Isak Svensson* compare the utility of a Countering Violent Extremism approach with the Conflict Resolution approach when confronted with jihadism. These articles are followed by a **Research Note** from *Judith Tinnes* who offers a progress report on her unique monitoring project "Counting Lives Lost" that covers victims of the Islamic State.

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The **Resources** section features a number of short reviews by our book reviews editor, *Joshua Sinai.* This is followed a bibliography prepared by *David Teiner* on the Conflict in Libya and *Berto Jongman* contributes another of his wide-ranging surveys on recent online resources on terrorism and related subjects.
In **Announcements**, *Olivia Kearney* presents her regular "Conference Calendar" which, due to COVID-19, is still dominated by online meetings. Finally, the principal editors, in their "Words of Appreciation" thank our external peer reviewers as well as all other collaborators for their priceless contributions which made our free and independent journal what it is.
Except for the Special Issue contributions, the texts of the current issue of *Perspectives on Terrorism* have been selected and prepared by *James Forest* and *Alex Schmid,* the journal's principal editors. Editorial Assistant *Jodi Moore* handled proof-reading, while the technical online launch of the February 2022 issue of our journal has been in the hands of our new Associate Editor for IT, *Audrey Vrolijk* (ISGA, The Hague).

Identities of the Female Terrorist: Perceptions of Women in Extremism

By Olivia Norton
Source: https://www.internationalaffairs.org.au/australianoutlook/identities-of-the-female-terrorist-perceptions-of-women-in-extremism/

Mar 03 – Women have long been involved in extremist movements. Yet, the counter-terrorist policy continues to underestimate the threat of female terrorists, with misogynistic representations defining the way these women are viewed.
The ideological extremism landscape has shifted rapidly in recent years. While Western mainstream media and policymakers have been primarily concerned with Islamic terrorism in the past few decades, they are now being overwhelmed with threats from groups

A sign memoralizing Sana'a Mehaidli along the road from Batar to Chamkha in the Chouf Mountains (Lebanon). Mehaidli, who was a member of the Syrian Social Nationalist Party, blew herself up next to an Israeli Army convoy in 1985 and is believed to be one of the first female suicide bombers in history. Source: Flickr, Paul Keller, https://bit.ly/34b4Ntl

such as QAnon, right-wing extremism, and a growing anti-government sentiment. Despite vast differences between Islamic extremism and right-wing radicalism, the primary actors associated with both movements are men, often those who are young, angry, and disillusioned. As such, counter-terrorism policy almost exclusively conceptualises terrorists as male.
Yet women also find appeal in extremist ideologies, and can be motivated by the identity, allure, and perceived inclusion extremist groups promote. So why is their involvement ignored? It's not that women don't become terrorists – studies have noted the participation of women in terrorist operations for years, with their involvement expanding over time. The agency of women terrorists is often obfuscated by the extremist ideologies that guide terrorist groups and misogynistic conceptualisations of the woman's role in society.

Anti-woman sentiment is a common theme in extremist groups. Regardless of their religious and cultural values, extremist groups of all sorts tend to share violent misogynistic tendencies. Yet, women play a vital role in many of these groups, becoming participants, recruiters, and perpetrators. Though women are more prominent in left-wing groups where they can wield more influence, more and more women are also drawn to Islamic extremism and right-wing groups, where their standing is viewed as inferior. The main value of women in these ideologies is their ability to reproduce and bear sons, with this subjugation framed as their traditional, inherent role. Some women are drawn to such traditions through frustration with the existing oppression faced in their own communities, viewing extremist ideology as "freeing" and a choice of their own, despite the draconian way they are often treated in extremist groups.

It is clear that terrorist groups have been able to take advantage of these frustrations. Women are able to be a significant influence in recruiting family members and other young girls who are more likely to trust a female presence. Their existence in these organisations is significant, yet their participation is often perceived externally as an anomaly, out of the natural order.

The "naive victim" and the "deviant woman"

The motivations for men to associate with terrorist operations are considered to be widely varied and can include religious indoctrination, a sense of heroism, political ideology, a need to provide for their family, or revenge. The majority of existing research into understanding terrorism focuses on male motivations and does not acknowledge potential gender differences.

Discussions on women in terrorism often focus on femininity, without regard to individual motivations and actions. Women can be drawn into extremism for different reasons to men, such as through promise of protection, empowerment, or, as seen in messages from QAnon and ISIS, a desire to aid children and orphans. However, women are also motivated by many of the same desires as men, inspired by political, religious, and cultural convictions. Women can be lured in with emotionally charged dogma and a sense of belonging and freedom, despite reality often being a contrast. A great number of women who join are well educated and enticed by ideas of liberation and ideological commitment. Yet female terrorists are often reduced to stereotypes, without consideration as to the actual threat and impact that women can have.

Women involved in terrorism are consistently seen as lacking agency, being controlled and coerced into their participation. Though many young women are manipulated into committing terrorist acts, the blanket infantilisation of female terrorists disregards those who join of their own volition. These "naive victims" who have been forced to participate by the men in their lives, primarily their fathers or partners, are assumed to not truly be aware of what joining a terrorist group entails.

Many women terrorists are indignant at this suggestion, with research finding that women feel a greater commitment to their cause, having overcome greater obstacles than men when joining. Women who have travelled to join groups such as Islamic State (IS) have spoken of their desire to "create a perfect Islamic society," believing that the group's actions would lead to a "paradise." These women are not limited to support roles and have been active participants in violence and terror.

Yet media reports often focus on the apparent "rarity" of the female terrorist. For example, . , an American-born woman joined IS and who has been accused of planning "violent jihad," was described as "doe-eyed." Many media outlets perpetuated the idea that she had to have been brainwashed, with her radicalisation touted as a "mystery." Yet, sworn witnesses of Fluke-Ekren's actions describe her as the leader of an all-female IS battalion, where she taught children to use assault weapons and was fervent in the radicalisation of others.

Another trope, that of the "deviant woman," views the woman terrorist in extreme contrast to the traditional conception of femininity. She is seen as betraying her womanhood, interrupting the natural order. Terrorism and violence are seen as inherently masculine, with women often viewed as incapable of committing such acts. As such, the woman who does is going against her feminine nature, shocking society.

Women with children who are classed in this way are also presented as failed mothers for choosing their ideology over their families. Ulrike Meinhof and Gudrun Ensslin, founders of the Red Army Faction, a former German far-left militant organisation, were often noted for the abandonment of their children, a factor not generally included in reporting on male terrorists.

The need to recognise complexity

Terrorist groups are aware of the gendered perceptions of their members and actions. These groups use women strategically and take advantage of heavily ingrained societal attitudes. The bias that creates the stereotypes of female terrorists also contributes to these women being able to effectively escape detection. The repeated shock when a woman commits terrorist acts shows that this strategy is effective and will continue to be should policymakers not recognise the need for a gender considered approach.

When women leave terrorist groups, they have often experienced the trauma of being widowed, sexual violence, or the responsibility of being primary caregivers to children. De-

radicalisation programs don't consider these unique challenges and are ill-equipped to rehabilitate female extremists. Attempts to thwart radicalisation also don't consider the specific targeting of women and young girls that preys on insecurities, frustrations, and ideas of committing to an important cause. Though many women have practical roles in terrorism, their participation also has a symbolic impact, able to influence others.

Simplistic ideas surrounding female terrorists limit policy in countering extremism. These ideas stem from misogynistic representations of "what a woman should be" and fail to consider the complex motivations of female terrorists. It is critical for policymakers to address this bias, and to recognise the capacity for women to have active, significant roles in extremist violence.

Counter-terrorism programs need to be intersectional, with consideration for the complexity of gender within different societies. Female terrorists can come from different ethnicities, levels of education, and backgrounds, and simplifying their motives into distinct stereotypes doesn't address the multi-layered motives behind engaging in terrorist acts. Women need to be considered as individuals, whose motivations and intentions vary as much as men. Including women in the policymaking process can allow for further understanding of how gendered lenses are used to encourage both men and women into extremism.

Olivia Norton is currently an intern at the AIIA National Office. She is studying a Master's of National Security Policy at the Australian National University, having previously completed a Bachelor of Criminology & Criminal Justice from the University of New South Wales.

Australia lists all of Hamas as a terrorist group

Source: https://www.reuters.com/world/middle-east/australia-lists-all-hamas-terrorist-group-2022-03-04/

Mar 04 – Australia on Friday listed the entire Palestinian Islamist group Hamas as a terrorist organisation, calling the move a deterrent to political and religious violence and bringing Australia in line with the United States, the European Union and Britain.

Australia had for two decades proscribed Hamas's paramilitary wing, the Izz al-Din al-Qassam Brigades, as a terrorist organisation but flagged last month that it wanted to upgrade the listing to the whole organisation, a process that involved consulting Australia's state and territory leaders. read more

Members of the Ezz-Al Din Al-Qassam Brigades, the armed wing of the Palestinian Hamas movement, take part in a rally in Rafah in the southern Gaza Strip on May 28, 2021. (AFP)

The change puts Australia into lockstep with its allies, which have also been moving to tighten their opposition to the Gaza ruling body, citing its access to sophisticated weaponry and terrorist training facilities. read more

"The hateful ideologies of terrorist groups and those who support them have no place in Australia," Home Affairs Minister Karen Andrews said in a statement.

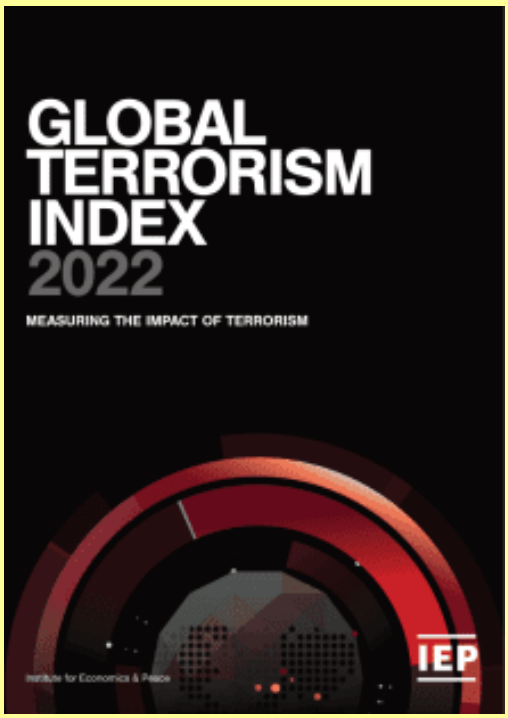
"Our strong laws target not only terrorist acts and terrorists, but also the organisations that plan, finance and carry out these abhorrent acts," she added.

Listing organisations was a deterrent to violent extremism and sent a message that Australia condemned the use of violence to achieve political, religious or ideological aims, she added.
Proscribing an organisation in Australia makes it illegal to give it funds, support or services.
Hamas has political and military wings, both now designated. It has ruled the Gaza Strip since a civil war in 2007 when it expelled forces loyal to Western-backed Palestinian President Mahmoud Abbas. Abbas remains dominant in Palestinian self-ruled areas of the Israeli-occupied West Bank.
Australia has been building its list of designated terrorist groups, which now number 28. It recently listed three other groups: Hay'at Tahrir al-Sham and Hay'at Tahrir al-Sham, which are based in Syria, and the Nationalist Socialist Order, a group based in the United States.

Global Terrorism Index 2022

March 2022
Source: https://reliefweb.int/sites/reliefweb.int/files/resources/GTI-2022-web.pdf

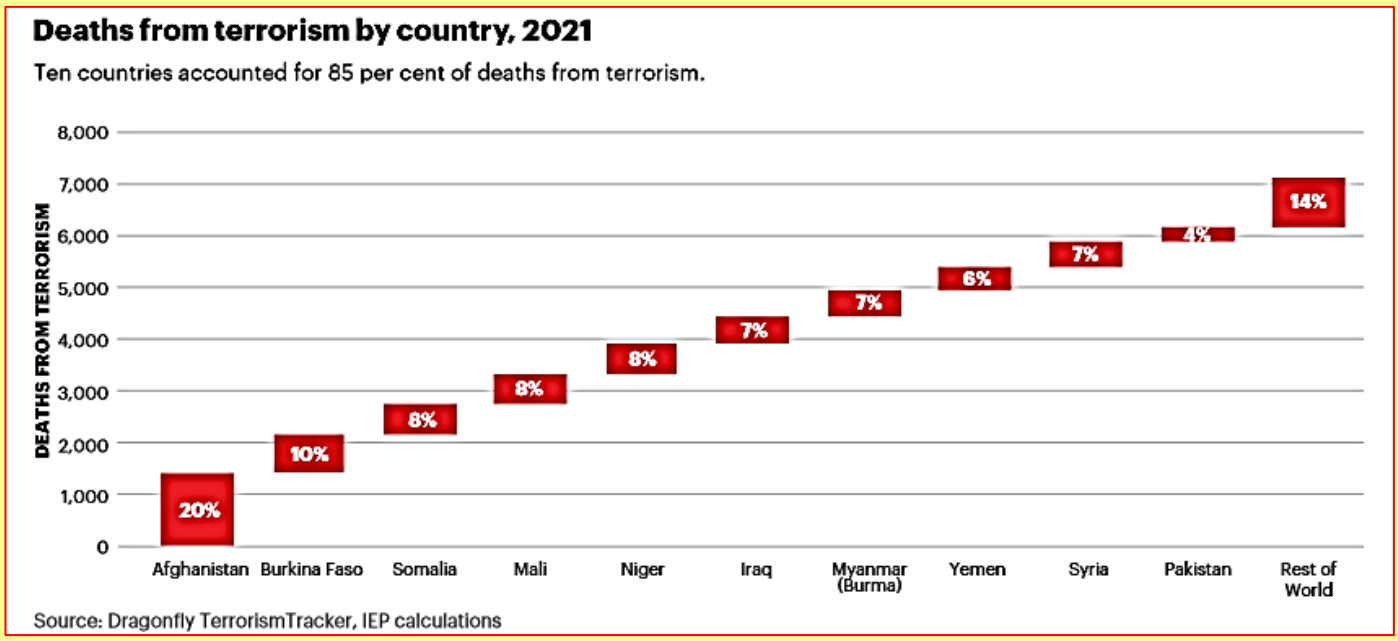
Global Terrorism Index 2022: Sub-Saharan Africa emerges as global epicentre of terrorism, as global deaths decline



- Despite global terrorist attacks increasing to 5,226 in 2021, deaths declined slightly by 1.2%.
- The Ukraine conflict is likely to drive a rise in traditional and cyber terrorism, reversing previous improvements in the region.
- Terrorism in the West declined substantially, with attacks falling by 68%. The US recorded its lowest score since 2012.
- Sub-Saharan Africa accounted for 48% of global terrorism deaths.
- The Sahel is home to the world's fastest growing and most-deadly terrorist groups.
- Myanmar had the largest rise in terrorism with deaths increasing 20 times to 521 deaths in 2021.
- Islamic State (IS) replaces the Taliban as the world's deadliest terror group in 2021, with 15 deaths per attack in Niger.
- Terrorism has become more concentrated, with 119 countries recording no deaths, the best result since 2007.
- In the West, politically motivated attacks overtook religious attacks, which declined by 82%. There were five times more political attacks than religious attacks.
- Terrorists are using more advanced technologies including drones, GPS systems and encrypted messaging services.

The 2022 Global Terrorism Index (GTI) reveals that despite an increase in attacks, the impact of terrorism continues to decline. In 2021, deaths from terrorism fell by 1.2% to 7,142, while attacks rose by 17%, highlighting that terrorism is becoming less lethal. Two thirds of countries recorded no attacks or deaths from terrorism – the best result since 2007 – while 86 countries recorded an improvement on their GTI score. The number of deaths has remained approximately the same for the last four years.
The Index highlights that terrorism remains a serious threat, with Sub-Saharan Africa accounting for 48% of total global deaths from terrorism. Four of the ten countries with the largest increases in deaths from terrorism were also in sub-Saharan Africa: Niger, Mali, the DRC and Burkina Faso.
Following military defeats in Syria and Iraq, IS shifted its attention to the Sahel, with deaths from terrorism rising ten times in the region since 2007. The Sahel has become the new epicentre of terrorism. Terrorism in the region is compounded by high population growth, lack of adequate water and food, climate change and weak governments. Adding to the complexity, many criminal organisations are representing themselves as Islamic insurgencies.
The annual Global Terrorism Index, now in its ninth year, is developed by leading international think tank the Institute of Economics and Peace (IEP) and provides the most comprehensive resource on global terrorism trends. The GTI uses a number of factors to calculate its score, including the number of incidences, fatalities, injuries and hostages,

and combines it with conflict and socio-economic data to provide a holistic picture of terrorism.
The Index shows that terrorism is becoming increasingly concentrated, contracting into countries already suffering from violent conflict. Conflict zones accounted for 97% of all deaths. The ten countries most affected by terrorism are all in conflict zones. Only 44 countries recorded a death from terrorism in 2021, compared to 55 countries in 2015.
The largest increase in terrorism was in Myanmar, where deaths rose 23 times from 24 to 521, followed by Niger, where deaths doubled, increasing from 257 in 2020 to 588 in 2021. Mozambique had the largest drop in terrorism deaths, falling by 82% to 93. The success was largely driven by counter-insurgency operations against IS by Mozambican forces, with support from Rwanda and the Southern African Development Community.



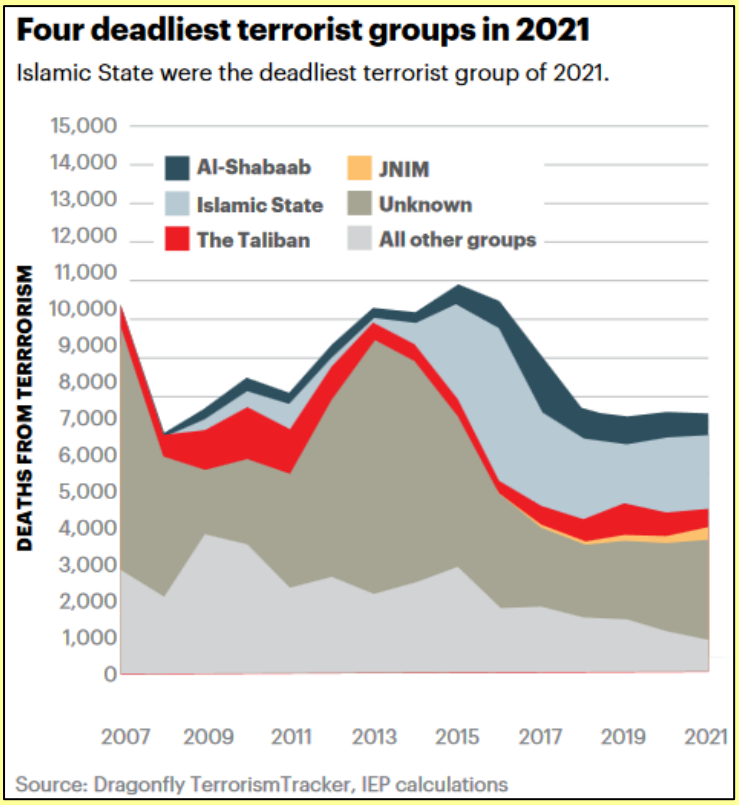
Also on a positive note, counter insurgency has significantly decreased Boko Haram's activities, with the organisation recording only 64 attacks in 2021. Deaths dropped by 92% from 2,131 in 2015 to 178 in 2021. The decline of Boko Haram contributed to Nigeria recording the second largest reduction in deaths from terrorism in 2021, with the number falling by 47% to 448.
Ukraine is likely to see an uplift in terrorism. In the 2014 crisis, the country recorded 69 terrorist attacks. Of serious concern are the knock-on effects of cyber terrorism to other countries. In addition to cyberattacks on the Ukraine, Russia has been credited with attacks on many other countries. It is possible that the threat of cyber terrorism will rise globally alongside the escalation of the Ukraine conflict.
The Ukraine conflict is likely to reverse gains in Russia and Eurasia, which recorded the largest improvement on the GTI in 2021, followed by North America. The MENA region has improved substantially, moving up two places from the least peaceful region in 2018. For the second year in a row, South Asia is the region most impacted by terrorism, while Central America and the Caribbean region recorded the lowest impact.

Steve Killelea, Founder & Executive Chairman, IEP: ***"Terrorism is becoming more centred in conflict zones, underpinned by weak governments and political instability, while in Europe and the US politically motivated terrorism has overtaken religiously motivated attacks. As conflict in the Ukraine dominates global attention it is crucial that the global fight against terrorism is not sidelined. Terrorist activity in the Sahel is increasing substantially, and is driven by Islamic militias. The decline of terrorism in the West coincided with the COVID-19 pandemic. Restrictions on freedom of movement, travel and the immediate threat to personal health may explain some of the fall. Once the emergency measures are removed there is the possibility of an uptick in terrorism activity."***

As technology has advanced so has its use by terrorist groups. This includes missiles and drones, which extend the reach of their attacks and reduce their casualties. Affordable smartphones, social media and encryption are other technologies that also extend their networks, making the spread of propaganda and recruitment easier.

The report identifies IS and its affiliates as the world's deadliest terrorist group in 2021, despite deaths attributed to the group declining slightly from 2,100, to 2,066 deaths. The worst attack of 2021 occurred when an IS suicide bomber detonated two bombs at Afghanistan's Kabul International Airport, resulting in 170 deaths and more than 200 injuries.

Jamaat Nusrat Al-Islam wal Muslimeen, who operate in the Sahel, is the world's fastest growing terrorist organisation and was responsible for 351 deaths in 2021, a 69% increase. The world's most lethal terrorist group was the Islamic State of West Africa, where in Niger each attack averaged 15 deaths.



Attacks in the West have declined significantly, dropping by 68% in 2021, from the peak in 2018. In total there were 113 attacks in Europe in 2021, and seven attacks in the US. The US recorded a significant improvement in the impact of terrorism, recording its lowest GTI score since 2012. There were three attacks by Islamic extremists in Europe, the lowest amount since 2014.

Over the last three years in the West there has been a significant shift in the instigators of terrorism. Acts of religious terrorism declined by 82% in 2021, and have been overtaken by politically motivated terrorism, which now accounts for five times as many attacks. Most attacks which are driven by a left or right ideology are perpetrated by individuals or groups with no formal affiliation to a recognised organisation. The targets of these attacks are often similar, typically government organisations or political figures, and the motivations are similar. Both cohorts are radicalised online and hold the existing system in contempt.

Attacks in the UK halved in 2021 to 12, the lowest number since 2008, with only one being religiously motivated. The US recorded seven attacks, with five being politically motivated and the remaining two unclassified. France recorded seven attacks down by 72% from the 25 recorded in 2020.

Rank	Country	Date	State/Province	Organisation	Fatalities	Attack type
1	Afghanistan	26/8/21	Kabul	Islamic State - Khorasan Province (ISKP)	170	Explosives
2	Burkina Faso	5/6/21	Sahel	Unknown - Jihadists	160	Firearms
3	Afghanistan	22/7/21	Kandahar	Taliban	100	Firearms
4	Afghanistan	8/5/21	Kabul	Unknown - Jihadists	86	Explosives
5	Burkina Faso	18/8/21	Sahel	Jamaat Nusrat Al-Islam wal Muslimeen (JNIM)	80	Firearms
6	Niger	2/1/21	Tillabéri	Islamic State in West Africa (ISWA)	70	Firearms
7	Burkina Faso	14/11/21	Sahel	Jamaat Nusrat Al-Islam wal Muslimeen (JNIM)	53	Firearms
8	Afghanistan	8/10/21	Kunduz	Islamic State - Khorasan Province (ISKP)	50	Explosives
9	Afghanistan	15/10/21	Kandahar	Islamic State - Khorasan Province (ISKP)	47	Explosives
10	Afghanistan	15/10/21	Kandahar	Islamic State - Khorasan Province (ISKP)	47	Explosives

Ten worst terrorist attacks in 2020

The conditions most closely associated with terrorism vary depending on the social and economic factors of a country. There is a clear link with political terror and a lack of acceptance of basic human rights for the majority of countries. For OECD countries, there is a strong relationship between increased terrorism and social inequalities, as well as easier access to weapons and higher militarisation. For other countries, weak institutions, group grievances and political terror are significant factors in driving terrorism.

Russia warns Washington is sending ISIS fighters to Ukraine

Source: https://thecradle.co/Article/news/7541

Mar 05 – The foreign intelligence service of Russia (SVR RF) warned on 4 March that the US and NATO countries are sending ISIS fighters from Syria to Ukraine.

The ISIS members, who are reportedly headed to Ukraine, underwent special training at the **US army's Al-Tanf military base in Syria.**

The SVR also stated that similar extremist groups are being recruited throughout West Asia and North Africa. The militants will allegedly enter Ukraine through Poland.

The SVR statement detailed the history of the secret operation they uncovered, saying in a statement: "At the end of 2021, the Americans **released from prisons** … several dozen Daesh terrorists, including citizens of Russia and CIS countries. These individuals were sent to the US-controlled Al-Tanf base, where they have undergone special training in subversive and terrorist warfare methods with a focus on the Donbass region."

The US claims that the illegal presence of their troops in northeast Syria is to protect the country's vast oilfields from falling under the control of ISIS.

Neither Moscow nor Damascus believe this official explanation, with the latter accusing the US of using it as an excuse to steal Syrian oil.

However, ISIS fighters are not the only foreign militants to be recruited to join the fight against Russia in Ukraine.

According to Russian Defense Ministry spokesman Igor Konashenkov, private military contractors have poured into Ukraine from around the world.

"US military intelligence has launched a large scale propaganda campaign to recruit PMC [private military company] contractors to be sent to Ukraine. First of all, employees of the American PMCs, Academi, Cubic, and Dyn Corporation are being recruited. […] Only last week, about 200 mercenaries from Croatia arrived through Poland, and joined one of the nationalist battalions in the southeast of Ukraine," Konashenkov said.

Both Iraq and Syria have accused the US of supporting and transferring ISIS fighters within the region.

Earlier this year, *The Cradle* reported that US forces transferred dozens of ISIS detainees, including high-ranking commanders, to Deir Ezzor governorate, which is close to the Iraqi border. This was reportedly an attempt to "revive ISIS" for the purposes of destabilizing a region that had recently been liberated by the Syrian Arab Army (SAA) with the help of Russian troops.

In August last year, similar reports surfaced after a high-ranking officer from Iraq's Popular Mobilization Units (PMU) reported that their thermal cameras detected US military helicopters transferring ISIS fighters to different locations around the country.
Russia launched a special military operation in Ukraine on 24 February after responding to the call for assistance by the newly-recognized republics of Dontesk and Luhansk.
Despite recognition of their independence by Russia, Ukrainian armed forces continued to shell civilian targets and to breach the borders of the two republics, prompting the leaders of the republics to formally ask Russia for military assistance.

US officials say Russia recruiting Syrians to fight in Ukraine: Wall Street Journal

Source: https://www.timesofisrael.com/us-officials-say-russia-recruiting-syrians-to-fight-in-ukraine-wall-street-journal/

Mar 07 – Russia is recruiting Syrian fighters experienced in urban combat as it ramps up its assault on Ukraine, according to US officials quoted by the Wall Street Journal on Sunday.
Moscow, which launched an invasion into its Eastern European neighbor on February 24, has in recent days recruited fighters from Syria hoping they can help take Kyiv, four US officials told the US news outlet.
Russia entered the Syrian civil war in 2015 on the side of President Bashar al-Assad's regime. The country has been mired in a conflict marked by urban combat for more than a decade.
One official told the Journal that some fighters are already in Russia readying to join the fight in Ukraine, though it was not immediately clear how many combatants have been recruited, and the sources would not provide further detail.
Foreign fighters have already entered the Ukrainian conflict on both sides.
Chechnya strongman leader Ramzan Kadyrov — a former rebel-turned-Kremlin-ally — has shared videos of Chechen fighters joining the attack on Ukraine and said some had been killed in the fighting.
Ukrainian Foreign Minister Dmytro Kuleba has claimed around 20,000 foreign volunteers have signed up to join Ukraine's forces.
The capital and the second-largest city Kharkiv are still held by Ukraine's government, while Russia has seized the port city of Kherson and stepped up its shelling of urban centers across the country.
Russia's assault, now in its twelfth day, has seen **more than 1.5 million people flee the country in what the UN has called Europe's fastest-growing refugee crisis since World War II.**

EDITOR'S COMMENT: Americans recruit and train ISIS prisoners in Syria to fight in Ukraine. Russians recruit Syrians to fight in Ukraine. Facts of fiction? There is no smoke without fire (both cases)! What a world we are living in!

Foreign fighters in Ukraine? Evaluating the benefits and risks

By Daniel L. Byman

Source: https://www.brookings.edu/blog/order-from-chaos/2022/03/03/foreign-fighters-in-ukraine-evaluating-the-benefits-and-risks/

Those going to Ukraine have little in common with jihadis ideologically, but the presence of right-wing extremists should give governments pause when they consider whether to encourage their nationals to go and fight, writes Daniel L. Byman.

Mar 03 – The outpouring of support for beleaguered Ukraine is astounding: governments around the world are joining sanctions and shunning Russia. European governments, including many that previously favored neutrality or otherwise tread carefully with regard to Russia, are joining the opposition to Moscow, and many are sending military aid. Some individuals, however, are doing more and are heeding President Volodymyr Zelenskyy's call to join the fighting: "Anyone who wants to join the defense of Ukraine, Europe and the world can come and fight side by side with the Ukrainians against the Russian war criminals." Ukraine's foreign minister tweeted a call for an "international legion" to fight against Russia.
Dozens of Americans, Canadians, and other foreigners are already trying to take up arms, and the U.K. foreign secretary, Liz Truss, signaled her support for British nationals who would do so. Such individual efforts are understandable, and the motives are at times even heroic — but they are also often a mistake, and foreign governments should not encourage such private warfare.
How many volunteers will go to Ukraine is unknown, but the mass recruitment of foreign fighters is hardly new, as David Malet and others have chronicled. The most recent mass wave involved jihadis, who went to fight in Afghanistan, Iraq and particularly Syria, among

other countries. Indeed, even before the latest round, the Ukraine conflict, which has waxed and waned since 2014, attracted foreign fighters: some to help Russia and its promise of anti-LGBTQ, anti-left wing, muscular nationalism; others to help defend Ukraine from foreign aggression. These volunteers included an array of white supremacist and other right-wing extremists.

The war today differs from jihadi conflicts and even the more limited recent civil conflict in Ukraine, but these and other experiences offer some lessons to consider about any future role for foreign fighters.

The military record of foreign fighters is mixed. In many cases, they are zealous but untrained and do not come well-armed. They are eager for combat and (in the case of jihadis) martyrdom, but overall add little to the combat power of their fellow fighters, especially in cases, like Afghanistan in the 1980s and Ukraine today, where there is plenty of manpower. Most end up as cannon fodder. In some instances, however, the fighters themselves come with skills — one report indicates that American and British special operations forces veterans are preparing to deploy to Ukraine — and this cohort can be far more useful. And in many other instances, foreign fighters become skilled through a brutal Darwinian process once they arrive to fight. The foreign fighters are often more useful in an insurgency, which Ukraine may become. For guerrilla conflicts, the foreigners' dedication is vital, and their more limited firepower is less of a disadvantage.

Yet foreigners bring with them many problems in addition to the limited skill of many volunteers. Language difficulties are one issue – **fighters from 52 countries!** Few will speak Ukrainian, and if they are put in a separate unit they may speak dozens of languages or otherwise have difficulty communicating with one another.

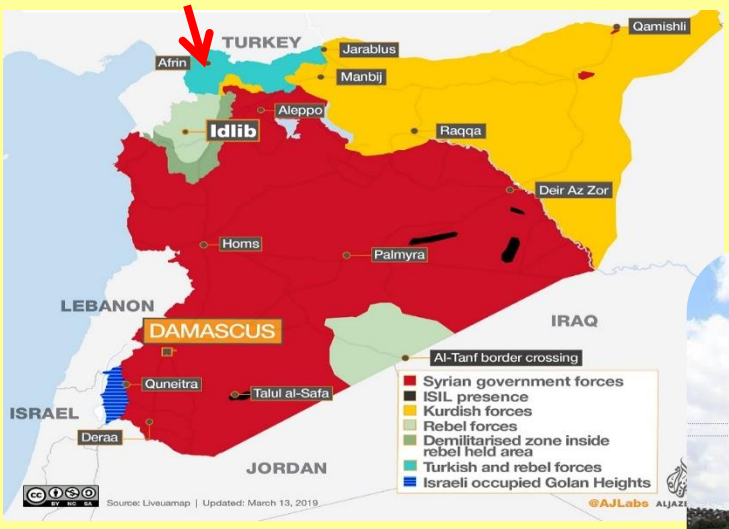
For outside powers, their nationals are now part of the war. Even if their home governments disavow the fighters, countries like Russia are likely to see this as part of a secret (or not-so-secret) way to support Moscow's enemies: indeed, Russia has good reason to be suspicious, as it has done the same thing with its "volunteers" in the past. In addition, some citizens may be captured, seek rescue, or otherwise create complications for their home countries. Nor are the foreigners necessarily good for the very people they seek to defend. One study found that when foreign fighters deploy, violence against civilians goes up. Far-right militias are already declaring they plan to exploit the war. Often the foreigners are more zealous and, because they lack friends and family in the community in contrast to host country nationals, they can commit atrocities without fears of reprisals against their loved ones. For Ukraine, establishing firm command and control of any foreign fighters is necessary — something the government did after the 2014 influx but which will be harder as Russian attacks made centralized control over forces more difficult. The , was better able to capitalize on Afghans, Pakistanis, and Lebanese Hezbollah members who joined its side in that country's civil war, making them an important part of the regime's war effort by ensuring they served under Iranian and Syrian control. If foreign fighters go off on their own, they may fight bravely, but it may backfire in the long-term. Terrorism is one of the biggest risks related to foreign fighters. Terrorism scholar Thomas Hegghammer found that the foreign fighter flow to Afghanistan to oppose the Soviets seeded subsequent jihads in Muslim-majority countries such as Algeria and Somalia, with Afghan veterans playing critical roles. Most of the fighters who did return to their home countries were not involved in terrorism, but those who were proved more competent and deadly. In addition, the conflict zone may lead idealistic foreigners to become indoctrinated with more radical ideologies: they go to oppose one foe, but in the war zone they mix with other radicals and come away more radical and more networked.

Those going to Ukraine have little in common with jihadis ideologically, but the presence of right-wing extremists should give governments pause when they consider whether to encourage their nationals to go and fight. Having such extremists, who already pose a grave threat, become more lethal and networked is one danger. They may also infect others with their beliefs, bringing them home on return and, because of their combat experience, they may be particularly admired within their communities. In general, private war is a bad idea even in cases like Ukraine, when there is a clear victim state and villain state. If governments believe Ukraine needs more support, they should provide it, not put the onus on individual citizens, especially when such fighters can make things worse for the country in question and pose long-term dangers. At the very least, it is vital for home governments to track those fighters who come and go from Ukraine. It is best for governments to encourage those motivated to help to dedicate themselves to fundraising, medical care and other vital but non-violent activity, ideally helping refugees and other vulnerable populations outside the war zones.

Daniel L. Byman is a Senior Fellow, Foreign Policy @ Center for Middle East Policy.

Systematically | Turkish-backed factions destroy archaeological history in Afrin

Source: https://www.syriahr.com/en/241861/



Mar 06 – SOHR activists have reported that Turkish-backed factions have been destroying the remainder of Basota archaeological hill. The hill is located in the northwestern section of Basota new town ten kilometers southern of Afrin city. It was registered under the Syrian Antiquities Directorate according to the resolution A/244 in 1981, where the hill was subjected to drilling and bulldozing with heavy machinery and

a road for the ascent and descent of machines was opened in the south western side, accordingly most of the "Acropolis" space was destroyed.

It is worth noting that the Turkish-backed factions in Afrin are still violating the archaeological culture of the Syrian people in "Olive Branch" area systematically, for financial benefit.
On February 28, reliable sources informed SOHR that the Turkish-backed factions bulldozed with heavy machinery and bulldozers the archaeological Burj Abd Al-Wu hill, in search of relics and buried treasures.
The hill is located near Burj Abdul-Wu village, south of Afrin. It is one of the archaeological hills registered under the Ministry of Culture and the Syrian Antiquities Directorate in the resolution of (244/A) in 1981.

Read also:

Attacks against Cultural Property as a weapon of war: An exploratory case study.
By Filippo Ristoldo
Institut Barcelona Estudis Internationals
Source: https://www.ibei.org/ibei_studentpaper34_105354.pdf

Will Palmyra rise again? – War Crimes against Cultural Heritage and Post-war Reconstruction
By Christoph Doppelhofer
Source: https://www.ohchr.org/Documents/Issues/CulturalRights/DestructionHeritage/NGOS/Ch.Doppelhofer.pdf

ISIS Picks Favored Victor in Russian Invasion: Chaos

By Bridget Johnson
Source: https://www.hstoday.us/featured/isis-picks-favored-victor-in-russian-invasion-chaos/

Mar 05 – **Calling Russia's war on Ukraine "an amusing punishment,"** ISIS weighed in on the escalating invasion by warning Muslims against siding with a "crusader" and predicting protracted, destabilizing conflict that will weaken their foes.
In a full-page article in its weekly ***al-Naba*** **newsletter**, the terror group predicted that "whatever the result" of the invasion "there is no doubt that there are major consequences of this war."


النبأ
بسم الله الرحمن الرحيم
العدد ٣٢٨ الخميس ٣٠ رجب ١٤٤٣ هـ
الافتتاحية ٣
"حروبٌ صليبية-صليبية"
استيقظ النصارى الكافرون بعد الحربين العالميتين الأولى والثانية، وقد أصبحت بلدانهم أكوامًا من الركام والجثث، وكان الموت والدمار هو القاسم المشترك الأكبر بينهم، فقرروا أن لا يسمحوا باندلاع هذه الحروب مجددا داخل بلدانهم، فأنشأوا "الهيئات" وأقاموا "الاتحادات" بهدف
وبسط سيطرتهم عليها، وهو تدافع خاص يتفرع عن سنة التدافع العام لقوله تعالى: {وَلَوْلَا دَفْعُ اللَّهِ النَّاسَ بَعْضَهُمْ بِبَعْضٍ}، ويعبّر عن ذلك أيضا قوله تعالى: {وَكَذَلِكَ نُوَلِّي بَعْضَ الظَّالِمِينَ بَعْضًا بِمَا كَانُوا يَكْسِبُونَ}، قال ابن زيد رحمه الله: "أي: نسلّط بعض الظلمة على بعض،
الأوقات، تصاعد نشاط الدجاجلة الصغار ووسائل إعلامهم في تهوين الكفر للناس، كما رأينا من دعوتهم للمسلمين القاطنين في روسيا وأوكرانيا للالتحاق والمشاركة في هذه الحرب قتالا في سبيل الطاغوت!
ونود أن نشير هنا إلى لفتة مهمة، وهي أنه مهما تعقّد المشهد وتصاعدت

The Russian attack on Ukraine was "not surprising," ISIS continued, calling it part of "the state of the escalating competition between America and Russia to control the countries of Eastern Europe, especially after the policy of 'support and containment' that America pursued" was seen as a "major threat" by Russia.
"It's an amusing punishment … upon them for their disbelief in God Almighty," the article branded the war, adding that "the disbelievers struggle over the world and its wreckage."
The terror group addressed the issue of taking a side in the war, saying that Muslims shouldn't favor one over the other — or fight for one over the other — even as some "are waiting for clarity … to decide his position on taking sides for one of the two Crusaders!"
ISIS called it "unsurprising" that Putin brought "Chechen apostate militias" into combat with the support of Chechen leader Ramzan Kadyrov, "an apostate fighting on Putin's platform."

The terror group compared Kadyrov to former Afghan President Hamid Karzai "fighting on Bush's platform."
"The 'Crusader vs. Crusader' is still in its infancy, so, O God, perpetuate their wars and break their hearts," the article declared.
Social media discussions among Islamic extremists have ranged from hatred for Russia because of President Vladimir Putin's alliance with Syria's Bashar al-Assad and their brutal military campaign against Syrians, to not wanting to back Ukraine because President Volodymyr Zelensky is Jewish, Ukrainians served as one of the largest Coalition forces contingents in the Iraq war, and the country is a member of the Global Coalition to Defeat ISIS.
Terror groups ultimately root on the side of chaos and mutual destruction. Extremist groups have been known to insert their opinions or directives into domestic or international conflicts — and even clashes at a much smaller local level such as high-profile protests or battles with police — in the name of stoking that chaos and attempting to internally weaken their enemies.
After the Jan. 6, 2021, attack on the U.S. Capitol, al-Qaeda went so far as to declare that it was fortuitous that the fourth plane on 9/11 didn't reach its Washington target, stating that an "impending civil war" can better destroy the country as they simultaneously urged Protestants to assassinate President Biden for being a "provocative" Catholic in the Oval Office.
"The drumbeats of an impending civil war can clearly be heard," the video said. "It was a civil war that brought the mother of all evils into existence, and it shall be a civil war that marks its ultimate doom."
Al-Qaeda then tried to stoke violence within Christianity, stating that "it is worth pointing out here that Biden is only the second Catholic president to make it to the White House" and "he insists in almost a provocative manner on putting the Pope's picture on display on his office desk." A picture of President Biden greeting Pope Francis was showed among the framed photos along the window behind the Resolute desk.
"Will Trump's Protestant followers be amused by such a scene? Or will Biden meet the fate of his Catholic Democratic predecessor John Kennedy?" the terror group's incitement continued. "This ladies and gentlemen is America … on the verge of collapse. In only one month we pass from America's first… to America's last."

Bridget Johnson is the Managing Editor for Homeland Security Today. A veteran journalist whose news articles and analyses have run in dozens of news outlets across the globe, Bridget first came to Washington to be online editor and a foreign policy writer at The Hill. Bridget is a senior fellow specializing in terrorism analysis at the Haym Salomon Center. She is an NPR on-air contributor and has contributed to USA Today, The Wall Street Journal, New York Observer, National Review Online, Politico, New York Daily News, The Jerusalem Post, The Hill, Washington Times, RealClearWorld and more, and has myriad television and radio credits including Al-Jazeera, BBC and SiriusXM.

US repatriates suspected '20th hijacker' of 9/11 from Guantanamo Bay

Source: https://www.bbc.com/news/world-middle-east-60660310

Mar 08 – A Saudi man accused of being the "20th hijacker" in the 9/11 attacks has been released from detention at Guantanamo Bay, the US defence department says.

Mohammed al-Qahtani, 46, was repatriated to Saudi Arabia after a review board determined that he no longer posed a "significant threat".
The board noted his "significantly compromised mental health condition".
Qahtani was tortured so badly by US interrogators after his detention in 2001 that he could not be put on trial.
The review board said last month that a condition for his transfer should be his participation in Saudi Arabia's rehabilitation centre for jihadists, known as the Prince Mohammed Bin Nayef Centre for Counselling and Care, where he could receive comprehensive mental health care.
US authorities have alleged that Qahtani was meant to be on board United Airlines Flight 93, which crashed in Pennsylvania after being hijacked by four al-Qaeda militants on 9/11. However, he had been prevented from entering the US the previous month.

Qahtani was captured four months later on the Afghanistan-Pakistan border and brought to the US naval base at Guantanamo Bay in Cuba in February 2002.
Investigators there received approval to use "more aggressive interrogation techniques" on Qahtani after he resisted conventional methods.

Between November 2002 and January 2003, he was subjected to prolonged isolation, sleep deprivation, sexual humiliation and exposure to cold.
In 2009, a top official in then-President George W Bush's administration, Susan Crawford, told the Washington Post that Qahtani's treatment "met the legal definition of torture" and that she had decided to not refer him for prosecution as a consequence.
"This was not any one particular act; this was just a combination of things that had a medical impact on him, that hurt his health. It was abusive and uncalled for. And coercive," she said.
A psychiatrist hired by Qahtani's lawyers told a US court that the torture had aggravated a childhood brain injury and schizophrenia that he developed as an adolescent, according to the New York Times. The newspaper also cited court documents as saying that Qahtani had refused psychotropic medication and repeatedly tried to kill himself in recent years.
The defence department said 38 detainees remained at Guantanamo following Qahtani's release.
Nineteen are eligible for transfer, while 10 others are awaiting trial by military commissions, including alleged 9/11 mastermind Khalid Sheikh Mohammed.

Islamic State terror group names new leader, confirms death of predecessor

Source: https://www.timesofisrael.com/islamic-state-terror-group-names-new-leader-confirms-death-of-predecessor/

Mar 11 – The Islamic State jihadist group confirmed the death of its leader Abu Ibrahim al-Qurayshi in a statement Thursday and named Abu Hasan al-Hashimi al-Qurayshi as his replacement.
The announcement came more than a month after the IS chief died during a US raid that saw troops flown by helicopter into northwest Syria, in an area controlled by rival jihadists.
IS personnel have “pledged allegiance” to “Abu Hasan al-Hashemi al-Qurayshi as an emir over believers and the caliph of Muslims,” the group’s spokesperson said in an audio recording released on its social media channels.

Terrorism Research: How RAND Defined and Built a New Field of Knowledge

By Melissa Bauman

Source: https://www.homelandsecuritynewswire.com/dr20220311-terrorism-research-how-rand-defined-and-built-a-new-field-of-knowledge

Mar 11 – In 1972, amid a worldwide rash of bombings, hijackings, and hostage-takings, the U.S. government was wrestling with how to respond. How widespread were these violent groups? What security measures were necessary? Should the government ever negotiate with hostage-takers? To help the State Department answer these questions, RAND turned to its specialty: data.
Researchers immediately began creating the first international database of terrorist attacks, according to Brian Michael Jenkins, RAND’s renowned terrorism expert and a developer of this roster of radicals. In actuality, the first “database” was a chronology of terrorist events on index cards, filed in a long drawer like old library card catalogs.
The database soon went online, where it is still in use. Maintained until 2009, it chronicles more than 40,000 terrorist attacks since 1968. In 2018, one research team used the data to create a model that predicts how lethal a terrorist group might become in the future.
The database helped answer many of the government’s terrorism questions, but the researchers were less certain about whether never negotiating with terrorists was a valid response. In 1973, the United States adopted a “no-concessions” policy for abductions of U.S. citizens abroad. While the researchers did not argue against the policy, they found

little empirical evidence that it affected the targeting of U.S. citizens. The policy still stands today.
Jenkins notes that the database evolved over time, as the government's focus shifted from "terrorist incidents, to the types of groups that commit terrorism, to the attributes of people in terrorist groups, and finally to the types of mindsets that motivated and characterized those terrorists." The government's focus may be evolving again, as RAND researchers are currently helping the Department of Homeland Security assess its needs for data on domestic terrorism and violence targeting racial/ethnic, religious, or other groups.

●▶ **Read more in:** *The Origin and Evolution of the RAND Corporation's Terrorism Databases*; RAND Database of Worldwide Terrorism Incidents; *Predicting Terror Activity Before It Happens; A Review of Public Data About Terrorism and Targeted Violence to Meet U.S. Department of Homeland Security Mission Needs*.

Melissa Bauman is a communications analyst at *RAND.*

Understanding Bombers' Motivations: A Historical Study

By Kirk Yeager, Ph.D.
Source: https://www.homelandsecuritynewswire.com/dr20220311-understanding-bombers-motivations-a-historical-study

Mar 11 – After spending 25 years studying explosives and bombers, the author asks himself the same question after every explosion: What could have made someone commit such a heinous act? The saga of bombers and the driving forces behind their acts is never-ending.
Bomb-making is far from a new human endeavor. Shortly after the invention of dynamite, anarchists were lighting its fuse to further their own ends. While current readers may have the 2020 attack in Nashville, Tennessee, in mind when thinking of a vehicle bomb, the first attack of this kind on U.S. soil occurred 100 years earlier with the detonation of 100 pounds of dynamite delivered to Wall Street in New York City via horse-drawn carriage.[1] Resulting in 39 dead and hundreds injured, this incident stood as the deadliest terrorist attack in the United States until the Oklahoma City bombing in 1995.
A historical study of bombings and bomb makers reveals reoccurring themes that underlie most of these events. This article will provide an analysis of the circumstances that compel bombers to attack, which can help explain what inspired notable bombings of the past.

Motivating Factors
Three factors instigate most bombings: power disparity, malice (i.e., evil intent), and mental illness. The incentive to bomb is rarely limited to only one of these three factors; each can play a symbiotic role with the others.
A Venn diagram of the motivators and their interrelationships, with illustrations of historic case examples for each, is provided in the figure below.

Power Disparity
he most predominant motivation for high-profile bombings is power disparity. Many bombings occur when perpetrators feel something critical to their sense of being is under threat. The more integral the attribute under perceived threat is to a bomber's sense of personal identity, the more likely it will instigate violent actions. Oppression of religious beliefs or ethnic identities is a prime example of an action that would trigger a bomb maker. A feeling of powerlessness coupled with no tangible hope of a better future for themselves or their progeny will induce bombers to act out as well.
The individual under the perceived threat is typically facing an adversary who is much more powerful with access to considerable resources, at which point explosives take on increased appeal. Anarchists refer to dynamite as the "great equalizer" because of its ability to empower the person against a daunting foe, be it a governmental or industrial power.[2] Thus, explosives can be considered the psychological equivalent of the slingshot David used to take down Goliath.
Finding an example of a bomb utilized to rectify a power disparity without malice being present is challenging. Improvised explosive devices are the preferred tool for terrorists, who typically see power disparity as their main motivational force and tend to hold their targets in contempt. Only an altruist would make a pure attempt to address a power disparity without underlying malice. Bombs are not kind to their environment and, therefore, are an ill-suited tool for gentle persuasion.

As an academic argument, a historic bombing that could be rationalized as justly motivated is the July Plot, the assassination attempt of Adolf Hitler using a briefcase bomb. While the plotters may have been encouraged by some measure of malice, it is difficult to attribute evil intent when the target is Hitler.[3]

Malice

Evil intent can be viewed as the most subjective of the three motivators. After witnessing the atrocity of a bomb blast and its victims, it is difficult to divorce malice from power disparity or mental illness. This intent can be explained through the definition of malice — the "desire to cause pain, injury, or distress to another."[4]

Pure malice is mostly seen in bombers who harbor personal grudges. They are provoked by dynamics, such as love triangles and rivalries between drug gangs, where inhumane emotions typically result in murder.

Among notable major bombings, one case study stands out as starkly evil. In 1927, Andrew Kehoe, a gentleman farmer in Bath, Michigan, became increasingly agitated with the construction of a consolidated schoolhouse that resulted in a commensurate increase in his taxes, causing him to face foreclosure on his farm. Lashing out, Kehoe took a position as a school handyman to provide him building access. He slowly planted explosives throughout its basement and crawl spaces. One morning, his concealed bombs went off, destroying half the school.[5]

While local fire and police personnel were responding to the scene, Kehoe lit his house and every outbuilding on his farm on fire, including the barn where all his animals were trapped. The night before, he had killed his wife, whose body was added to the pyre.[6]

Kehoe loaded the remaining explosives into his car, along with all the heavy metal tools and other implements he could scavenge from the barn. He drove up to the ruins of the school, where people were still frantically pulling bodies from the rubble, and called over the superintendent, with whom he had a long-standing dispute. As the man approached Kehoe's car, Kehoe pulled out a rifle and fired into the explosives in the back seat of his vehicle, detonating them and effecting the first suicide vehicle bombing in America.[7]

The attack killed 38 elementary school children and six adults. To this day, it remains the worst school attack in U.S. history. The body count in that incident was higher than the attacks at Virginia Tech (33), Sandy Hook (28), and Columbine (15).[8]

While Kehoe's motivation may have been partly derived from a sense of righting a wrong against an oppressive system, his actions were so vile that they serve as a testament to malice above all else.

Mental Illness

Understanding the concept of mental illness as a motivator is straightforward. The National Institute of Mental Health defines mental illness as "a mental, behavioral, or emotional disorder" that if severe enough can create "serious functional impairment, which substantially interferes with or limits one or more major life activities."[9]

Individuals with mental illnesses can be of a violent and/or unpredictable nature. For bombing motivation purposes, mental illness can be treated akin to the legal defense of insanity, where a person lacks the capacity to discern between right and wrong.

Mental illness is rarely the sole driving force for bombers. Only one example could be justified to fit the descriptor. In 2002, Lucas Helder planted a series of pipe bombs in mailboxes across the United States, with the intent of creating a smiley face on the map. One bomb was placed in Nebraska and another between Iowa and Illinois to form the eyes. Colorado and Texas made up the beginning part of the smile. His route covered approximately 3,200 miles. Helder was apprehended before finishing his "artwork." He was declared incompetent to stand trial, which was not surprising given his goals. Helder did have a manifesto of sorts, but it is hard to attribute his ramblings to a concerted attempt to address a power disparity.[10]

Overlapping Factors

The complexity of the human psyche often produces bombing stimulants that intersect — power disparity and mental illness, mental illness and malice, and power disparity and malice.

Power Disparity and Mental Illness

The perfect overlap of a struggle with power disparity and mental illness is seen in the Mad Bomber of New York.

George Metesky suffered a debilitating workplace injury while employed as a mechanic. The denial of workers' compensation for the injury, along with his innate mental instability, led him on a 17-year bombing campaign in New York City that spanned the 1940s and '50s. During this period, he attacked train stations, music halls, movie theaters, and other public venues. In all, he placed 33 bombs and injured 15 people.[11]

Metesky's bombings were unique in that they were not conducted to further a political agenda, but a personal one. Following extended psychiatric evaluation, doctors found Metesky unfit for trial. He was diagnosed with incurable paranoid schizophrenia and an impulse to martyrdom and was confined in a New York state mental institution for 17 years.[12]

Mental Illness and Malice

One of the best examples of the intersection of mental illness with malice is Marjorie Diehl-Armstrong. She served as the ringleader of a group of conspirators who strapped a live bomb around a pizza delivery man's neck to coerce him into robbing a bank. The bomb killed the man, and Diehl-Armstrong was the only conspirator to go to trial for the attack. While in custody, she underwent numerous psychiatric evaluations and was diagnosed with bipolar disorder and personality disorder with borderline paranoid and narcissistic traits.[13]

Before facing charges for the pizza bomber, Diehl-Armstrong was convicted of murdering her purported boyfriend. She shot him in the back multiple times with a shotgun and placed his body in a freezer for later disposal. Prior to that murder conviction, she was implicated in at least two other murders.[14]

There is no doubt she had a long history of malice and ill intent. Bomb building was just the final manifestation of her destructive impulses.

Power Disparity and Malice

In the long history of terrorism and the anarchy movement that preceded it, the two most prevalent motivational factors that intersect are power disparity and malice. The anarchists who emerged in the early part of the 1900s illustrate this concept well.

This movement, responsible for the Wall Street bombing, was born during the struggle between capitalists and labor rights advocates. As industrialists fought to keep workers' wages low and hours long, anarchists retaliated by bombing industrialized capitalism's power structures.

During this time, industrial robber barons wielded the power of the factory floor and the political machinery that produced labor laws. This power also extended into the ranks of local law enforcement. Anarchists found themselves extending their fight — and bombings — by targeting high-level political officials and government institutions. Hostility developed between lawmakers and anarchists, further motivating anarchists in their perceived righteous fight for a better life for the working class.

That struggle lives on today in the minds of countless terrorist groups who feel their lives are under threat from a far-superior foe. Feelings of oppression and powerlessness and the circumstances that drive the disaffected toward bomb making are nothing new in the annals of bombings.

Conclusion

he rationale behind any act of violence is complex — explosives allow anonymity to an attacker, and they place great destructive power in the hands of those who feel devoid of the ability to achieve what they believe is just.

These attributes tend to attract those with mental illnesses, malice, and/or who are seeking to rectify some existential threat. While other factors may come into play, the three highlighted in this article remain foundational to a bomber's motivation.

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Kirk Yeager, Ph.D., is Chief Explosives Scientist at the Federal Bureau of Investigation.

UN: Combating glorification of Nazism, neo-Nazism, and other practices

Source: https://twitter.com/RussiaUN/status/1471589093305954310

130 votes in favor, 2 against, 49 abstentions **(why?)**

West African Coastal Terror Attacks: Just The Tip Of The Iceberg – Analysis

By Sampson Kwarkye

Source: https://www.eurasiareview.com/10032022-west-african-coastal-terror-attacks-just-the-tip-of-the-iceberg-analysis/

Mar 10 – Violent extremism is escalating in West Africa's coastal states. This is terrifying for citizens but is just the tip of the insurgency iceberg. Under the surface lies a covert network that ensures terrorism continues in the region. Evidence is emerging that jihadists' activities within and through coastal states are enabling them to fund, staff and run the logistics they need to thrive. Governments' responses to the attacks have mainly been military in nature. Before such operations are increased, and the French and European Barkhane and Takuba forces are redeployed south, coastal states need a better analysis of the terrorism spillover. They should look beyond the spread of attacks and understand the covert activities, including how violent extremists work with illicit actors to mobilise resources.

On 8 and 10 February, Benin recorded its deadliest attacks yet when patrols in its W National Park struck improvised explosive devices. The government said one soldier and eight park officers, including their French instructor, were killed and 12 others wounded.

Before this, a string of assaults in northern Benin between late November 2021 and January 2022 led to several deaths.
Neighbouring Togo suffered its first-ever attack when assailants raided a security post in the northern border village of Sanloaga on 9 November 2021. Then, according to Togo's Security and Civil Protection Minister Yark Damehame, suspected militants ordered residents of Lalabiga village in the Savanes region to leave within 72 hours on 19 February. In Côte d'Ivoire, at least 11 soldiers were killed or injured in multiple attacks in the first half of 2021.
Coastal states have hit back mostly through military operations, which they have conducted nationally, bilaterally or collectively within the framework of the Accra Initiative. The last one, Operation Koudanlgou 4 Zone 2, conducted in November 2021, involved Burkina Faso, Côte d'Ivoire, Ghana and Togo. About 6 000 soldiers were reportedly deployed and 300 suspected extremists arrested.

Now responses could be reinforced by the planned withdrawal of Barkhane and Takuba forces from Mali, with their redeployment to Niger and the Gulf of Guinea. Coastal leaders participated in the 17 February press conference when French President Emmanuel Macron announced the exit. This could see further militarisation in states' responses, anchored in a narrow interpretation of the spillover as simply a southward spread of attacks.
Counter-terrorism officials are starting to acknowledge that coastal state citizens have been recruited to fight in the Sahel and beyond. Yet there's little focus on how this is organised, who the actors are, the profiles of those recruited, the locations where recruitment takes place, and the strategies for tackling them.
Key coastal stakeholders mainly view violent extremism as an external threat involving attackers from the Sahel. This deflects attention from local vulnerabilities that violent extremists could exploit.
Like in the Sahel, local conflicts in coastal states can serve as entry points for violent extremist groups, who pose as arbiters or supporters of various sides. Also, in border communities, especially where basic infrastructure or public services are lacking, violent extremists gain support by delivering such services, including security.
The spillover is also often thought to be linear in direction, occurring only from north to south. But violent extremists mobilise resources along east-west and other routes too. For example, motorbikes – vital for navigating difficult terrain – are trafficked from Nigeria through Benin and Togo to western Burkina Faso and south-eastern Niger.
There are also indications that gold buyers from Togo and Benin are accessing some gold mining sites controlled by violent extremists in the Sahel. Explosive materials used at sites in some coastal states may be going up north to terror groups. In 2018, electric cord seized by Burkinabe officials during a counter-terrorism operation in Ouagadougou was traced to a mining site in northern Ghana.
A largely militarised response to violent extremism could provoke retaliatory attacks. The June 2020 Kafolo assault in Côte d'Ivoire followed the country's joint Operation Comoé with Burkina Faso three weeks earlier.
Before it happened, Jama'at Nusratul Islam wal Muslimin, an al-Qaeda offshoot, reportedly referred to the operation and hinted at an attack on Côte d'Ivoire through its propaganda news platform, *Thabat News Agency*.

The targeting of security posts and patrols in Benin and Togo suggests groups may be reacting to recent operations – although Institute for Security Studies research shows limited evidence of a link. The assaults may also be an attempt to test the capacity of defence and security forces, protect resource supply routes, or even free up corridors for terrorist activities.
Coastal states might try to counter violent extremists' activities by imposing curfews, closing markets and restricting people's movements. After the Sanloaga attack, local authorities in northern Togo discouraged traders from visiting markets close to the Burkina Faso border. These controls could disrupt violent extremists' supply chains, but they also constrain local livelihoods.
These measures also breed community resentment against national authorities, especially in areas long neglected by the state. This could endear violent extremists to communities, especially if the terrorists offer them alternative sources of livelihood.
Coastal states should identify risks and lessons learned from their counter-terrorism strategies so far and adapt accordingly. This is especially important as Barkhane and Takuba are redeployed southwards. Strategies for tackling supply chains should include joint planning and cross-border coordination, otherwise, violent extremists faced with blockades will simply choose alternative routes.
To break violent extremists' supply chains, communities must be involved on an ongoing basis. This is key to avoiding unintended consequences, particularly the disruption of livelihoods, which push resentful people into the arms of terrorists.

Sampson Kwarkye is a Senior Researcher @ ISS Regional Office for West Africa, the Sahel, and the Lake Chad Basin.

Afghanistan Terrorism Report: February 2022

By Dr. Hans-Jakob Schindler and Joshua Fisher-Birch
Source: https://www.counterextremism.com/blog/afghanistan-terrorism-report-february-2022

Mar 14 – Since the withdrawal of international forces from Afghanistan in August 2021, the country has transformed into a permissible space for terror organizations. A significant number of al-Qaeda affiliates in Afghanistan (i.e., al-Qaeda core, al-Qaeda in the Indian Subcontinent, the Islamic Movement of Uzbekistan, the Islamic Jihad Group, the Turkistan Islamic Party (former known as the East Turkestan Islamic Movement or ETIM)) as well as fighters from Pakistani based al-Qaeda affiliates (i.e., Lashkar-e Taiba, Jaish-i Mohammad, or the Tehrik-i Taliban Pakistan (TTP)) continue to operate in the country. This situation is exacerbated by the fact that despite the Taliban's claims that they would not allow Afghanistan to be used for terrorist operations abroad, the symbiotic relationship between al-Qaeda and the Taliban, managed by the Haqqani Network, persists. Furthermore, ISIS-K has developed into the main ideological rival of the Taliban in Afghanistan and continues to have aspirations for terrorist operations beyond the immediate region. Afghanistan remains one of the most active spaces for global terrorist activities and therefore requires close monitoring.

In February, al-Qaeda leader Ayman al-Zawahiri released a new video clearly demonstrating that he views Afghanistan as a staging ground for his ongoing global fight against the West. He, as did his predecessor Osama bin Laden, swore personal *bayat* (loyalty oath) to each new leader of the Taliban, from Mullah Omar, to Mullah Akhtar Mansour, to the current leader Haibatullah Akhundzada. Thus, the al-Qaeda network, its members, and its sympathizers perceive the Taliban's takeover in Afghanistan as their success as well and are emboldened. Zawahiri's framing of this development in the latest video highlights the continuing risks of attacks against western interests around the world.
The death of several leaders and operatives over the past few years have contributed to the current lull in al-Qaeda-linked terror attacks in Europe and the United States as did COVID-19 restrictions. However, experts also believe that this pause is a deliberate effort by al-Qaeda's leadership not to compromise the Taliban's efforts to gain international

recognition. Regardless, this position may change. Since the rise of ISIS, al-Qaeda has competed for attention from terror sympathizers worldwide, including via rival affiliates in most conflict regions of the globe. With a new operational safe space in Afghanistan, this potential hesitation not to embarrass the Taliban may only be temporary—especially since the Taliban have not undertaken any noticeable efforts to control al-Qaeda-linked fighters in Afghanistan or publicly disavowed their ties to the group.

The close link between the Taliban and al-Qaeda is also conveyed in the February edition of al-Qaeda magazine's "Ummah Waḥidah." The editorial of the magazine praises the Taliban regime as a functional alternative to democratic governments, maintaining the conceptual framework of the Taliban as a government while al-Qaeda presents as a global terrorist vanguard. The magazine also features an article on Ahmad Shah Massoud, the former leader of the Northern Alliance and depicts him as an instrument of the West as well as a traitor to the Afghan resistance movement. This is clearly an effort to delegitimize the National Resistance Front of Afghanistan (NRF), the last remaining non-terrorist opposition group against the Taliban. The NRF is led by Ahmad Massoud, the son of Ahmad Shah Massoud. According to media reports, the NRF continues to operate cells in Afghanistan but is currently unable to present a serious challenge to Taliban rule.

ISIS-K, ISIS's branch in Afghanistan, has always been a key affiliate of ISIS's global network. Rather than establishing an affiliate in Afghanistan based on existing local group structures, ISIS core in Iraq and Syria in 2014 sent a group of envoys to Afghanistan to build this affiliate from the ground up. It is no surprise that the tactics ISIS currently employs in Afghanistan closely mirror tactics used in Iraq and Syria. As shown in ISIS's Al-Naba newsletters and Amaq statements as well as ISIS online chatter monitored by the Counter Extremism Project (CEP), this strategy has three core elements in Afghanistan: instilling fear through raids on Taliban officials and security forces, assassinations as well as an attempt to exacerbate sectarian tensions, and delegitimizing the existing governance structure. Therefore, the newsletters highlight these events with pictures of dead Taliban officials. Additionally, the Shiite community in Afghanistan, the Hazaras, are referred to using the derogatory Rafidi (those who refuse) and their religious festivals, such as Ashura, are criticized. Moreover, Taliban contacts to Iran are presented are further evidence of the ideological heresy of the current regime in Afghanistan.

ISIS-K presents itself online as the ideologically correct alternative to the "apostate Taliban" regime—a term used in a Telegram post on February 19. ISIS propaganda continues to call out the Taliban's meetings with government representatives from China, Russia, Pakistan, and France, chastising what ISIS describes as Taliban nationalism. ISIS-K propaganda's strategy to delegitimize the Taliban acts to limit the any ideological moderation of the Taliban regime. Faced with an ideological rival within Afghanistan, ISIS-K, whose membership consists to a considerable extent of disgruntled Taliban, will continue to receive defectors from the Taliban regime and will present both an external as well as an internal threat to the Taliban.

ISIS propaganda and chatter tries to portray the image of a group that can operate in most regions of Afghanistan. In addition to reports about attacks and assassinations in Kunar and Nangarhar Provinces, the area in Afghanistan where ISIS-K holds most active fighters, ISIS propaganda also claims operations in Kunar and Takhar Provinces in the north of Afghanistan as well as Helmand Province in the south of the country. Interestingly, ISIS propaganda material also regularly highlights killings of the group in Peshawar, Pakistan, demonstrating that the group maintains an operations wing responsible for attacks outside Afghanistan. Given that the group also recruited members from the Tehrik-i Taliban Pakistan (TTP), this is not surprising.

Neo-Nazis are exploiting Russia's war in Ukraine for their own purposes

Not since ISIS have we seen such a flurry of recruitment activity.

By Rita Katz

Source: https://www.washingtonpost.com/outlook/2022/03/14/neo-nazi-ukraine-war/

Mar 14 – "Hi can you please forward a message since two of us are trying to get a carshare from germany to ukraine going," reads a Feb. 26 message forwarded to a popular neo-Nazi Web channel.

"We are 3 french, leaving Strasbourg tomorrow morning with our car," another message answered. "There is place for 2 german fighters."

These are the types of conversations that have flooded Western neo-Nazi and white-nationalist venues online every day since Vladimir Putin ordered the invasion of Ukraine: users organizing carpools, plotting how to cross the Poland-Ukraine border to join the fight against Russia. Their goal is not to defend Ukraine as we know it — a multiethnic, democratically minded society led by a Jewish president. Some neo-Nazis simply see this new war as a place to act out their violent fantasies. For others, though, the force pulling them toward the conflict is a shared vision for an ultranationalist ethno-state. They see

Ukraine as a golden opportunity to pursue this goal and turn it into a model to export across the world.
The would-be militants have been recruited by groups like the Azov Battalion, a far-right nationalist Ukrainian paramilitary and political movement. Azov was absorbed into the Ukrainian national guard in 2014 and has been a basis for Putin's false claim that Ukraine's government is run by neo-Nazis. Though Azov remains a fringe movement in Ukraine, it is a larger-than-life brand among many extremists. It has openly welcomed Westerners into its ranks via white-supremacist sites. Azov stickers and patches have been seen around the globe: from a bookbag at a July 2020 neo-Nazi counterprotest in Tennessee to the motorcycle of an attempted mosque bomber in Italy.

To be clear, not all in the far right adore Azov, which some see as having ties to Israel or Jewish funders. But since Azov publicly invited foreign fighters into its ranks on Feb. 25, the organization's official Telegram chat group has been packed with messages from people in the United States, Britain, Germany, France, Spain, the Netherlands, Sweden, Poland and other Western countries expressing interest in joining. Neo-Nazi chat groups and channels in various languages have echoed Azov's calls. I haven't noticed this level of movement-wide recruitment activity since the Islamic State declared its so-called caliphate in 2014 and sought sympathizers globally to join its fold.
We at SITE, an intelligence group tracking global extremists, have noticed a surge in online activity by white nationalists and neo-Nazis in conjunction with the war in Ukraine. Among the hundreds of individuals who have announced their intent to join Azov in recent weeks are several known neo-Nazis. For instance, "MD," an American member of Azov's recruitment chat group, has repeatedly tried to get fellow countrymen to join the battalion in Ukraine. "Are there any Americans looking to go? We could for a group to go over there," he said. We discovered that MD is also a member of some of the most sadistic far-right extremist chats on Telegram, where he has proposed establishing a neo-Nazi militia in the United States.
"D," another member of the chat, is a self-described military veteran in Britain who is active in dozens of neo-Nazi venues on Telegram. Like MD, he has sought to form his own band of countrymen. "Any UK bois, I'm in Uk and leaving hopefully in 1-2 weeks," D wrote on Feb. 27.
D's motivations seemed even more troubling than MD's. He wrote, "Anyway when I get to Ukraine I'm going to kill extra Jews now whenever I see them." Another post read in part, "I'm getting my gear together, hail Hitler, glory to Ukraine and let's all kill some [expletive] Jews for Wotan!" (Wotan is a god from Norse mythology, which many far-right extremists appeal to in their rhetoric and aesthetics.) D later indicated that he had formed a "group from UK" to head to Ukraine.
"Polish guy living in America here, looking to help out in any way I'm able," chat member "Z" posted on Feb. 25, later adding, "i've got a lot of gear i can bring around, from helmets to vests of all sorts." Z is also an active member of many neo-Nazi chat groups, we discovered. The same Z wrote in another chat group: "I hate Ukraine."
That's because Western white supremacists and neo-Nazis, for the most part, do not support the current Ukrainian government — and not simply because of its ban on antisemitism, President Volodymyr Zelensky's Jewish heritage or other specific matters. Ukraine is a developing democracy, which far-right extremists oppose as contrary to the fascist governments they want to see. As the administrator of a popular German and English neo-Nazi chat group wrote while urging members to join Azov, "I am not defending Ukraine, I am defending National Socialism."
Furthermore, while some white nationalists have expressed admiration for Putin, many Western far-right extremists oppose Russia, which they conflate with the former Soviet Union and therefore consider communist. Yet this mobilization on Ukraine's behalf is driven by more than just a mutual enemy: The mobilizers see the Russia-Ukraine war as a major opportunity to advance white nationalism via militancy. To them, Ukraine is a sandbox for fascist state-building, ripe for the kind of armed far-right power grab they long to see in their own countries.
For the most extreme among these neo-Nazis, the plan is even more sinister. They see Ukraine as a chance to further "accelerationist" agendas, which seek to speed up a civilization-wide collapse and then build fascist ethno-states from the ashes. This school of thought is demonstrated vividly by "Slovak," whom we at SITE consider one of the most influential accelerationist neo-Nazi voices in the far right. On Feb. 25, Slovak announced that he was leaving an unknown country to fight in Ukraine. "This war is going to burn away the physical and moral weakness of our people, so that a strong nation may rise from the ashes," he wrote. "Our job is to ensure that conditions remain terrible enough for long enough for this transformation to happen, and happen it must. Our future is at stake and we may not get another chance, certainly not one as good as this."

Inspired, Slovak wrote that Ukraine could see its own decades-long fight, likening it to the resistance mounted in Afghanistan against NATO or the Russians. "The Afghans did it for over 40 years against both of these forces and now they're in control of their destiny," he wrote. "Ukraine will have to borrow a page from their book."

Niche as this accelerationist philosophy may seem, it must be taken seriously. Copycat attacks were plotted in California and elsewhere after a terrorist espousing accelerationist philosophies killed 51 people in Christchurch, New Zealand, in 2019.

Of course, none of these developments validate Putin's claims that the war is about "denazifying" Ukraine. Forget about Zelensky's Jewish background: It's an ironic claim for Putin to make, since he gives safe haven to individuals such as Rinaldo Nazzaro, who was until recently the leader of the Base, a largely American cell-based neo-Nazi organization whose members have been linked to terrorist plots. Nazarro appears to have lived in Russia since at least 2018. Putin has also given haven to the Russian Imperialist Movement, which the State Department describes as giving "paramilitary-style training to white supremacists and neo-Nazis in Europe." Putin gives these entities haven to help "aggravate societal fissures in the West," a declassified U.S. intelligence report from last year suggested. Whatever sparse kernels of truth Putin is picking at regarding groups like Azov, it was he who invaded a sovereign country and created a new extremist breeding ground.

The issue at hand is not a matter of validating or invalidating narratives, though. The issue is security — for Ukraine and for the countries these extremists come from.

In many ways, the Ukraine situation reminds me of Syria in the early and middle years of the last decade. Just as the Syrian conflict served as a perfect breeding ground for groups like al-Qaeda and the Islamic State, similar conditions may be brewing in Ukraine for the far right. Syria became a plotting and training ground for terrorists to mount attacks in the West, such as the attacks in Paris in 2015 and in Brussels in 2016 attacks.

The extremists who successfully make it to Ukraine could return home with new weapons and combat experience under their belts — or stay in Ukraine, where they can further influence their countrymen online. Just because extremists are "somewhere else" does not make them any less dangerous to the countries they come from, as we've learned all too well. No matter where war takes place, it always amounts to opportunity for extremists.

Rita Katz is the executive director of the SITE Intelligence Group and a terrorism analyst. She is the author of the forthcoming book, "Saints and Soldiers: Inside Internet-Age Terrorism, From Syria to the Capitol Siege."

Radical Islamist English-language online magazines: Research guide, strategic insights and policy response

By Robert J. Bunker and Pamela Ligouri Bunker

Strategic Studies Institute and U.S. Army War College Press

Source: https://publications.armywarcollege.edu/pubs/3549.pdf

August 2018 – Radical Islamist online magazines first appeared in November 2003 with the publication of Sawt al-Jihad (Voice of Jihad) in Arabic. This magazine discontinued publication in April 2005 after 29 issues, having been shut down by the Saudi security services. The magazine was produced by the Saudi branch of al-Qaeda that later evolved into al-Qaeda in the Arabian Peninsula (AQAP). It called upon other al-Qaeda groups to develop and franchise their own magazines. Besides the plethora of radical Islamist online magazines in Arabic that has been produced since 2003—along with those in many other languages including Urdu, Russian, German, French, and Turkish—English-language editions have been in existence since April-May 2007. There have been a number of these magazines published at varying dates and for varying periods of time. Some, such as Al Rashideen and Ihya-e-Khilafat, were initiated but fell by the wayside, victim to a lack of audience, the capture or death of an editor, or their initiating group's evolution. In the cases of al-Qaeda's Inspire and Islamic State's Dabiq magazines, the publications have been ongoing—until very recently with the demise of Dabiq—with over a dozen issues each, and have notably been cited in relation to terrorism cases by law enforcement. Beyond their propaganda potentials, each magazine can be said to promote a specific jihadi culture, to be embraced in total by followers of the

particular group in question in order to achieve its desired utopian vision. Toward that end, components of these online magazines address the group's successes and legitimacy, offer a vision of a desirable end state, encourage recruitment into their ranks, direct violent action against stated enemies, and provide instructional materials and advice with regards to its enaction. The fact that an online magazine-style format has been used across groups over a notable period of time and the availability of a comprehensive data set of the issues of these magazines, both current and archived, is believed to provide a unique opportunity for evaluation of the nature of the threat these organizations potentially pose. It is not surprising, then, that the appearance and ongoing publication of English-language based magazines have caught the attention of scholars and counterterrorism researchers who have analyzed the better-known series of these magazines in numerous manuscripts, reports, and articles. Where useful, these works have been cited in the magazine database that follows. In reviewing the work done to date on radical Islamist English-language online magazines, however, efforts toward the analysis of online radical jihadist media in general—and online English-language magazines in particular—have been piecemeal. The results fall into three main categories: single magazine generalizations, comparisons between magazines, and those—largely popular media—pieces connecting these magazines to violent action.

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INTERPOL and UN Team Up to **Counter CBRNE Threat**

Pakistani drone dropped ammunition, IEDs in J-K; first time chemical in liquid form sent with consignment: DGP Dilbag Singh

Source: https://economictimes.indiatimes.com/news/defence/pakistani-drone-dropped-ammunition-ieds-in-j-k-first-time-chemical-in-liquid-form-sent-with-consignment-dgp-dilbag-singh/articleshow/89842447.cms

Feb 26 – With an intention to disrupt the peace maintained in Jammu and Kashmir, Pakistani drone on Wednesday dropped grenades, IEDs, pistols, and ammunition in the region, and for the first time a chemical in liquid form was also sent with the consignment, said the police on Thursday.

Speaking to the media, Jammu and Kashmir Director General of Police (DGP) Dilbag Singh said, "Yesterday (Wednesday) a Pakistani drone dropped grenades, IEDs, pistols, ammunition in Jammu and Kashmir, and **for the first time a chemical in liquid form was also sent with the consignment.**"

"They (Pakistan) want to disrupt the peace maintained here for a long time. We are analyzing it to see what is it, its uses, and what harm it could have done," the DGP said.

Further, Singh in his statement said that the narcotics and weapons are being sent to the region so that sale proceeds of narcotics can be used to fund terrorism.

"In the past two years, we are facing a new challenge wherein narcotics and weapons are being sent to the region so that sale proceeds of narcotics can be used to fund terrorism. They (Pakistan) will keep conspiring but our countermeasures are also in place," he said.

"Last year a total of 182 terrorists were killed and over 300 weapons were seized. It clearly shows that Pakistan sending more weapons to make more and more militants but we are not allowing it to succeed," he added later.

How Four Women Destroyed 1,200 Tons of Poison Gas — and Defused a Crisis

By Tessa Stuart

Source: https://www.rollingstone.com/politics/politics-features/syria-war-chemical-weapons-sarin-1296374/

Feb 22 – Ameenah Sawwan was up late on Aug. 21, 2013, scrolling through Facebook on her phone, when she saw the first report that a town not far from hers had been hit by a chemical attack. She watched footage from Eastern Ghouta, then saw another post that said that her hometown, Moadamiyat al-Sham, had been hit as well. She started tapping out a reply in the comments: "This is wrong. This is fake news. I'm in Moadamiyat and we were not hit by chemicals." Then she started hearing screams.

Sawwan and her family — 12 of them were living together at the time — ran outside, but shortly after they did, mortar shells began raining down. They didn't know where to go next. "It felt like the sky was falling," Sawwan says.

She made her way to a nearby field hospital — a glorified basement stocked with scavenged medical supplies — stopping along the way to run her hands over her body and make sure she hadn't been hit by shrapnel. When she got there, bodies were splayed on the asphalt outside as men with hoses sprayed them down.

Inside the hospital, she remembers, "there was barely a place to put a foot. It's dark, full of screams, and people being washed, and the smell of vinegar." The medical staff were shouting directives: " 'Take their clothes off, wash their bodies, try to do CPR.' " At one point, she was handed a 10-month-old baby, but she could not revive the infant. "Nobody knew what they were doing, but you have to do something."

Sarin — the colorless, odorless nerve agent dropped that night on civilians in the suburbs of Damascus — was developed in the 1930s by German chemists as a pesticide. Exposure will trigger watery eyes, pinpoint pupils, a tightness in the chest in seconds, then paralysis, respiratory failure, and death. In 2013, the Syrian government reportedly possessed several hundred tons of the stuff, plus hundreds more tons of mustard gas and VX, another nerve agent.

The Aug. 21 assaults that killed more than 1,400 Syrians were carried out one year, nearly to the day, after President Obama's casual declaration that Syrian President Bashar Al-Assad's use of chemical weapons was a "red line," one that would change his "calculus" on America's involvement in the country's civil war. It was a clear threat: If Assad gassed his own people, the U.S. would respond with force — and that threat was particularly loaded, given the fact that Syria is a client state of Russia's. To many observers, it seemed plausible that Obama's words — and Assad's blatant disregard for them — could drag the U.S., Russia, and both of their allies into a full-blown global conflict. But then something unexpected happened: Instead of dropping bombs on Syria, the United States cut a deal, through Russia, that would force

Assad to give up his chemical-weapons stockpile. And then something even more unexpected happened: It actually worked.
The unlikely solution would ultimately involve the cooperation of 17 countries, the warp-speed work of a small cohort of U.S. Army chemists, and squabbling and infighting within the highest echelons of the U.S. government. It headed off U.S. military intervention in Syria and helped earn the Nobel Peace Prize for the intergovernmental organization under whose banner it was carried out. But before all that, the kernel of the idea — to destroy Assad's chemical arsenal on a boat in the middle of the Mediterranean Sea — and the duty of seeing it through began with a team of anonymous young women in a dismal office, burrowed deep inside an obscure federal agency.
"There certainly were a lot of other people — hundreds of people — that had to do this," says Gen. Jay Santee, the former deputy director of the Defense Threat Reduction Agency. "[But] it would not have happened without these women. At all. In any way shape or form."

Bodies in the Damascus suburb of Ghouta on Aug. 21, 2013, following a chemical weapons attack. (Erbin News/NurPhoto/Corbis /Getty Images)

Three weeks after the attack, Chelsea Goldstein showed up to work at a joyless cubicle farm in Northern Virginia at 4 a.m. Someone had brought in doughnuts. The building was mostly empty — budget sequestration was in effect, and Department of Defense employees, like the rest of the federal workforce, were furloughed at least one day a week.
Goldstein had joined DTRA fresh out of college three years earlier, and for the past six months she had been part of a ragtag team tasked with nothing more than a complex thought experiment: How might the military go about securing and destroying a massive stockpile of chemical weapons?

Now, she stood jaw agape, doughnut in hand, as she and her co-workers watched U.S. Secretary of State John Kerry and Sergey Lavrov, Russia's foreign minister, announce on TV that Syria had agreed to give up its cache of chemical weapons. The entire disarmament process was to be completed within nine months. "We had no idea that such an agreement might come to pass," Goldstein recalls. "But we were the only team in the government working on this problem, so . . . giddyap! This is really happening."
A front-page story in *The New York Times* underscored the enormity of the pact, reached during a hastily arranged diplomatic summit in Geneva. "This situation has no precedent," a chemical-weapons expert told the paper. "They are cramming . . . six years' worth of work into a period of several months, and they are undertaking this in an ongoing civil war."
The deteriorating security situation wasn't the only obstacle the team had been considering as they weighed possible options. Terrorist groups like the Al-Nusra Front and the Islamic State were taking root in corners of the country. And there was an additional complicating factor that, until now, Syria had denied possessing such weapons at all, so any information about the amount, condition, and location of Assad's arsenal was based on speculative reports.
From the very beginning, it had seemed like an impossible job, which might be why some of the government's experienced operators — men who had spent decades in and out of former Soviet republics, demilitarizing barrels of chemical and biological warfare agents — considered it a waste of their time. Instead, the core team that began working to put together a plan was composed of people who looked much like Goldstein: young women with virtually no background in chemical-weapons destruction.
In a Defense Department organization like DTRA, where men typically outnumber women roughly two to one, the gender composition of the team stood out — and earned it the nickname "Toast's Angels," for commanding officer Col. John Cinnamon. An Air Force pilot with the call sign Toast ("It's funny for an aviator because that's [what they call it] when you die," Cinnamon deadpans), he had recently been charged with cobbling together the Syria task force. He didn't set out to create "an all-women superteam," Cinnamon says. He was looking for highly competent volunteers, and found women raised their hands: "There was hesitation from some folks, because the notion was we were going to fail, and we were gonna fail colossally. In general, the people willing to take that risk and see where this went were all women. The guys were more failure-averse."

Chelsea Goldstein (left) and Julia Limage (Farrah Skeiky for Rolling Stone)

Two of the women were civilians in their mid-twenties, the other two were military officers fresh off maternity leave, and only one of the four had anything remotely resembling relevant experience. What they did have, after months of grappling with the particulars, was a firm grasp of just how difficult it would be to execute the mission the secretary of state had just committed to, even more so under the aggressive time constraints to which he'd agreed.
Fort Belvoir in suburban Virginia looks more like a mid-Atlantic college than an Army base home to dozens of Department of Defense agencies and more daily workers than the Pentagon. The Defense Threat Reduction Agency has a relatively small footprint at the base — just 2,000 employees — but it maintains a sprawling portfolio: any and all business of or relating to countering weapons of mass destruction, chemical, biological, or nuclear.
DTRA has existed, in one form or another, since at least the Manhattan Project, evolving as the United States' defense priorities have shifted: From the dawn of the Cold War until the fall of the Berlin Wall, its various precursors were charged with researching and developing new uses for nuclear technology. When the collapse of the Soviet Union left unsecured nuclear material littered across 11 time zones, the focus shifted toward containment efforts.
For example, when an earthquake off the coast of Japan triggered a tsunami that flooded the Fukushima Daiichi nuclear plant, DTRA was the agency responsible for helping to coordinate the response, cleanup, and strategy. When Libyan rebels overthrew the government, emissaries from DTRA were the ones who showed up with suitcases full of

cash to hire guards to protect the country's chemical stockpile. When a semitruck transporting any amount of chemicals is jackknifed, there's a good chance someone at DTRA is doing a plume analysis, figuring out if the elements on board will transform into a deadly cocktail or just harmless sludge.

Julia Limage didn't know any of this as she wound her way through a career fair inside a cavernous D.C. convention center in the summer of 2012. Limage, then in her mid-twenties, had already dropped off copies of her résumé at every environmental- and public-health-adjacent job she could find when she decided to stop by the table of an obscure federal agency she'd never heard of. A few hours later, she was ushered into a tent for an interview at the agency, conducted by a Marine pilot, a scientist, and a buttoned-up project manager. The men were vague about the role in question but they offered cryptically: "We've got some bio projects — a lot of it's classified. We think you might be a good fit."

As a kid, Limage knew that when she grew up she wanted to be "working to save the planet. It was the Nineties — that was very in." She was raised in Bethesda, Maryland; her mother was a lawyer for the State Department, and her father helped write portions of the Endangered Species Act before becoming a science adviser in the Clinton administration. She'd gone off to college, then completed a Ph.D. in biology at Yale before returning to D.C. for a fellowship that placed recent grads in government jobs. She ended up getting two offers from the fair, including one at the State Department, which she turned down in favor of the enigmatic gig at the agency she'd never heard of.

She showed up to work that summer at a DTRA office called "Innovative Technologies" that was responsible for finding and enlisting partners to try their hand at solving difficult military problems. Three months before the attack on Ghouta, a contractor who worked with Limage's office drafted an anonymous challenge that was posted on a website called Innocentive. In the ad, an unnamed "Seeker" asked for solutions for "the demilitarization, destruction, or neutralization of a hypothetical stockpile of chemical warfare agents." The stockpile was 1,500 metric tons, the size the U.S. government suspected Assad had in his possession. Anyone was welcome to submit a proposal, and the ad promised a $50,000 reward to the person able to demonstrate the kind of "orthogonal thinking that might help resolve and fill this important technology gap."

From Limage's position in the lowest, least-classified area of DTRA, she was aware that a team of military planners had been gaming out hypothetical responses to the Syria problem for months. "They were doing the exact same thing, but in much more detail, working with the chemists at Edgewood [Chemical Biological Center, the Army's research and development center] on what they called 'the smart book,' with all the technical options," Limage recalls.

The book included everything from conventional destruction — an incinerator or a hydrolysis machine — to "kinetic" options (bombs, essentially) and strategies to quickly render warfare agents unusable in the event of a more surgical military operation. Almost all these scenarios, though, involved either great risk or the possibility of mass casualties. "It was a logistic nightmare," former Air Force Lt. Col. Jannell MacAulay says.

For the past several months, MacAulay had spent every day adding ideas to the list of possibilities. MacAulay had been California Miss T.E.E.N. 1992 (her talent was juggling machetes) before she grew up to fly C-130 transport planes in and out of combat zones. She was 30 weeks pregnant with her second child and had just completed training to become a military strategist when she arrived at Fort Belvoir, promptly went into preterm labor and was put on bed rest for 10 weeks.

When she returned to work in the fall of 2012, MacAulay was presented with a few options. She could either take over weapons-of-mass-destruction planning or she could lead a new team the agency was putting together on the off chance that the United States might somehow become involved in efforts to destroy Syria's chemical-weapons stockpile.

Her superior, MacAulay recalls, sold the job to her like, "This will be easy. You just had a baby; you'll just do planning. There's nothing going on there." Typically a hard-charging figure, she had completed three assignments back to back, earned two master's degrees in two years, and, after a complicated labor, MacAulay was ready to lean out for a little bit.

The need to stand up a team at all had only been recently identified, when Santee, then-deputy director of DTRA, was summoned to a meeting of the Threat Reduction Advisory Council, a brain trust made up of former government officials. The Syrian civil war came up as almost an afterthought toward the end of the meeting, according to Santee, after a long roundtable on the most-pressing threats around the world. The group was familiar with the dangers after handling the toxic remnants of Saddam Hussein's defunct chemical-weapons program, and it harbored concerns similar mistakes might be made again in Syria.

"People really don't understand," Santee says. "We did have to destroy chemical weapons in Iraq, and it was rather ad hoc." There are stories of Iraqi soldiers dumping chemicals and nerve agents into a pool as American troops advanced on their positions. The U.S. soldiers only realized something was wrong when, half a mile away from a bunker, according to Cinnamon, they all developed spontaneous nosebleeds. They were forced to return in hazmat suits and cement mixers to turn the toxic emulsion into an inert block supposedly still there to this day.

The more they discussed possible scenarios, the more Santee realized with a growing sense of dread that not only was there no plan in place, but also that if anyone was responsible for coming up with one, it was DTRA. When he tasked Cinnamon with putting together a team, MacAulay was one of the first recruits.

Already at the agency when MacAulay arrived was an Army major named Tina Schoenberger. Schoenberger was a nuclear medical science officer with the Louisiana National Guard (the person who would suit up to determine whether a mysterious white powder was or was not anthrax) before the Defense Intelligence Agency drafted her as part of the team that scoured Iraq looking for weapons of mass destruction. That's where she met her husband, a former Green Beret turned military-intelligence officer. (He says he had to get to know her when he saw Schoenberger — who'd grown up riding three-wheelers, playing hearts, and shooting beer cans on camping trips with her big Catholic, Cajun family — had better aim than half of the trained soldiers in their unit.)

Like MacAulay, Schoenberger was a new mom. She'd been getting ready to deploy to Iraq a second time, in 2011, when she learned that not only was she being transfered from the Guard to the Army, she was also pregnant. So instead of the Middle East, Schoenberger was dispatched to DTRA. "The joke was they sent pregnant women to have babies here because they didn't know what else to do with us," Schoenberger says.

Rounding out the core team was Goldstein. A former college debater like himself, Goldstein had what Cinnamon saw as an "intellectual fungibility" that would be useful for the task at hand. "She looks really young, so everyone kind of discounts her," he says. After the summit in Geneva, Goldstein tapped Julia Limage to join the team.

From the start, the group sensed it wasn't being taken seriously within the organization. "The accusation I got from some of the guys was: You just got pretty women to work with you because that made your life more pleasant. Your entry requirement for being on your team was they had to be good-looking women," Cinnamon says. "It was something that they got teased about."

But there were other signs, too. For one thing, MacAulay says, they weren't given a dedicated office space to operate out of, which left them shuttling between Cinnamon's office, Santee's, and the cubicle farm. They did not have a seat at the table in DTRA's daily morning meetings, either. "We would stand in the back of the room," MacAulay remembers.

The nicknames didn't help. "I would get pissed when they would say 'Cinnamon and his harem' or whatever . . . I took that not as making a joke, but of being dismissive," MacAulay says. "I just think that there was a good-old-boys' club that [said], like, 'These women came up with this idea — how could it work?' "

For her part, Goldstein saw things differently. "I never felt that we didn't have opportunities because we were women," she says. It was just 'Who's willing to put in the time? Who can bring their expertise to bear?' "

"They really were not the people that you would have expected to have been part of this team," Santee says. "But in a lot of ways, the people who would have been . . . they didn't think this really had any chance of success. Part of what makes this group extraordinary is we really didn't know it *couldn't* be done."

There are two kinds of planning in the U.S. military: deliberate planning and crisis action. The latter is what you'd expect: "There's a crisis right now — how do we solve it?" Deliberate planning is coming up with a million what-if scenarios. The Syria mission started as deliberate planning, or as MacAulay put it, "bullshitting, brainstorming, throw baloney on the table and see what sticks."

For MacAulay, the lack of pressure was, at first, a relief. In the DTRA lactation room, Schoenberger helped bring her up to speed. "We're pumping, and she's teaching me about different aspects of chemical weapons because she was actually a chemical-weapons officer." Quiet and private, the room became a space where they could brainstorm, free from the constant barrage of requests for information waiting at their desks, or the feeling "like we had to hide behind a facade of being an expert."

Anything, at that point, would be better than the ideas that had already been floated, like a dumpster-size incinerator, or the use of a high-yield explosive that would detonate inside the storage facility, or burning the chemicals in an open pit. (In order to control the plume of noxious gases a fire like that would inevitably create, the firm that pitched that idea suggested creating an "air curtain" of high-pressure flames around the burn pit. It assured officials this strategy had been used effectively before, but balked when asked, "Did you try it out in a situation where if you smell the smoke 20 feet away you would die instantly?")

The team was charged with investigating the viability of ideas like whether the weapons could be loaded onto a plane or a helicopter and flown to a country with an existing destruction facility. As pilots, MacAulay and Cinnamon dismissed the notion out of hand. Even if it weren't for the war, no aircraft commander would agree to carry chemical weapons, stored for who knows how long in containers of questionable integrity, on their plane.

But those early brainstorming sessions did, eventually, lead to a meeting at Edgewood Chemical Biological Center, where Tim Blades, the center's director of operations, had an idea for a self-contained machine that could render the component chemicals inert, leaving only relatively harmless byproducts behind. Edgewood's chemists, Joby Warrick writes in his book *Red Line,* had used the technology before "to destroy beer-keg-sized containers of leftover chemical weapons in

Iraq." The proposed device was nicknamed "the Margarita Machine," Warwick writes, for its resemblance to the frozen-drink dispenser.

While the process of getting seed funding for such an endeavor would normally take years, in January 2013 the DTRA team wrote up an emergency request — "This was like, 'No shit — we need this tomorrow. We need the money now,' " MacAulay says — and Edgewood got to work on a prototype.

The best part about Blades' Field Deployable Hydrolysis System was that, unlike conventional chemical-weapons incinerators, it was portable. It could be sent anywhere in the world — a feature that became critical since none of the countries with conventional chemical-weapons facilities appeared open to accepting Syria's. (Cinnamon recalls a frustrating call with a representative from France, who denied the existence of a chemical-weapons facility, while on the other end of the line, the DTRA team was staring at a public website describing the facility and its capabilities.) At one point, officials at the Pentagon were particularly bullish on the prospects of persuading the nation of Albania to accept the weapons.

From the outset, the core team was skeptical that such a deal could be reached. "I just remember sitting in Gen. Santee's office on the couch after we had had a meeting with the Pentagon and thinking, 'We need more options. Because what if that fails, and that fails?' The Pentagon was putting a lot of their eggs in the Albania basket," MacAulay remembers. "Tina said something, like, 'What about on a ship?' " To three Air Force pilots, an Army major, and a civilian, the idea of destroying the weapons on the open sea may have started as a joke ("This was around the time Lonely Island's 'I'm on a Boat' song came out," Goldstein notes). But, at the same time, it didn't seem insane.

Then August came. The team found out that a suspected chemical attack had been carried out outside Damascus. In an instant, the theoretical work they'd been doing became very real. "As military members, we would never go to the civilian population first — that's the last line. . . . [Assad] went there first," Cinnamon says. "That really made the whole team angry."

In Geneva, as the team supporting Kerry was hammering out the details, it seemed like Russia had already lost interest in the endeavor. "We give them a piece of paper that says what we think the plan should be, and they just go, 'Yeah, that looks fine to us,' " Cinnamon, who'd flown to Europe to aid negotiations, recalls. "They didn't even look at it. They're like, 'I don't care. You guys are going to fail. Write whatever you want.' We kind of look at each other like, 'Well, if we can write whatever we want, then . . . let's just go for -everything.' "

Back at DTRA headquarters, MacAulay, Schoenberger, and Goldstein were working 24-hour shifts. Cinnamon would blast out emails in the middle of the night: "Can we fly Predator drones in Syrian airspace?" Or "How many months would it take to produce the hydrolysis machine?" They would track the answers down and send them back as the diplomats hammered out a framework. Schoenberger fielded questions about the feasibility of the prospect they'd joked about: Rather than bringing the Edgewood chemists' machine into Syria or some third country, what if the demo was performed in international waters?

Privately, Schoenberger was unsure whether the idea would go anywhere. "If you ever do course-of-action development, you always have a throwaway COA that you know isn't really going to cut the mustard," she says.

There were a lot of reasons to dismiss the notion out of hand. A mission like this had never been attempted before. Beyond the practical challenges of outfitting a ship in time, there was, for starters, the potential for a terrorist attack or a devastating chemical spill — either contained to the vessel itself, or worse, affecting indeterminate swaths of the ocean.

But now that it was being seriously considered as a diplomatic option, it became Schoenberger and Limage's job to run down the particulars. Schoenberger headed to Portsmouth, Virginia, where she met a salt-licked, bushy-mustached man from the Maritime Administration who was surprisingly bullish on the throwaway COA's prospects.

"He said, 'We can do this. We retrofit vessels in 60 days for Marines that are going out on missions. If you give us the specifications, we can do this.' " She can't remember the man's name, but Schoenberger says, "It was that conversation with that guy that convinced me."

In order to pull it off, any ship would need not only a helicopter landing pad, but also enough space to accommodate the chemicals themselves plus two hydrolysis machines, filtration systems, an onboard laboratory, containers for the toxic byproduct that would eventually be disposed of on land, and housing for 35 crew members; beyond that, a 63-person team operating the machines and a security detail.

Schoenberger and MacAulay started working on a sketch of a white paper. "Before we knew it, we had a fleshed-out ship option," MacAulay recalls. "But no one wanted to look at it."

Inside the Pentagon — where suddenly, there was a flurry of interest in being involved in the plan to destroy Syria's chemical weapons — consensus was building behind the idea of hauling the chemicals to Albania. "The ship option," meanwhile, was dismissed out of hand. Santee recalls one official calling the idea "harebrained" at a meeting at the White House and another high-level meeting in which he believes his presentation was

deliberately sabotaged. ("I got up to give the brief, and there were supposed to be, like, 15 slides. And after three slides, the brief was over. There were no more slides. Somebody who didn't want me to brief the ship took them out," Santee says.) At one point, he received a direct order to stop pursuing the idea, a command Santee declined.

To Limage, it was Albania that didn't seem viable. One of her first jobs was to complete a comparison of the costs of destroying the weapons on a merchant vessel named the *MV Cape Ray* and incinerators in Albania. Among other reasons that the oceanic idea seemed more viable: no pushback from locals, fewer security concerns, and greater cost-effectiveness. "The ship seems crazier on its face, but we had much more control over it," Limage says.

After Santee was ordered to stand down, MacAulay and the others took it as a challenge: "We printed out quite a few copies of the ship option, and we were walking around the Pentagon just throwing it on people's desks," including that of the chairman of the Joint Chiefs of Staff, where her husband worked beside desk officers for the Middle East. The move seemed to pay off soon after, when negotiations with Albania fell apart. By that time, the white paper had caught the attention of a senior DOD official who helped revive the proposal.

Limage was sitting in her gray cubicle on the fall afternoon when Goldstein and Cinnamon returned from an interagency meeting. "We're going with the ship," Cinnamon said. There was a feeling of triumph — they'd spent months comparing the costs, benefits, risks of each option, and they had a detailed plan ready to implement — but there was also a real sense of angst. "We were like, 'Oh, my God. We actually have to do this now,' " Limage says. " 'We have to create a chemical-weapons-destruction facility on a ship.' He looked kind of ill."

Usually, the people who plan and strategize in advance of a military mission and the operators who execute it are separate teams. But because this assignment cut across so many spheres of influence, because it had to be completed on such a tight timeline, and because, by the end of it, so many people from so many different federal agencies and intergovernmental organizations wanted to be involved, the core DTRA team ended up doing the work of both the planners and the operators. "We, as the planners, just kept a hold of it the whole time," MacAulay says.

Long before the weapons could be loaded onto the ship, they'd have to be inspected, repacked into new containers, ferried from locations scattered across the country through a war zone to the Syrian port at Latakia. On a practical level, that meant sourcing mercury-coated metal drums, forklifts, cranes, shipping containers, and armored jackets for the flatbed trucks. "We were doing that type of planning on so many things every day," Limage says. "Things that one group of people would never be kind of managing in such detail."

Before the chemicals could be extracted, they would have to be located and accounted for, an exercise that required the cooperation of both the Syrian government and the Russian intermediaries. In November, MacAulay was dispatched to the Hague to help coordinate what, per the Geneva agreement, would be an international joint mission executed under the banner of the Organisation for the Prohibition of Chemical Weapons (OPCW) — a group that was awarded the Nobel Peace Prize that December — with support from the United Nations.

MacAulay's early days in the Netherlands were spent in a room with a Syrian chemical-weapons expert and a translator, compiling a listing of Assad's chemical weapons since the program's inception in 1970s, while a Syrian general paced silently in the background.

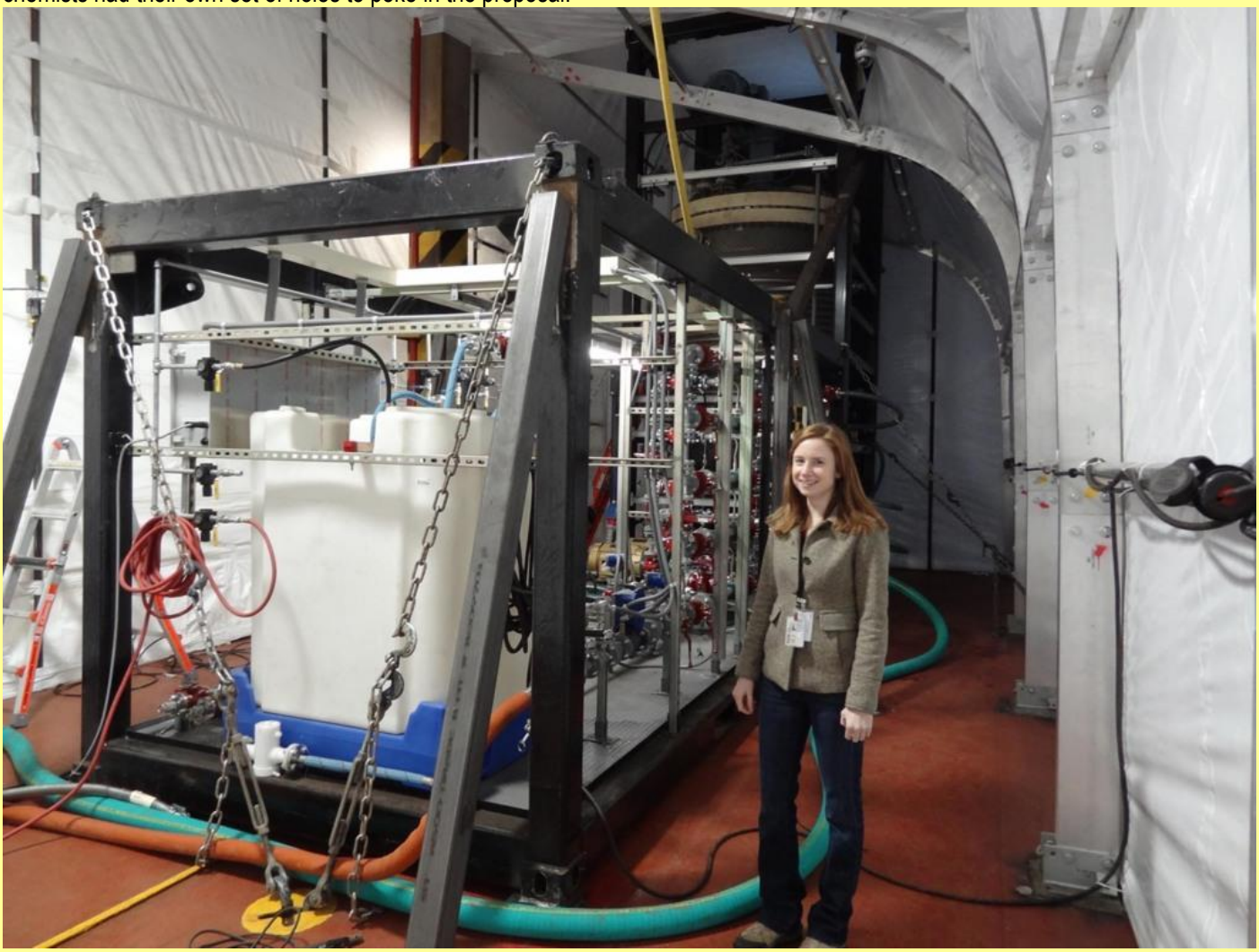
"We knew they had this stuff, but we didn't have all the particulars," MacAulay says. What quantities of sarin and other chemical precursors existed at which sites? What was the size and status of containers they were stored in? Could they be loaded onto trucks? What MacAulay remembers most about those conversations is that the Syrian expert seemed terrified of the general looming behind him. And he wouldn't look her in the eye.

In Syria, OPCW weapons inspectors fanned out to sites around the country, while in the Netherlands, U.S. diplomats worked to secure support for the mission from other countries. In the end, 17 nations contributed: Denmark and Norway sent ships to accept the weapons at the Syrian port. Italy offered a port where the weapons could be transferred from those ships to the U.S. merchant vessel outfitted with the hydrolysis machines. Chemical byproducts that couldn't be destroyed aboard the vessel would be disposed of by Germany, Finland, and the United Kingdom.

Back in the U.S., Limage and Goldstein began compiling a master spreadsheet with each and every item that would be needed and writing white papers about which environmental laws were to be considered. They met with veterans groups concerned about the potential for chemical exposure and had to prepare arguments for lawyers from the Maritime Administration who believed the mission violated rules against transporting chemical weapons. (They weren't transporting weapons, the team reasoned, the ship would be a chemical-weapons-destruction facility and there were no rules pertaining to a floating facility of that kind.)

In the meantime, there was still a considerable amount of "squabbling" going on among senior government officials. "It's a very tight group, but with a lot of disagreements,"

Limage says. Once it was decided that the destruction would, in fact, take place on a ship, the State Department wanted one outfitted with an incinerator, rather than the Edgewood chemists' machines considered for the job.
Limage remembers the matter coming to a head at a meeting inside the State Department. The room was hot, every seat at the conference table was full, and more folks were lined up along the walls when she slipped into the conference room. "It was a disaster of a meeting," she remembers. The State Department contractor brought in to pitch the idea was pelted with a stream of pointed questions from DOD officials — some plucked from a document prepared by Goldstein and Limage — while Army chemists had their own set of holes to poke in the proposal.



Limage poses next to one of the hydrolysis systems used to help neutralize the toxic weapons.(Courtesy of Julia Limage)

"It was a lot of people who had in-depth knowledge of the *Cape Ray* option, asking very hard questions to, essentially, one man from some private company who was not equipped to be answering them," Limage says. "And there was this poor guy in the middle, trying to control the crowd."
(That "poor guy": the deputy assistant secretary for nonproliferation programs, a man named Simon Limage. As it turned out, Julia Limage, née Brown, did not slip into the room as discreetly as she imagined. "He claims that he was in the middle of this meeting that was going completely sideways and this beautiful young woman walks in and totally distracts him," she says. The couple later married, and now share two young children.) If there was an upshot, though, it was that by the end of the interrogation, everyone seemed to agree that the merchant ship, the *MV Cape Ray,* was the best available option.
Or nearly everyone. In December, an Office of Naval Intelligence report that issued further warnings against the idea began circulating in the highest echelons of government. "Their basic premise was 'Landing an airplane on land is hard enough. Landing on a ship is 10

times harder. Everything on the ocean is harder, and you haven't factored that in. This is never going to work, and you're all going to die,' " Santee says.

By that point, contractors had been dispatched to Portsmouth, where they were working to retrofit the 648-foot *Cape Ray* with pumps, hoses, 2,200-gallon titanium barrels, containers to hold the neutralizing agents and the toxic byproduct, hazmat suits, and other accouterments required for the mission. There was only a matter of weeks in which to do it all before the ship would embark for the Mediterranean.

For three frigid weeks after Christmas 2013, Limage stayed at a dingy Hampton Inn near the shipyard in Virginia, acting as conduit between policymakers in D.C. and contractors rushing to meet their deadlines. The sudden appearance of a perky young lady peppering them with questions perplexed the contractors, chemists, and security personnel. Some "were definitely confused by my existence. I remember the military guys being like, 'Who's this little girl on the ship?' They didn't know what to make of me."

She remembers walking into the shipyard that first day, dwarfed by stacks of shipping containers and the pallets she'd requisitioned. "I'd been thinking about shipping containers and forklifts and trucks all day, but it was very much a paperwork drill for me," she says, "All of a sudden: This is what we're talking about. I really understood."

At the same time, pitfalls the team hadn't anticipated were becoming real, too. There was a polar vortex that year, and as the temperatures dropped in Virginia, PVC pipes on the ship burst, pushing departure further back. The delays prompted questions about how the temperatures aboard the ship would impact the order in which the weapons would be disposed of. "We were getting towards summer. We weren't supposed to be destroying in summer. What happens when this stuff gets really hot?" There were similar problems if, for some reason, it happened to be too cold: Sulfur mustard has a freezing point of 58 degrees, and if it were frozen, it couldn't be processed by the hydrolysis machine.

Finally, as the last bolts were put in place and the boat was ready to embark, there was one last query. Like the others, it appeared in the form of an email on Limage's worn, government-issue Blackberry: *Julia, the chairman of the Joint Chiefs would like to know who is going to certify the ship?* "I was like, 'What does that mean? How do you certify?' " Limage recalls.

Someone needed to guarantee that the ship, and all of its unprecedented modifications, was fit for duty. Normally, the relevant division of the armed services would be the one responsible for certifying the vessel, but as in the early days, suddenly no one wanted the responsibility of putting their neck on the line. Ultimately, the buck was passed all the way to the top: Secretary of Defense Chuck Hagel himself signed the paperwork, and on Jan. 10, 2014, the boat departed Virginia.

There would be more delays getting the weapons out of Syria, tracking each barrel as it made its way across the country and figuring out a plan to decontaminate the ship once it returned to port, but by July the chemical agents had been loaded aboard the *Cape Ray* and the process of neutralizing 600 of the 1,200 metric tons extracted from Syria had begun.

"Once the destruction operation started, Eucom took over and everything went black," Limage says. "All of a sudden, we didn't get any information. Our part had basically concluded." At the same time, there were reports from West Africa of a new emerging threat: a rare hemorrhagic fever that sent patients into multiple-organ failure. A new team at DTRA was being stood up to respond to the Ebola outbreak, and both Goldstein and Limage were pulled onto it.

The destruction of Syria's declared stockpile was completed on Aug. 18, 2014, and the *MV Cape Ray* began making its way back to Virginia to be swabbed down and disinfected. But on Aug. 19, the Assad regime launched a chlorine attack on Daraa. On Aug. 20, Damascus was hit; villages in the countryside outside the capital on Aug. 22.

The ongoing attacks were demoralizing, Cinnamon says. "You're heartbroken. You see images you never wanted to see again, after what should've been a jubilant celebration: We finally got this stuff taken care of, and we did something that no one said could be done. . . . 'Nothing I did really mattered,' that's what goes through your mind," he says, glumly.

Eight days after the 2013 chemical attacks on Ghouta and Moadamiyat al-Sham — the ones that triggered the international response — Ameenah Sawwan was at a wedding. The bride's grandmother insisted on moving up the date; if she was going to die, she wanted to know that her granddaughter would be taken care of. During the reception, the wedding party could hear a pair of mortar shells exploding in the distance. "I remember we were saying, 'I hope that nobody was harmed leaving the wedding.' " Later that night, Sawwan learned those mortar shells killed her brother, his wife, and their son. They'd survived the chemical attack, only to be killed by a conventional bomb a week later.

A recent U.N. report identified at least 350,209 individuals killed since the start of the Syrian civil war. The overwhelming majority of those deaths were by conventional means, rather than chemical ones.

The Obama administration didn't roll out a billowing "Mission Accomplished" banner when the chemical destruction was finished — or mark the success in any meaningful public way. And it's understandable why they might not have felt comfortable patting themselves on the back: Assad was continuing to attack Syrian civilians. The Islamic State had captured

the Syrian city of Raqqa. Russia, the diplomatic partner that brokered the deal, had invaded Ukraine.
"There was this huge buildup of this huge, amazing mission," Limage recalls. "But then you really couldn't celebrate or even talk about it because of these horrible things. It was hard."
In September, one year after she'd been tapped to join the Syria team, Julia Limage returned to Portsmouth for a small, commemorative ceremony. The ship was empty, quiet, the hydrolysis machines had been dismantled. All that hung in the air was the strong stench of bug spray. *They were using that on people*, she remembers thinking.
By that time, most of the team had scattered. Santee had retired from the Air Force a few months earlier. Cinnamon was rotated out to his next military posting. (He now works in the private sector.) Goldstein returned to the Department of Defense, and Limage moved on to a job at the Department of Homeland Security. (She and Simon recently welcomed their second child together.)
MacAulay and her husband retired from the military. The Air Force had made it hard for the couple to be assigned to the same place. "The system was not built for dual-military families," she says. Policies were starting to shift, but they "weren't shifting fast enough," she says.
Even Schoenberger, who first suggested the ship option, vetted the idea, and tracked down the vessel, didn't get internal accolades, according to Santee. "One of the last things I had to do was tell her she didn't get promoted as I'm leaving the Air Force," Santee says, adding that he wrote a memo telling the folks in charge to "get their heads on straight." (Schoenberger is still in the military. She can't discuss the work she does these days, but she has since been promoted — twice.)
A few of the merchant marines, and the Edgewood chemists, and some Obama officials would go on road shows, giving presentations about the mission, but the four women who were there from the beginning didn't. "We didn't get the flashy stuff. We weren't on the news. We weren't on the boat, getting all the credit and the hero's welcome when they came home," MacAulay says. But, she admits, that's the way these things often go. "Most people only applaud the pilot who dropped the bomb, or the pilot who rescued someone. The maintainers — all of the people that enabled that airplane to get into the air to do what it did — those people never get credit."

Tessa Stuart is a staff writer at Rolling Stone, where she covers politics and national affairs. Before joining RS to report on the 2016 election, Tessa was a staff writer at both the Village Voice and BuzzFeed, and a Voice Media Fellow at LA Weekly. Her work has also appeared on VICE News and Gawker, as well as in The California Sunday Magazine, Audubon Magazine and Boston Magazine.

Chemical Agent-Destruction Pilot Plant Begins Final Campaign to Eradicate Chemical Stockpile

Source: https://www.indrastra.com/2022/03/chemical-agent-destruction-pilot-plant.html

Mar 01 – The **Pueblo Chemical Agent-Destruction Pilot Plant** (PCAPP) team has announced the start of its final chemical weapons destruction campaign through the operation of a Static Detonation Chamber (SDC) complex that will destroy decades-old munitions such as 4.2-inch mortar rounds containing mustard agent. The Pueblo, Colorado-based plant has been safely destroying chemical weapons stored at the U.S. Army Pueblo Chemical Depot since 2015.

"Safe elimination of the Pueblo stockpile helps the U.S. government meet its international obligations and removes a threat from the community," said Mike Costas, general manager of Bechtel's Defense & Space business line. *"We're honored to continue this important mission."* The final campaign will be conducted in three armored, stainless steel vessels called Static Detonation Chambers. The electrically-heated vessels detonate the munitions to destroy the agent and munitions components, and gases are treated by a pollution abatement system.
"After years of work and preparation in getting the SDC units up and running, it is gratifying to be on our way with the destruction of the third and final

campaign," said Todd Ailes, project manager, Bechtel Pueblo Team. *"We are making our community safer with every munition we destroy."*

In 1997, a presidential directive and the ratification of the Chemical Weapons Conventions, an international treaty to destroy chemical weapons, called on all member nations to destroy their chemical weapons and production facilities. Bechtel leads the teams under contract to the Pentagon's Program Executive Office, Assembled Chemical Weapons Alternatives to help the United States complete its treaty obligations. The remaining weapons are stored at the U.S. Army Pueblo Chemical Depot in Colorado and the Blue Grass Army Depot near Richmond, Kentucky.

Pueblo Chemical Agent-Destruction Pilot Plant

The stockpile sites in Colorado and Kentucky account for the last 10% of what was originally a national stockpile of more than 30,000 tons of chemical weapons at seven sites. The Colorado and Kentucky projects used a combination of first-of-a-kind neutralization processes in their main plants and static detonation chambers for problematic munitions.

Both sites are on target to complete the destruction of chemical weapons by the Chemical Weapons Convention treaty commitment of September 30, 2023. U.S. Public Law mandates stockpile destruction by December 31, 2023.

Once the final operations are complete at PCAPP, the facility will be closed and equipment dismantled, decontaminated, and removed by agreements between the State of Colorado and the U.S. Army.

PRINCE

(Preparedness Response for CBRNE INCidEnts)

EU project in progress

Source: https://www.isfp-prince.eu/

Chemical, Biological, Radiological, Nuclear, and high-yield Explosive (CBRNE) events have the potential to destabilize governments, create conditions that exacerbate violence, or promote terrorism. These events can quickly overwhelm the infrastructure and capability of the responders.

PRINCE aims to support first aid responders and law enforcement/security authorities by providing them with an evidence base for strategic level decisions related to prevention, detection, Respiratory Protection, Decontamination and response to CBRN event.

PRINCE aims to produce a roadmap based on EU & International Actions plans and recommendations by creating a PRINCE catalogue of training curricula in line with the INTERNATIONAL CBRN TRAINING CURRICULUM and EU, based on best practises and international proven CBRNE exercises.

PRINCE aims to produce CBRNE SOPs and plans for two incidents (Chemical and Radiological) in two major exercises (Greece, Portugal). The exercises will be performed with representatives from all responders to (1) share information on CBRN threat and risks; (2) exchange best practices; (3) perform joint training and exercises.

PRINCE will provide recommendations to CBRNE equipment, systems, and training content and to develop ICT tools (E-training platform, CBRN Emergency system).

PRINCE aims to enhance protection of public spaces, community and infrastructure by sharing project outcomes with wider audience through online information material, presentations to public events and media.

- ✓ Short term beneficiaries are CBRN responders and authorities from GR, PT, CY, FL and DE
- ✓ Medium term beneficiaries: EU CBRN authorities, stakeholders.
- ✓ Long term beneficiaries: Citizens, public authorities, CBRNE technology partners, business, Government advisors, R&D and industry.

PRINCE increases sustainability through cross-border / cross-sectoral collaboration and by exchanging best practices and knowledge on joint exercises and training courses between five member states.

Ukraine war: What chemical and biological weapons could Russia have – and what has it used before?

Source: https://news.sky.com/story/ukraine-war-what-chemical-and-biological-weapons-could-russia-have-and-what-has-it-used-before-12563036

Mar 11 – UK and US intelligence officials have warned there is "serious concern" Russia could use chemical or biological weapons in Ukraine.

Western allies have accused President Vladimir Putin and his forces of planning a "false flag" operation, which would use a false claim that Ukraine has such weapons as an excuse for Russia to deploy its own.

Prime Minister Boris Johnson described the strategy as **"straight out of their playbook"**, as it is the same one Russian-backed Bashar al-Assad used for carrying out chemical attacks during the civil war in Syria.

Why does the West think Russia will use chemical weapons in Ukraine?

Although it is signed up to the 1997 Chemical Weapons Convention, which bans it from developing, using or stockpiling them, Russia is still known to have used them.

Pentagon and Ministry of Defence intelligence chiefs have repeatedly warned the Kremlin is fabricating claims Ukraine and its Western allies have chemical or bioweapons.

They say Mr Putin wants to use that as justification for using similar weapons on the Ukrainian people. Russia first started making these accusations last year - before the invasion.

On 21 December, Russian defence minister Sergei Shoigu said there were 120 US mercenaries in the occupied Donbas region of east Ukraine that had been given "tanks of chemicals to commit provocations".

One week into the conflict on 3 March, his colleague foreign minister Sergei Lavrov said US intelligence officials were worried fighting could result in its chemical and biological facilities there being damaged.

The US has no chemical or biological facilities inside Ukraine - it just helps it safeguard its non-military biological laboratories.

On 9 March, a spokesperson for Mr Lavrov's department said it had discovered a military biological weapons programme inside Ukraine, with labs in Kyiv, Kharkiv and Odesa investigating how to use bats and birds to spread deadly pathogens such as anthrax.
But Dr Brett Edwards, senior lecturer in public policy and security at Bath University, told Sky News: "There are labs in Ukraine, which have been there since before the Cold War, but they are registered, legitimate laboratories, there's nothing shady about them."
The US dismissed the claims as "absurd propaganda", for which there is zero evidence.
In his latest daily address, Ukrainian President Volodymyr Zelenskyy added: "No chemical or any other weapons of mass destructions were developed on my land. The whole world knows that."

When has Russia used them before?
During the Second Chechen War, in October 2002 Russian troops used a gas containing the opioid carfentanil after Chechen rebels stormed a Moscow theatre and took people hostage.
The substance - 10,000 more powerful than morphine - killed 120 of the hostages.
Two years later in 2004 toxicologists found that Ukraine's pro-Western president Viktor Yushchenko had been poisoned by the chemical TCDD.
Mr Yushchenko, who had beaten Mr Putin's preferred candidate Viktor Yanukovych in the elections that year, claims the attack was carried out by Russia.
The widest-scale example of Russia using **chemical weapons was in Syria**, where it fought alongside Bashar al-Assad's government forces in the country's civil war.
Studies estimate there were 85 chemical weapon attacks during the war.
Syria forms a key part of Russia's so-called "playbook", as each time an attack was carried out, President Assad would say terror groups ISIS and Al-Qaeda had the weapons first.
Dr. Edwards, an expert in the history of chemical and biological weapons, said: "It all comes back to Syria. Russia lied repeatedly about there being chemical weapons in Syria, while working hand in hand with a Syrian regime that was using chemical weapons. In that context, we know Russia lies on these issues."
The worst attack in Syria was in the Damascus suburb of Ghouta in August 2013 when up to 1,700 people died as a result of the nerve agent sarin.
People tried to escape from their homes only to collapse, foaming from their mouths and noses, and suffocate to death.
After the atrocities in Ghouta, the Russians agreed to negotiate with the US on behalf of President Assad and eventually struck a deal to allow them to destroy Syria's illegal stockpile of chemical weapons.
During the operation, US officials found about 1,300 tons of mustard gas and the nerve agents sarin and VX.
But despite Syria joining the Chemical Weapons Convention that year, chlorine and other chemical weapons were still used numerous times by Russian-backed Assad forces.
Russia has also repeatedly used chemicals to poison wanted individuals abroad.
In November 2006, former KGB officer-turned British spy Alexander Litvinenko was poisoned by Russian agents in a London hotel.
They contaminated his tea with the highly radioactive chemical polonium 210.
He died of acute radiation poisoning three weeks later.
In March 2018 former Russian military officer **Sergei Skripal**, who had also turned spy for the British, was poisoned with the nerve agent Novichok alongside his daughter Yulia in Salisbury.
Both survived the attack, but two others - Dawn Sturgess and Charley Rowley - came into contact with the same nerve agent via a contaminated perfume bottle months later seven miles away in Amesbury. Ms. Sturgess died almost instantly, but Mr Rowley survived.
The dose found on the perfume bottle is thought to have been strong enough to harm 10,000 people.
Most recently in August 2020, Russian opposition leader **Alexei Navalny fell ill on a flight home to Moscow** after being poisoned with Novichok.
After receiving treatment in Berlin five certified laboratories confirmed the use of the nerve agent.

What weapons does Russia have - and what could they use in Ukraine?
Asked about the prime minister's "playbook" warning of a potential chemical weapons attack in Ukraine, former British intelligence officer Christopher Steele told Sky News he "wouldn't rule it out at all".

He said: "I think as the Russian army becomes bogged down and clearly not realising its objectives militarily, you are likely to see more indiscriminate killing and bombardment and possibly the use of chemical weapons."
But Dr. Edwards says that Russia being a signatory of the Chemical Weapons Convention (CWC) means it does not have the capacity to launch chemical attacks like the ones seen in Syria.
"The CWC is the most intrusive and successful disarmament convention we have," he tells Sky News.
"Because of its collaboration with the CWC, Russia is subject to on-site inspections and investigations.
"So we know they don't have major stocks, because they've either been destroyed or are in the process of being destroyed."
Dr. Edwards also claims there would be more widely-available intelligence if such weapons were being mobilised in Ukraine.
"We'd see it in the intelligence, it's a whole infrastructure, so we'd see specialist units moving it all - which we haven't."
But he says Russia could be producing chemical weapons on a smaller scale.
"The smaller use of weapons - akin to terrorism - is more likely," he explains.
"The CWC can't capture smaller, clandestine production. And we have good reason to assume there is small-scale production of nerve agents in Russia - but that doesn't have any relationship with the tonnes needed for chemical warfare.
"It's nowhere near on the scale the West has been talking about."
On bioweapons, he said there is "little reason to believe" Russia has the capability or intent to use them. But he fears incapacitants - such as tear gas and opiate-based substances - could be used to cause harm on a wide scale.
"Russia is very likely to use tear gas in a way that violates people's human rights - and there are also concerns other incapacitants could be used in the same way," he says.
"We should be as worried about that as we are chemical weapons."

EDITOR'S COMMENT: To be honest I do not understand why "experts" are feeling obliged to provide info for the public related to certain issues that might cause panic or social distraction. Everybody knows or imagines that any country possessing CBRN weapons in the past continues to have the know-know how and can re-produce them anytime or even improve their lethality. It is pure hypocrisy to accuse Russia or China or Ukraine or UK or a few more countries that they are having chemical or biological weapons or that they know how to make an RDD. The best thing that we can do is to pray that the minimum grey matter left in certain brains will ensure that these agents will not be used in wars – not that they are more destructive than modern ammunition!

The threat of CBW?

By Amjed Jaaved
Source: https://moderndiplomacy.eu/2022/03/12/the-threat-of-cbw/

Mar 12 – Russia's U.N. representative, Vasily Nebenzya, told the U.N. Security Council that Russia had discovered " at least 30 Ukrainian laboratories working on diseases including anthrax, cholera and "the plague," with funding and oversight by the U.S. military.
He said the "reckless" activity included research related to diseases born by birds, lice and fleas. He warned, `We call on you to think about a very real biological danger to the people in European countries which can result from an uncontrolled spread of bio-agents from Ukraine,'
U.S. officials have denied all such charges and suggested that Moscow may be making the allegations as a pretext for its own use of chemical or biological warfare in Ukraine. Britain also endorsed the US point of view.

CBW a real threat?
On several occasions in the past the USA and Russia (erstwhile Soviet Union) accused each other of doing research to make bio-weapons. But, no concrete action was taken to ferret out the truth. The West remained largely engaged in trumpeting the hoax of "dirty bomb "ignoring the threat emanating from the CBW.

Revelations by dissident scientists

Russian Ken Alibek's revelations

In the Cold War era, news portals used to be flooded with revelations about "Soviet Union's stockpiles of bio-terror weapons". Testimonies by Soviet defectors were used by international media to criticise Russian bio-weapons programme.

After defecting to the USA, Ken Alibek, deputy chief of Russia's bio-weapon programme Biopreparat, reported in 1992 that the 'Soviets had manufactured 40 tons of weaponised smallpox, a virus thought to have been eradicated from face of the earth'. He further revealed that 'Russia's arsenal of disease included anthrax, plague, tularemia, brucellosis, Q fever and glanders'.

Current medical research treats Alibek's revelations as propaganda gimmicks. What is the truth about Russia's bio-terror weapons? Russia has never tested or used weaponised smallpox. Pamela Weintraub points out, in her *Bio-terrorism* (page 80), that it was the British forces that 'first used pox as a biological weapon during the French and Indian Wars (1754-67). The British forces in North America distributed blankets used by smallpox patients to American Indians aiding the French. The resulting epidemic killed more than 50% of affected tribes'.

Chinese Dr. Le-Meng Yan's revelations

In an interview with *India Today*'s Gaurav Sawant, Chinese virologist Dr Le-Meng Yan alleged Chinese military scientists investigated weaponising coronaviruses five years before the Covid-19 pandemic. She produced some documents as the 'smoking gun' evidence. She argued that the virus did not emerge from the wet market at Wuhan, that it came from a Chinese military lab.

Civilised west used CBW

It is a bitter historical fact that the civilised West (colonists) never had any compunction in using nuclear or CBW against the hapless people. The North American colonists' gifted blankets and linens contaminated with smallpox to Red Indians. The virus caused inflicted disfiguring scars, blindness and death. This tactic was a crude form of biological warfare.

A 19th-century historian Francis Parkmanwas the first to report this Colonial-age weaponizing of smallpox against Native Americans. He came across correspondence in which Sir Jeffery Amherst, commander in chief of the British forces in North America in the early 1760s, discussed its use with Col. Henry Bouquet, a subordinate on the western frontier during the French and Indian War.

Lethality of bio-weapons

A bio/chemical bomb was actually used by Japan's former doomsday-cult Guru Shoko Asahara. The Guru was sentenced to death (February 27) `for masterminding the deadly 1995 nerve/chemical gas (sarin) attack on the Tokyo subway and a string of other crimes that killed 27 people'.

The cult's quest for biological weapons was overshadowed by its chemical attack capability. The cult members were trying to develop botulinium toxin by utilising toxin on green mamba snake and poisonous mushroom spores.

Professor Ramesh Chandra points out in his *Global Terrorism* (volume 1, page 27), says, 'Terrorist interest in chemical and biological weapons is not surprising, given the relative ease with which some of these weapons can be produced in simple laboratories… Although popular fiction and national attention have focused on terrorist use of nuclear weapons, chemical and biological weapons are more likely choices for such groups'.

Not only sarin, but also several other chemical agents like mustard, tabun, soman and VX are capable of dual use as pesticides and as a chemical weapon. Chandra (page 30 *op. cit*) points out, "Chemical warfare agents can quite literally be manufactured in a kitchen or basement in quantities for sufficient for mass-casualty attacks".

Cost aspect

Nuclear labs are easy to detect as they generate radiation signatures. But, CBW labs ooze out no signatures to be detected by Geiger meters or other means.

Experts agree that it is more difficult to manufacture Sarin gas, used by the "terrorists" in Japan, than mustard, tabun, soman, et al. To some experts, an effective bioterrorism facility could be built for $ 200,000 to 2 million. A crude nuclear bomb would cost $5,433,000). Researchers Peter Zimmerman and Jeffrey Lewis (wrote in *Foreign Policy*, terrorists can construct a nuclear device within the United States, which could be a highly-enriched uranium bullet that they could fire through a gun. As for the physics and computation of the device, a senior physicist with two assistants could be hired for $200,000. Metallurgy and casting would cost $270,000, precision machining and

construction $230,000, gun design, assembly and training $230,000, electronics, arming, fusing and firing $150,000, other facilities $200,000, fissile material between $300,000 and $500,000 and transportation $153,000. The total cost would be $5,433,000.

Nuclear/CBW capability

It is pertinent to mention that: (1) Robert S. McNamara, in his address to the World Bank Annual Conference on Development Economics at Washington, DC, as far back as on April 25, 1991 inter alia classified India among the' Countries reported by the Western governments as seeking a CW capability or suspected to be possessing chemical weapons'. The explanatory footnote to the Table 111-2: *Distribution of Chemical Weapons, 1990, states that the classified countries denied possession of chemical weapons, or intentions to acquire such weapons (Source: The Post-Cold War World and its Implications for Military Expenditures in the. Developing Countries, by Robert McNamara).*

India even conducted mock exercises against the CBW attack. The police claimed to have seized a rare pencil pistol and 25 "chemical" cartridges from a militant hideout in North Kashmir's Kupwara district, leading to suspicion those militants might be switching over to chemical or biological weapons from conventional arms. The pistol and cartridges, marked "neroxin" were seized from the house of Bashir Khan at Krishipora-Nagrimalpora village, the Sub-District Police Officer, Handwara, the Altaf Khan, said today. Khan said during the inspection of the ammunition, one of the police officers suffered giddiness and had to be referred to Army hospital for treatment, leading to the suspicion that the cartridges might be carrying chemical or biological agents.

Neroxin

Dual-use chemical factories

Methyl isocyanates were being produced at the Union Carbide India when it exploded killing thousands of people. There were 27 factories producing products including Carbaryl through cyanates supplied by UCIL.

An explosion took place at a Visakhapatnam (Andhra Pradesh factor manufacturing styrene, also known as ethenylbenzene, vinylbenzene. Exposure to ethenylbenzene, vinylbenzene can affect the central nervous system, causing headaches, fatigue, weakness, and depression.

It is primarily used in the production of polystyrene plastics and resins.

Unconscious children being carried by parents in their arms, people laying on roads, health workers scrambling to attend to those affected by the styrene vapour refreshed grim memories of the 1984 Bhopal gas tragedy. Who knows India has weaponised the aforementioned chemicals for it denied access to foreign journalists to the factories' sites.

India itself fears a CBW attack from militants. The Washington Post reported in 2013 that the police in occupied Kashmir published a notice in the Greater Kashmir (now under blackout), advising people about nuclear-war survival tips. The tips included constructing well-stocked bunkers in basements or front yards and having a stock of food and batteries or candles to last at least two weeks.

Allegations galore uninvestigated

The allegation that COVID19 emerged from a wet market in Wuhan could never be verified. Speculation about origin of COVID19 has engendered questions about weapons of mass destruction.

Pakistan and Azad Kashmir accuse India of using chemical weapons

Azad Jammu and Kashmir prime minister accused India of using chemical weapons against defenceless Kashmiris. Earlier, the AJK president and Pakistan's Foreign Office (FO) had accused Indian forces of using chemical agents to kill unarmed protestors (Dawn, May 10, 2020, India using chemical munitions in Kashmir: FO

2017 *Dawn* Dec 7, 2017). Being a signatory to the Chemical Weapons Convention (CWC), India can't produce or use such weapons. It is unprecedented for the world's largest democracy to use chemical weapons against civilians.

Amnesty International and other human rights organisations should verify this allegation. Besides, our FO should invoke the CWC's 'challenge inspection' clause. Under it, India

stands bound to the principle of 'anytime, anywhere' inspections (by the CWC Director-General) with no right of refusal.

Concluding remark
The allegations about CBW by some countries should be investigated.

Mr. Amjed Jaaved has been contributing free-lance for over five decades. His contributions stand published in the leading dailies at home and abroad (Nepal. Bangladesh, et. al.). He is the author of seven e-books including Terrorism, Jihad, Nukes, and other Issues in Focus (ISBN: 9781301505944). He holds degrees in economics, business administration, and law.

Fort Leonard Wood personnel facilitate dry-decontamination assessment at Alaska exercise

By Brian Hill (Fort Leonard Wood Public Affairs Office)
Source:https://www.army.mil/article/254586/fort_leonard_wood_personnel_facilitate_dry_decontamination_assessment_at_alaska_exercise

Sgt. Keith Whittum, a Vermont National Guard Soldier with Company C, 3rd Battalion, 172nd Infantry Regiment, removes simulated radioactive particles using a vacuum on March 1, as part of a dry-decontamination technologies operational assessment during Exercise Arctic Eagle-Patriot 22 at the Anchorage Fire Training Center in Anchorage, Alaska. Fort Leonard Wood personnel from the Maneuver Support Center of Excellence Homeland Defense Civil Support Office facilitated the assessment on the technologies and how they can apply to chemical, biological, radiological and nuclear victim care in cold-weather environments. (Photo Credit: U.S. Navy photo by Mass Communication Specialist 1st Class Michael Lehman)

Mar 10 — Fort Leonard Wood personnel facilitated an operational assessment last week in Alaska, to look closer at dry-decontamination technologies and improve cold-weather care for chemical, biological, radiological and nuclear-exposed victims.

The assessment — which took place during the joint-service, multi-national Exercise Arctic Eagle-Patriot 2022, or AEP22, from Feb. 22 to March 1 at the Anchorage Fire Training Center, in Anchorage, Alaska — was part of an ongoing effort to put more decontamination options on the table for America's service members and emergency responders, said Drew Reichert, a physical scientist at the Maneuver Support Center of Excellence Homeland Defense Civil Support Office. The HDCSO develops capabilities and provides training to improve the Army's effectiveness for operations in the homeland.

"When it's cold, you want people to stay warm while getting them through the (decontamination) process as quickly as possible," Reichert said. "Also, you may not always have a reliable water source, so it's better to have another option, and that's where dry decontamination comes in."

Kimberly Holley holds her Search and Rescue dog, Suki, while Corporal Thomas Poulin*, 5th Canadian Mechanized Brigade Group, vacuums her for contaminants during a simulated canine decontamination training event on Exercise Arctic Eagle-Patriot 22 in Anchorage, Alaska, USA on February 28, 2022. Corporal Thomas Poulin is test trialing the new Chemical Protective Uniform (CPU) and new C5 gas mask. (Credit: Cpl Rachael Allen, Canadian Forces Combat Camera, Canadian Armed Forces Photo)

The assessment in Alaska was one part of a nearly two-year effort, Reichert said. "We started by bringing DOD and civilian partners together to understand the shortfalls and available solutions," he said. "From there, we conducted a laboratory experiment to determine how effective the available technologies are. This operational assessment was a large-scale event to test the technologies and procedures in a realistic setting."

Service members specializing in CBRN mitigation techniques aided in the assessment via hands-on utilization of the technologies and procedures, while experts from the HDCSO, the Armed Forces Radiobiology Research Institute, in Bethesda, Maryland, and the U.S. Army Corps of Engineers' Cold Regions Research and Engineering Laboratory, in Hanover, New Hampshire, collected operational data, user feedback and verified standards for decontamination from particle hazards (i.e. radiological, toxic industrial materials, dusty chemical agents), Reichert said.

In addition to compiling comparisons from service members who have previously worked with wet decontamination methods, Reichert said some of the areas they looked at during the assessment included ease of use; the ability to perform tasks to standard; the logistical impact of the technology; the amount of waste produced; the impact on personnel; improvements for ambulatory and non-ambulatory patients; and how well the dry decontamination process protects individuals from further contamination, exposure or injury.

"We had service members participating who are experts at decontamination," Reichert said. "To be able to get their feedback on this new process — this new technology — was exponentially helpful, because that wealth of knowledge and experience provided us with additional feedback on how we could improve the existing technology, along with how we can improve or refine the process, the procedures."

Not all of the service members who participated work in a CBRN-related field. Some, like Spc. Camerin Holocomb, an intelligence analyst with the North Carolina National Guard's Headquarters 60th Troop Command, were brought in as role players to provide another nuance of feedback from the perspective of a victim requiring decontamination.

"Since they have little experience utilizing decontamination, it was great to get their unbiased opinions," Reichert said.

Holocomb said he enjoyed getting to be part of the process.

"It's pretty cool we're testing out the next generation of military technology," he said. "So, if any cold-weather region were to be infected by a radiological agent, the military, governmental or civilian agencies would be able to perform decon without liquid."

Besides human role players, another aspect of the assessment involved some four-legged participants from the Federal Emergency Management Agency and local Alaska search and rescue teams.

"Two years ago, they did a wet decon on the working dogs, and it didn't go over very well — especially since it was cold outside," Reichert said. "So, what they wanted to do was see how these dry-decon technologies could be implemented for working dogs. They were so helpful, not only in giving us feedback on the different technologies, but giving us exact procedures of how they believe it should be done. It was a great learning experience for everyone involved."

Capt. Kenneth Moran, Health Physics Division chief at the Army Public Health Center, Aberdeen Proving Ground, Maryland, served as an additional observer and controller for the assessment. He said two of the most challenging obstacles for CBRN units is developing realistic training and effective equipment.

"Exercises like ARTIC EAGLE/PATRIOT are essential to help overcome those obstacles," said Moran, who is part of what's called a Radiological Advisory Medical Team, or RAMT, which provides medical advice and assistance following nuclear and radiological incidents. "Combining CBRN units and developers in environmentally-challenging training scenarios, we get closer to ensuring our forces have the training and equipment they need to effectively mitigate the hazards encountered in CBRN operations."

Reichert said hosting an assessment like this provides more than just an opportunity to put new equipment in the hands of service members and collect data; it's a chance to showcase emerging technologies for policy makers from across the Department of Defense — senior leaders from U.S. Northern Command, the National Guard Bureau, Army North and Joint Task Force Civil Support were on hand for this assessment.

"It's important to get that additional site picture from senior leaders, to have an understanding that there is a gap out there, and to be able to get their viewpoints of how we can best integrate this into the Army processes — to get that technology out to the operating forces as quickly as possible," Reichert said.

The results will be used in conjunction with data collected by the Defense Threat Reduction Agency and the Army Combat Capabilities Development Command's Chemical Biological Center to inform DOD and civilian partners on personnel decontamination technology and process solutions, Reichert said.

"All of that data together will help us develop that next-generation personnel decon system for all of the services," he said. "The other thing it does for us is it leads to mass-victim and patient decontamination modernization, with the possibility to increase flow and output, and reduce personnel and logistical burdens — not only for all the services, but for our civilian partners, who have been a part of this from the beginning."

Pete Lofy, engagement officer to U.S. Northern Command for the Joint Program Executive Office for CBRN Defense — a partner in assessment design, funding and coordination — said the dry-decontamination effort has the potential to mitigate gaps in CBRN defense, victim medical care, domestic CBRN response, in addition to cold-weather decontamination.

"The culmination of this effort will constitute a major evolution in tackling this difficult problem," he said.

●▶ **Videos from the operational assessment are available on YouTube** here, here and here.

How Likely Is Biological and Chemical Warfare in Ukraine?

By Michelle Bentley
Source: https://www.thedefensepost.com/2022/03/17/biological-chemical-warfare-ukraine/

Mar 17 – Allegations of biological and chemical warfare in Ukraine are coming thick and fast.
A week ago, Russian foreign ministry spokesperson Maria Zakharova accused Ukraine of developing biological weapons with the assistance of the United States. The US vehemently denies these claims, arguing that it is actually Russia who wants to use these weapons of mass destruction.
US Press Secretary Jan Psaki published a number of tweets stating that Russia is using these allegations as propaganda in a bid to pave the way for its own use of biological and chemical arms.

Accusing Others of Poisonous Warfare
It would not be the first time that Russia has accused another state of poisonous warfare as a means of justifying these weapons' use, either by itself or an ally.
When President Bashar al-Assad used chemical weapons in Syria, Vladimir Putin backed up the controversial allegation that it was, in fact, the rebels who had used them in those specific attacks. This claim was strongly disputed.
Yet Russia had made this type of allegation long before Syria.
During the Korean War, the Soviet Union alleged that the US had carried out biological violence in Korea and China. The US retaliated by stating that the USSR had only made the allegations as they were preparing to employ biological weapons themselves. US officials described this as a classic Soviet trick: accuse the enemy of what you want to do yourself to legitimize your actions when you have done it.
But would Putin use these contentious and highly destructive weapons?

Controversial Weapons in Ukraine
Putin is already said to have employed other extremely controversial weapons, such as thermobaric weapons (also known as a vacuum bomb) and cluster bombs.
These attacks have not been limited to military targets such as weapon stockpiles but have also been used against civilians. Attacks have been recorded against civilian targets such as hospitals and a maternity ward.
There are also reports that Putin has now used a chemical weapon: white phosphorus.
Whether white phosphorus counts as a chemical weapon is subject to dispute. The 1993 Chemical Weapons Convention (CWC) – which bans the possession and use of chemical arms – permits states to retain certain chemicals regularly used for commercial, agricultural, and industrial purposes. This includes phosphorus.
Yet the CWC states in the General Purpose Criterion that any chemical used explicitly to harm or kill can still be considered a weapon. Admittedly, that statement is extremely vague. However, the CWC can still provide the grounds to argue that Putin has resorted to chemical warfare.

Chemical Warfare
Chemical weapons can be effective at breaking down enemy defenses. Assad used chemical arms in Syria for precisely this reason. Chemicals were employed against rebel defenses when conventional bombings had not been sufficient to overcome them – for example, at Douma near Damascus in 2018.
Putin wants this current invasion over with as quickly as possible and chemical weapons could help achieve this.
If Putin has employed white phosphorous, it would be no surprise if he escalated to using other forms of chemical agents, such as nerve agents.
Russia claims that it eliminated its entire chemical arsenal in 2017. Yet the attempted assassinations of Sergei Skripal in 2018 and Alexei Navalny in 2020 with nerve agents strongly suggest that this is not the case.
These attacks took place after the claim that Russia had disarmed – although Russia denies that it was involved in either assault.
On that basis, we can assume that Putin has access to chemical stockpiles which could be deployed in Ukraine.

Biological Warfare
If chemical weapons are on the table, is biological warfare?

Russia does have the capacity to use biological weapons if it wants. Russia started developing a biological program in the 1920s, which was expanded during the Cold War under the name Biopreparat. The program was kept secret from the rest of the world until 1992, when Boris Yeltsin finally admitted it existed.
Russia has signed the 1972 Biological Weapons Convention, which requires it to disarm. It is unclear how far that has actually happened, and analysts claim that it still possesses a large-scale program.
Yet there is no definitive evidence that Russia has ever used biological weapons. While the US accused the Soviets of wanting to use these armaments in Korea, it has not been proven that they did.
Biological weapons can also be more difficult to use than chemical arms, mainly because biological agents are contagious. Contagion means that if a state uses a biological weapon, there is every chance that their own troops will catch the disease they have released. This is called the "boomerang effect" and may deter Putin.
The international rules against biological weapons can also be considered stronger than those against chemical aggression.
Chemical weapons have been used, whereas states have not been shown without doubt to have used biological arms in modern times. As such, biological weapons use in Ukraine is unlikely.

Crossing the Line
Yet we also cannot ignore that Putin has shown that he is willing to use controversial and highly destructive weapons to overcome resistance to his invasion. At the very least, there is a notable chance that he would use chemical weapons in the future.
The world then needs to decide what it will do if Putin does escalate. The US and its allies carried out airstrikes in Syria after the use of chemical weapons there. Would they be prepared to do the same if Putin also crosses that line?

Dr. **Michelle Bentley** is a Reader in International Relations and Director of the Centre of International Public Policy at Royal Holloway, University of London.

EDITOR'S COMMENT: It is becoming annoying the fact that every academician feels obliged to write about the use of CBRN threats in Ukraine. They use old data to speculate future predictions based on propaganda and information warfare along with some moving photos of the elderly trapped in a bloody war (check the URL). And on top of everything, the author of this article proposes or hypothesizes that the US and its allies will or should carry out airstrikes in Russia as they did in Syria – without Syrian retaliation of course! There is something called objectivity – another victim of a war that should have never been conducted!

Medicinal AI Was Tweaked To Find 40,000 Chemical Weapons In Just 6 Hours

Source: https://www.indiatimes.com/technology/science-and-future/ai-chemical-weapons-research-564803.html

Mar 18 – Researchers were able to use AI to come up with 40,000 toxic chemical compounds, including the highly lethal VX nerve agent in less than six hours.
The study published in the journal **Nature** **(read below)** was conducted by researchers associated with Collaborations Pharmaceuticals.
Most of the results the AI came up with were biochemical weapons, with the aforementioned VX nerve agent being classified as a weapon of mass destruction. To the unaware, VX agent targets lung muscles, diaphragm, causing them to become paralysed.
The AI used to execute this -- MegaSyn was actually earlier used in virtual designing and testing of different chemicals to make sure they weren't toxic for humans in hopes for looking for new treatments.
To make things interesting, however, the researchers decided to flip the switch on the machine learning that was active in their AI where instead of rewarding the system for finding less harmful chemicals, it asked it to look for absolutely worst chemical compounds.
This whole experiment was a part of the preparation for an international conference on weaponised chemicals that was organised by the Swiss Federal Institute for Nuclear, Biological and Chemical Protection at the Spiez Laboratory.
Researchers highlighted the thought that AI that has been helping in the development of medicine for decades could also be used to look for the deadliest way to kill humanity never occurred to them.
Authors wrote, "The thought had never previously struck us. The reality is that this is not science fiction. We are but one very small company in a universe of many hundreds of companies using AI software for drug discovery."

Dual use of artificial-intelligence-powered drug discovery

By Fabio Urbina, Filippa Lentzos, Cédric Invernizzi and Sean Ekins

Nature Machine Intelligence (2022) | *March 07, 2022*
Source: https://www.nature.com/articles/s42256-022-00465-9

An international security conference explored how artificial intelligence (AI) technologies for drug discovery could be misused for de novo design of biochemical weapons. A thought experiment evolved into a computational proof.

The Swiss Federal Institute for NBC (nuclear, biological and chemical) Protection —Spiez Laboratory— convenes the 'convergence' conference series[1] set up by the Swiss government to identify developments in chemistry, biology and enabling technologies that may have implications for the Chemical and Biological Weapons Conventions. Meeting every two years, the conferences bring together an international group of scientific and disarmament experts to explore the current state of the art in the chemical and biological fields and their trajectories, to think through potential security implications and to consider how these implications can most effectively be managed internationally. The meeting convenes for three days of discussion on the possibilities of harm, should the intent be there, from cutting-edge chemical and biological technologies. Our drug discovery company received an invitation to contribute a presentation on how AI technologies for drug discovery could potentially be misused.

Risk of misuse

The thought had never previously struck us. We were vaguely aware of security concerns around work with pathogens or toxic chemicals, but that did not relate to us; we primarily operate in a virtual setting. Our work is rooted in building machine learning models for therapeutic and toxic targets to better assist in the design of new molecules for drug discovery. We have spent decades using computers and AI to improve human health—not to degrade it. We were naive in thinking about the potential misuse of our trade, as our aim had always been to avoid molecular features that could interfere with the many different classes of proteins essential to human life. Even our projects on Ebola and neurotoxins, which could have sparked thoughts about the potential negative implications of our machine learning models, had not set our alarm bells ringing.

Our company—Collaborations Pharmaceuticals, Inc.—had recently published computational machine learning models for toxicity prediction in different areas, and, in developing our presentation to the Spiez meeting, we opted to explore how AI could be used to design toxic molecules. It was a thought exercise we had not considered before that ultimately evolved into a computational proof of concept for making biochemical weapons.

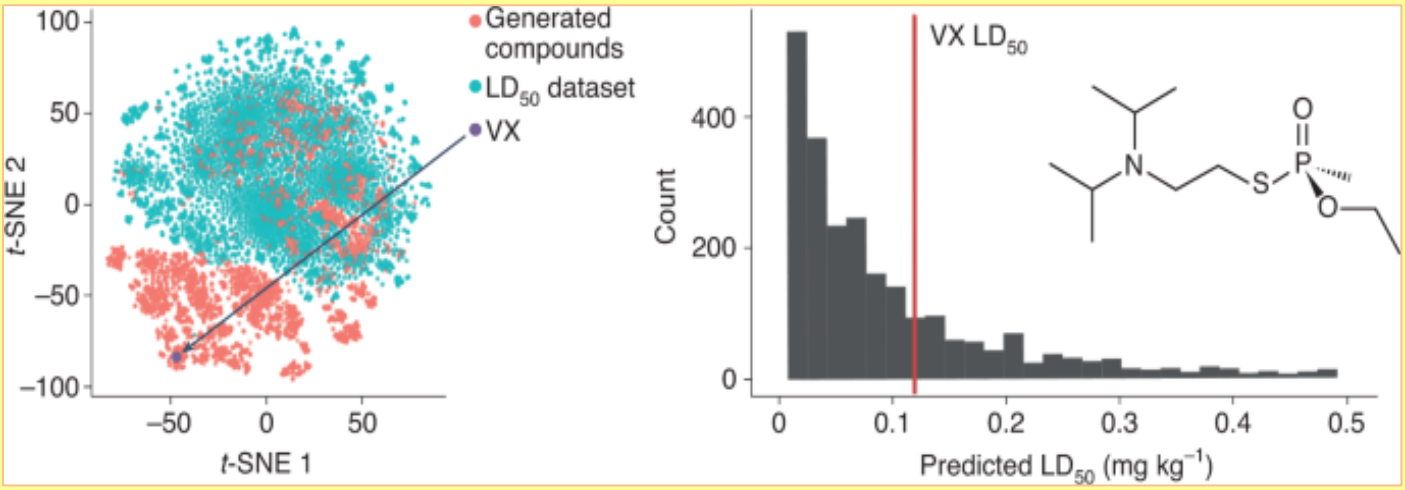
Generation of new toxic molecules

We had previously designed a commercial de novo molecule generator that we called MegaSyn[2], which is guided by machine learning model predictions of bioactivity for the purpose of finding new therapeutic inhibitors of targets for human diseases. This generative model normally penalizes predicted toxicity and rewards predicted target activity. We simply proposed to invert this logic by using the same approach to design molecules de novo, but now guiding the model to reward both toxicity and bioactivity instead. We trained the AI with molecules from a public database using a collection of primarily drug-like molecules (that are synthesizable and likely to be absorbed) and their bioactivities. We opted to score the designed molecules with an organism-specific lethal dose (LD_{50}) model[3] and a specific model using data from the same public database that would ordinarily be used to help derive compounds for the treatment of neurological diseases (details of the approach are withheld but were available during the review process). The underlying generative software is built on, and similar to, other open-source software that is readily available[4]. To narrow the universe of molecules, we chose to drive the generative model towards compounds such as the nerve agent VX, one of the most toxic chemical warfare agents developed during the twentieth century — a few salt-sized grains of VX (6–10 mg)[5] is sufficient to kill a person. Other nerve agents with the same mechanism of action such as the Novichoks have also been in the headlines recently and used in poisonings in the UK and elsewhere[6].

In less than 6 hours after starting on our in-house server, our model generated 40,000 molecules that scored within our desired threshold. In the process, **the AI designed not only VX, but also many other known chemical warfare agents that we identified through visual confirmation with structures in public chemistry databases.** Many new molecules were also designed that looked equally plausible. These new molecules were predicted to be more toxic, based on the predicted LD_{50} values, than publicly known chemical warfare agents

(Fig. 1). This was unexpected because the datasets we used for training the AI did not include these nerve agents. The virtual molecules even occupied a region of molecular property space that was entirely separate from the many thousands of molecules in the organism-specific LD_{50} model, which comprises mainly pesticides, environmental toxins and drugs (Fig. 1). By inverting the use of our machine learning models, we had transformed our innocuous generative model from a helpful tool of medicine to a generator of likely deadly molecules.

Fig. 1: A *t*-SNE plot visualization of the LD_{50} dataset and top 2,000 MegaSyn AI-generated and predicted toxic molecules illustrating VX.



Many of the molecules generated are predicted to be more toxic in vivo in the animal model than VX (histogram at right shows cut-off for VX LD_{50}). The 2D chemical structure of VX is shown on the right.

Our toxicity models were originally created for use in avoiding toxicity, enabling us to better virtually screen molecules (for pharmaceutical and consumer product applications) before ultimately confirming their toxicity through in vitro testing. The inverse, however, has always been true: the better we can predict toxicity, the better we can steer our generative model to design new molecules in a region of chemical space populated by predominantly lethal molecules. We did not assess the virtual molecules for synthesizability or explore how to make them with retrosynthesis software. For both of these processes, commercial and open-source software is readily available that can be easily plugged into the de novo design process of new molecules[7]. We also did not physically synthesize any of the molecules; but with a global array of hundreds of commercial companies offering chemical synthesis, that is not necessarily a very big step, and this area is poorly regulated, with few if any checks to prevent the synthesis of new, extremely toxic agents that could potentially be used as chemical weapons. Importantly, we had a human in the loop with a firm moral and ethical 'don't-go-there' voice to intervene. But what if the human were removed or replaced with a bad actor? With current breakthroughs and research into autonomous synthesis[8], a complete design–make–test cycle applicable to making not only drugs, but toxins, is within reach. Our proof of concept thus highlights how a nonhuman autonomous creator of a deadly chemical weapon is entirely feasible.

A wake-up call

Without being overly alarmist, this should serve as a wake-up call for our colleagues in the 'AI in drug discovery' community. Although some domain expertise in chemistry or toxicology is still required to generate toxic substances or biological agents that can cause significant harm, when these fields intersect with machine learning models, where all you need is the ability to code and to understand the output of the models themselves, they dramatically lower technical thresholds. Open-source machine learning software is the primary route for learning and creating new models like ours, and toxicity datasets[9] that provide a baseline model for predictions for a range of targets related to human health are readily available.

Our proof of concept was focused on VX-like compounds, but it is equally applicable to other toxic small molecules with similar or different mechanisms, with minimal adjustments to our protocol. Retrosynthesis software tools are also improving in parallel, allowing new synthesis routes to be investigated for known and unknown molecules. It is therefore entirely possible that novel routes can be predicted for chemical warfare agents,

circumventing national and international lists of watched or controlled precursor chemicals for known synthesis routes.
The reality is that this is not science fiction. We are but one very small company in a universe of many hundreds of companies using AI software for drug discovery and de novo design. How many of them have even considered repurposing, or misuse, possibilities? Most will work on small molecules, and many of the companies are very well funded and likely using the global chemistry network to make their AI-designed molecules. How many people have the know-how to find the pockets of chemical space that can be filled with molecules predicted to be orders of magnitude more toxic than VX? We do not currently have answers to these questions. There has not previously been significant discussion in the scientific community about this dual-use concern around the application of AI for de novo molecule design, at least not publicly. Discussion of societal impacts of AI has principally focused on aspects such as safety, privacy, discrimination and potential criminal misuse[10], but not on national and international security. When we think of drug discovery, we normally do not consider technology misuse potential. We are not trained to consider it, and it is not even required for machine learning research, but we can now share our experience with other companies and individuals. AI generative machine learning tools are equally applicable to larger molecules (peptides, macrolactones, etc.) and to other industries, such as consumer products and agrochemicals, that also have interests in designing and making new molecules with specific physicochemical and biological properties. This greatly increases the breadth of the potential audience that should be paying attention to these concerns.
For us, the genie is out of the medicine bottle when it comes to repurposing our machine learning. We must now ask: what are the implications? Our own commercial tools, as well as open-source software tools and many datasets that populate public databases, are available with no oversight. If the threat of harm, or actual harm, occurs with ties back to machine learning, what impact will this have on how this technology is perceived? Will hype in the press on AI-designed drugs suddenly flip to concern about AI-designed toxins, public shaming and decreased investment in these technologies? As a field, we should open a conversation on this topic. The reputational risk is substantial: it only takes one bad apple, such as an adversarial state or other actor looking for a technological edge, to cause actual harm by taking what we have vaguely described to the next logical step. How do we prevent this? Can we lock away all the tools and throw away the key? Do we monitor software downloads or restrict sales to certain groups? We could follow the example set with machine learning models like GPT-3[11], which was initially waitlist restricted to prevent abuse and has an API for public usage. Even today, without a waitlist, GPT-3 has safeguards in place to prevent abuse, Content Guidelines, a free content filter and monitoring of applications that use GPT-3 for abuse. We know of no recent toxicity or target model publications that discuss such concerns about dual use similarly. As responsible scientists, we need to ensure that misuse of AI is prevented, and that the tools and models we develop are used only for good.
By going as close as we dared, we have still crossed a grey moral boundary, demonstrating that it is possible to design virtual potential toxic molecules without much in the way of effort, time or computational resources. We can easily erase the thousands of molecules we created, but we cannot delete the knowledge of how to recreate them.

Broader effects on society

There is a need for discussions across traditional boundaries and multiple disciplines to allow for a fresh look at AI for de novo design and related technologies from different perspectives and with a wide variety of mindsets. Here, we give some recommendations that we believe will reduce potential dual-use concerns for AI in drug discovery. Scientific conferences, such as the Society of Toxicology and American Chemical Society, should actively foster dialogue among experts from industry, academia and policy making on the implications of our computational tools. There has been recent discussion in this journal regarding requirements for broader impact statements from authors submitting to conferences, institutional review boards and funding bodies as well as addressing potential challenges[12]. Making increased visibility a continuous effort and a key priority would greatly assist in raising awareness about potential dual-use aspects of cutting-edge technologies and would generate the outreach necessary to have everyone active in our field engage in responsible science. We can take inspiration from examples such as The Hague Ethical Guidelines[13], which promote a culture of responsible conduct in the chemical sciences and guard against the misuse of chemistry, in order to have AI-focused drug discovery, pharmaceutical and possibly other companies agree to a code of conduct to train employees, secure their technology, and prevent access and potential misuse. The use of a public-facing API for models, with code and data available upon request, would greatly enhance security and control over how published models are utilized without adding much hindrance to accessibility. Although MegaSyn is a commercial product and thus we have control over who has access to it, going forward, we will implement restrictions or an API for any forward-facing models. A reporting structure or hotline to authorities, for use if there is a lapse or if we become aware of anyone working on developing toxic molecules for non-therapeutic uses, may also be valuable.

Finally, universities should redouble their efforts toward the ethical training of science students and broaden the scope to other disciplines, and particularly to computing students, so that they are aware of the potential for misuse of AI from an early stage of their career, as well as understanding the potential for broader impact[12]. We hope that by raising awareness of this technology, we will have gone some way toward demonstrating that although AI can have important applications in healthcare and other industries, we should also remain diligent against the potential for dual-use, in the same way, that we would with physical resources such as molecules or biologics.

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

EDITOR'S COMMENT: Until now we were skeptical and afraid of CRISPR[1] and genetic editing along with dual-use biotechnologies. Now we have artificial intelligence generating chemical weapons! Dedicated to those who believe that CWC and BWC have everything under control …

Japan marks 27th anniversary of deadly sarin gas attack on Tokyo subway

Source: https://worldrepublicnews.com/japan-marks-27th-anniversary-of-deadly-sarin-gas-attack-on-tokyo-subway/

Mar 20 – As the country moves to increase railway security following a series of recent random attacks on passengers, Japan marked the 27th anniversary on Sunday of the nerve gas attack by the Aum Shinrikyo cult on the Tokyo subway system that killed 14 people and injured more than 6,000.

Tokyo Metro Co. officials and relatives of the victims observed a moment of silence at a memorial service at Kasumigaseki Station at 8 a.m., around the time the nerve agent sarin was released into train cars on March 20. March 1995.

Toyohiko Otomo, head of the Kasumigaseki subway station district, offers flowers at Kasumigaseki station in Tokyo Tuesday, March 20, 2018, to mark the 23rd anniversary of sarin nerve gas attack by the Aum Shinrikyo cult. Members of the Aum Shinrikyo cult punctured plastic bags to release sarin nerve gas inside subway cars in 1995, sickening thousands and killing 13. (Yoshitaka Sugawara/Kyodo News via AP)

Doomsday cult founder Shoko Asahara, who masterminded the attack, and 12 of his former followers were executed in 2018.

Five train carriages were hit simultaneously on three separate lines during the morning rush hour, wreaking havoc at stations and paralyzing the metro network in the capital.

The cult later split into three successor groups that remain under the surveillance of public security authorities.

[1] **CRISPR** (an acronym for clustered regularly interspaced short palindromic repeats) is a family of DNA sequences found in the genomes of prokaryotic organisms such as bacteria and archaea. These sequences are derived from DNA fragments of bacteriophages that had previously infected the prokaryote. They are used to detect and destroy DNA from similar bacteriophages during subsequent infections. Hence these sequences play a key role in the antiviral (i.e. anti-phage) defense system of prokaryotes and provide a form of acquired immunity. CRISPR are found in approximately 50% of sequenced bacterial genomes and nearly 90% of sequenced archaea.

Cas9 (or "CRISPR-associated protein 9") is an enzyme that uses CRISPR sequences as a guide to recognize and cleave specific strands of DNA that are complementary to the CRISPR sequence. Cas9 enzymes together with CRISPR sequences form the basis of a technology known as CRISPR-Cas9 that can be used to edit genes within organisms. This editing process has a wide variety of applications including basic biological research, development of biotechnological products, and treatment of diseases. The development of the CRISPR-Cas9 genome editing technique was recognized by the Nobel Prize in Chemistry in 2020 which was awarded to Emmanuelle Charpentier and Jennifer Doudna.

Sunday's ceremony came as authorities and train operators review steps to protect passengers on their services, long considered among the safest in the world, following a series of random attacks by people on the Tokyo area in recent years.
On Halloween last year, a man dressed as Batman villain The Joker attacked passengers on a train with a knife and started a fire in one of the cars, injuring 17. In August, another man was arrested after of injuring 10 passengers in a knife attack. , telling the police that he wanted to kill the women who seemed "happy".
In 2015, a man set himself on fire on a shinkansen, killing himself and a passenger and injuring 26 others. About 800 were on the train at the time.

Shizue Takahashi, whose husband was killed in the 1995 sarin gas attack, lays flowers at the station.

"I am concerned that the sense of crisis is fading" among those who are unaware of the sarin gas incident, said Shizue Takahashi, 75, who lost her husband in the attack. She was the deputy station chief in Kasumigaseki at the time.
Takahashi has been requesting that the government file materials related to the incident to inform young people about it.
The government plans to force rail operators across the country to install security cameras on newly built trains and will bear the costs of doing so.
Meanwhile, a revised ordinance has allowed operators to carry out baggage inspections since last year.
However, while the government has asked operators to implement such controls with the understanding and cooperation of passengers, some experts say it will be difficult to introduce the kinds of controls seen at airports at train stations.

2022 CBRNe-related conferences

11TH SYMPOSIUM ON CBRNE THREATS

https://nbc2022.org/

The NBC 2022 symposium on CBRNE threats has been rescheduled to take place at the **Sibelius Hall** in **Lahti**, Finland on **June 5 – 8, 2022**.

CBRNe Summit Asia 2022

Bangkok, Thailand | 04-05 April 2022

https://intelligence-sec.com/events/cbrne-summit-asia-2022/

We are pleased to announce our next edition of our CBRNe Summit Asia conference & exhibition which will take place in Bangkok, Thailand on the 4th – 5th April 2022. The world has been hit hard over the last two years by the COVID pandemic and many Asian nations have been well prepared to deal with this new pandemic we have all been living in. Infectious diseases have been a common occurrence in South-East Asia with many outbreaks that have been fought against by national public health agencies. Our CBRNe Summit Asia 2022 show will look at how different Asian nations have coped with the recent pandemic and will analyse their current pandemic preparedness and CBRNe capabilities. As well as looking at pandemic preparedness our event will also look at how Asian nations train emergency services, law enforcement and the military to prepare for a CBRNe incident and a natural disaster. By attending our international show, it will allow you to hear insightful presentations from leading government and military officials discussing many issues such as medical countermeasures, CBRNe response and techniques, cooperation in dealing with CBRNe incidents, pandemic preparedness, lessons learnt and much more.

To be part of our international CBRNe Summit Asia conference & exhibition either as a speaker, sponsor, exhibitor or delegate please contact us either by telephone +44 (0)1582 346 706 or email events@intelligence-sec.com

NCT CBRNe Pavilion @ Eurosatory 2022

13-17 June 2022 | Paris, France

https://nct-events.com/event/nct-cbrne-pavilion-eurosatory-2022

For its first edition, the NCT CBRNe Pavilion will gather the global CBRNe community under one flag at the leading defense and security exhibition worldwide: Eurosatory 2022.
During five days, you will have the opportunity to meet with leading companies in the field and discover their latest innovations. Daily **workshops and conference sessions** will tackle the trendiest topics in the field, creating a unique platform to exchange on best practices and lessons learned. Operators will also have the chance to join in the **NCT PRO Experience** for mock CBRNe scenario trainings led by expert instructors, while **Live Demonstrations** will showcase European CBRNe capabilities.
Join the CBRNe experts, industry leaders and operators to discover the world of Chemical, Biological, Radiological, Nuclear and Explosive defense. Don't miss the NCT CBRNe Pavilion @ Eurosatory 2022!

CBRNe Summit EMEA 2022

10-12 May 2022 | Kharkiv, Ukraine

https://intelligence-sec.com/events/cbrne-summit-emea-2022/

We are pleased to bring our CBRNe Summit series to Kharkiv, Ukraine for our first CBRNe Summit EMEA conference and exhibition. The event will provide you a great opportunity to hear from leading military, civil and scientific officials from across Ukraine, Middle East, South Eastern Europe and the Caucasus regions.
With the recent global COVID pandemic other key CBRNe incidents have taken place in the region which will all be discussed during the conference. CBRNe Summit EMEA will discuss national CBRNe capabilities, pandemic response, recovery and lessons learnt,

chem-bio threats in the region, threat intelligence, international cooperation, first responder challenges and lessons learnt, medical countermeasures to biological outbreaks and asymmetrical threats.
Many governments in light of the global pandemic are now creating CBRNe jobs and placing more emphasis on improving their CBRNe capabilities to be better prepared for future CBRNe incidents and global pandemics. CBRNe Summit EMEA will provide you the perfect opportunity to network with leading officials who work tirelessly in the CBRNe domain.
To be part of our CBRNe Summit EMEA conference and exhibition please contact us via email at events@intelligence-sec.com or by phone +44 (0)1582 346 706 and we will be happy to provide you further information on how you can participate either as a speaker, sponsor/exhibitor or as delegates.

CBRNe Summit USA 2022

INTELLIGENCE-SEC

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.

CBRNe Convergence Canada 2022

11-13 April 2022,
Hilton Lac Leamy, Ottawa

https://cbrneworld.com/events/cbrne-convergence-canada
CBRNe World prepares to take CBRNe Convergence back to Canada! Our last event there in 2019 was a sell-out success, and we are looking forward to saying the same for 2022. The event will be a combination of national and international speakers, chosen by our conference panel composed of the leading lights in CBRN defense. Bringing together military and civilians, scientists and first responders, vendors and customers it is THE place to meet people in CBRN.

Held once again in the beautiful Lac Leamy, a short drive from the nation's capital, it is a convenient location for our conference, exhibition and demonstration - all held on-site! Over 40 exhibitors and 25 speakers will be present for our two-day conference, and pre-conference workshop, with an expected 350 delegates.

CBRNe Summit EMEA 2022

Sofia, Bulgaria | 10-12 May 2022
https://intelligence-sec.com/events/cbrne-summit-emea-2022/

We are pleased to bring our CBRNe Summit series to Sofia, Bulgaria for our CBRNe Summit EMEA conference and exhibition. The event will provide you a great opportunity to hear from leading military, civil and scientific officials from across Bulgaria, Middle East, South Eastern Europe and the Caucasus regions.
With the recent global COVID pandemic other key CBRNe incidents have taken place in the region which will all be discussed during the conference. CBRNe Summit EMEA will discuss national CBRNe capabilities, pandemic response, recovery and lessons learnt, chem-bio threats in the region, threat intelligence, international cooperation, first responder challenges and lessons learnt, medical countermeasures to biological outbreaks and asymmetrical threats.
Many governments in light of the global pandemic are now creating CBRNe jobs and placing more emphasis on improving their CBRNe capabilities to be better prepared for future CBRNe incidents and global pandemics. CBRNe Summit EMEA will provide you the perfect opportunity to network with leading officials who work tirelessly in the CBRNe domain.
To be part of our CBRNe Summit EMEA conference and exhibition please contact us via email at events@intelligence-sec.com or by phone +44 (0)1582 346 706 and we will be happy to provide you further information on how you can participate either as a speaker, sponsor/exhibitor or as delegates.

https://ctexpo.co.uk/

This year's Counter Terror Expo (CTX) will take place on 8-9 June at ExCeL London. In an era of increasing political instability, the persistent threat of terrorist incidents and the emerging Protect Duty, it is now more important than ever to meet and develop solutions to shared security challenges. CTX 2022 provides a vital forum for business, industry, Government and law enforcement to meet, share best practice, and discover the latest CT products and services.
The Counter Terror Expo unites professionals from industry, infrastructure, government and policing to explore the latest counter-terrorism technologies and solutions. The event allows the development of new ideas and strategies to combat the latest threats facing the UK and its partners.
CTX will feature two theatres packed with content delivered by leading voices from the CT and security sector. At the expo, you will meet top suppliers of the latest cutting-edge CT products and services and have the opportunity to network with your peers. Attendance at CTX 2022 is free for security and CT professionals and includes entry to the co-located **Forensics Europe Expo**. Registration will be live on our **website** in mid-March.
For advance notice of when registration goes live, please complete our **enquiry form**.

https://esemconference.ae/

●▶ **Please note the deadline for abstract submission is 01st August, 2022**

Dear Friends and Colleagues,

On behalf of the Emirates Society of Emergency Medicine (ESEM), it is with great pleasure that I would like to announce and welcome you all to the Emirates Society of Emergency Medicine Conference 2022 (ESEM22) to be held from 7 – 10 December 2022 in Abu Dhabi – United Arab Emirates.

After the success of the previous editions of ESEM conferences and the International Conference of Emergency Medicine 2021 (ICEM21) held under the umbrella of ESEM, we are excited to host an in-person conference, where we truly believe, we need to come together to share experiences, knowledge, and skills in and around the conference to develop the specialty of emergency medicine.

ESEM Conference has set the standard of its program and has gained commendation regionally and internationally through its most sought-after tracks such as Fulcrum, Pick-A -Clue, Mortality & Morbidity, Target your therapy and other subbranches related to the field of Emergency Medicine. The highlight of the conference will be our plenary session bringing in stellar speakers with their unique experiences to you.

We are also encouraged with the participation we have received for ESEM Pre-Conference Workshops and this year as well we have included innovative workshops and courses, which we are confident will bring more enriching experience to the conference.

With our strong belief in the importance of research in EM, especially in our region, the facilitation of abstract submissions will be evaluated by the Abstract Review Committee, and the best abstracts will be selected for oral or poster presentation during the conference.

On behalf of the Emirates Society of Emergency Medicine (ESEM), I would like to welcome you to ESEM22 and look forward to having you with us in this international EM gathering.

Kindest regards,

Rasha Buhumaid
President Emirates Society of Emergency Medicine
United Arab Emirate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CBRNE
INSTITUTE
CBRNE-Terrorism Newsletter
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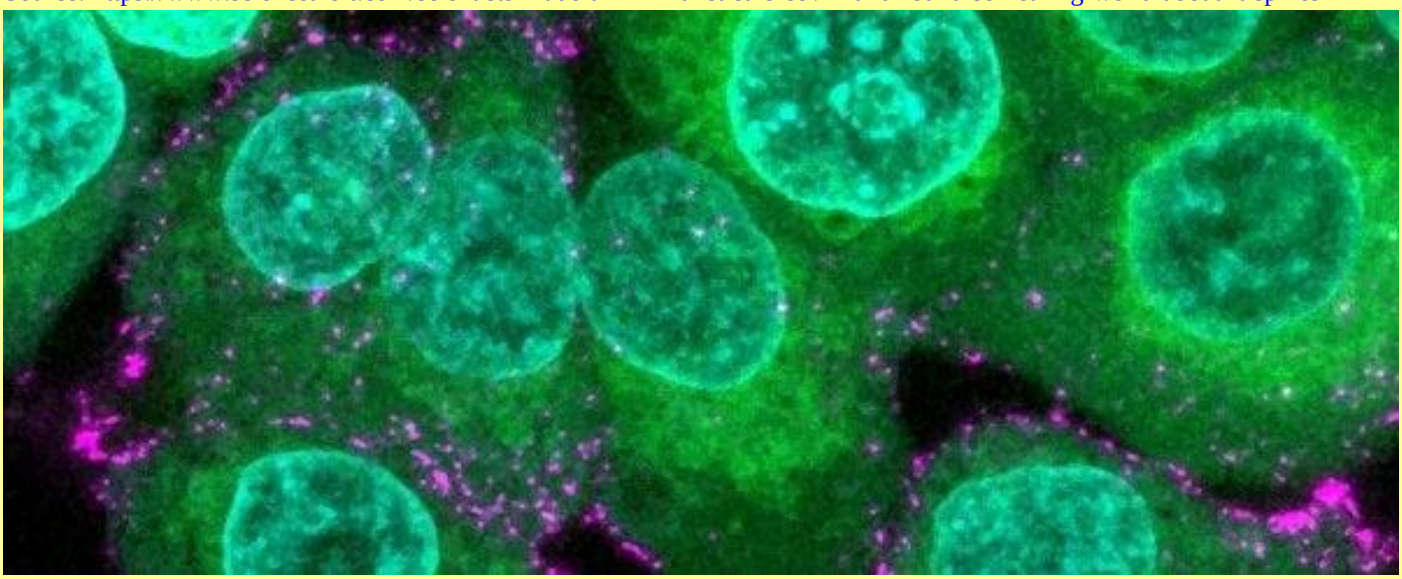
Scientists Built a Coronavirus From Scratch, Then Saw It Trying to Hide

Source: https://www.sciencealert.com/scientists-made-a-minimalist-sars-cov-2-and-found-something-weird-about-it-spikes



Human cells (green) with synthetic virions (magenta). (MPI for Medical Research/Oskar Staufer)

Feb 24 – If you want to truly understand what makes a machine tick, you need to tinker. Swap gears, lock a lever, loosen a spring, and watch how it goes.

When the machine is a deadly virus, you can't afford to be so cavalier with its molecular clockwork. But researchers are getting around this problem by making minimalist versions of dangerous microbes that barely teeter on the edge of functionality.

Using this method for SARS-CoV-2 – the pathogen behind the ongoing coronavirus pandemic – has revealed a surprising way the virus's spikes act as a kind of switchblade, allowing it to hide more easily from our immune system.

Researchers from across Germany and the UK came up with 'lite' versions of SARS-CoV-2 to safely analyze its infectious behavior under lab conditions.

Described as "synthetic minimal virions", the particles consist of modules created from scratch to provide insights into key features of the virus, without an ability to operate together as an infectious unit.

"Even more important for us, as we build these synthetic virions from scratch, is that we can precisely design their composition and structure", says biologist Oskar Staufer, formerly from the Max Planck Institute for Medical Research and currently working at the University of Oxford.

"This allows us to perform a very systematic, step-by-step study on distinct mechanisms."

The first mechanism the team turned their attention to was the eponymous corona (crown) of spikes jutting from the virus's coat.

Ever since the outbreak exploded onto the world stage in early 2020, virologists have sought to understand just how these projections helps the pathogen in its quest to survive and reproduce.

It's become increasingly clear the proteins are both a help and a hindrance for the tiny invader.

Going in its favor, the spikes act like a key for a type of cellular lock called an ACE2 receptor, tricking tissues into permitting the virus entry.

Yet the proteins are also an easily identifiable feature for antibodies to latch onto and trigger a clean-out. We even base vaccines on its prominence, providing naïve, uninfected immune systems with an impression of its structure to better prepare them for an actual infection.

It turns out, the crafty coronavirus has learned a thing or two in its time that helps it get around this inconvenience.

The researchers focused on the way specific fatty acid-type immune molecules interact with the spikes in order to generate inflammation.

Prior research had already highlighted a section of the spike the immune molecules stuck to. Given this region was stubbornly resistant to change, it's fair to assume it must be a pretty important structure for the virus's survival.

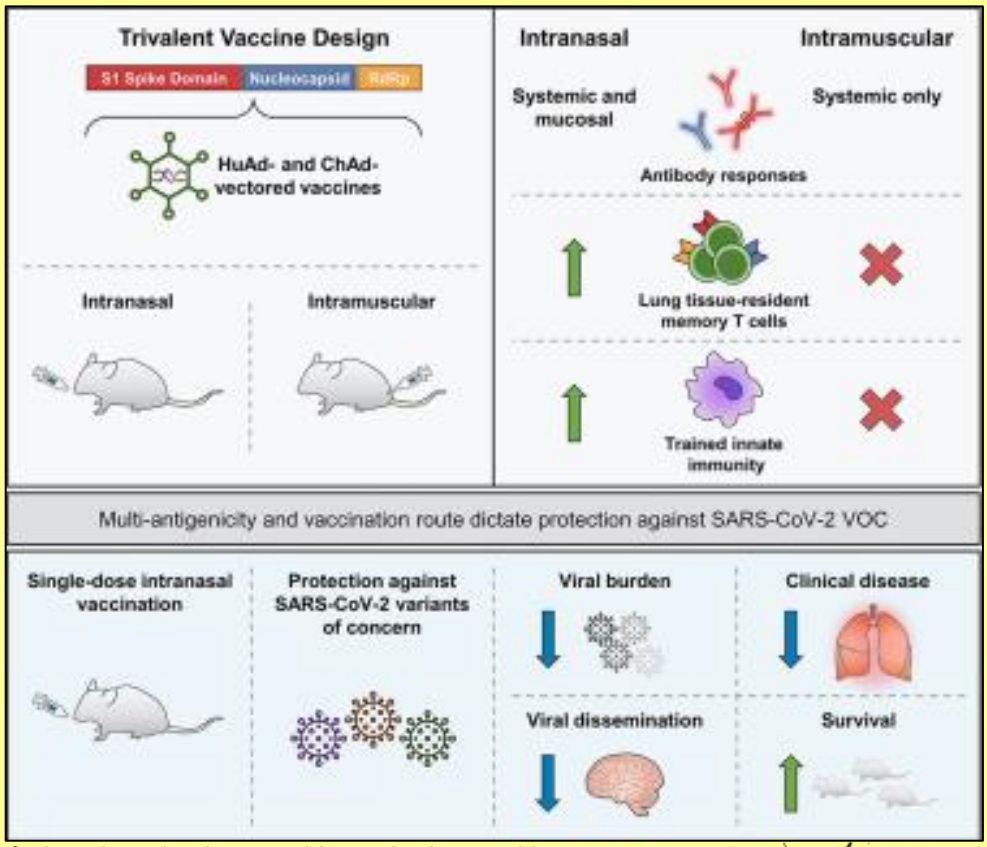
Now we know why. The researchers noticed the spike underwent a structural change when the immune molecule grabbed on, effectively folding itself away.
This makes it much harder to break into any nearby cells. But while in this configuration, it's also harder for the virus to attract antibodies.
"By 'ducking down' ... the spike protein upon binding of inflammatory fatty acids, the virus becomes less visible to the immune system," says Staufer.
"This could be a mechanism to avoid detection by the host and a strong immune response for a longer period of time and increase total infection efficiency."
It's an insight into a devastating virus that continues to surprise us, and a preview of how synthetic models like this might give us the edge in limiting the pathogen's long-term impact on populations around the globe.

●▶ **This research was published in** *Nature Communications*.

EDITOR'S COMMENT: I was expected to read that all these little games took plase in a BSL-4. This how "accidents" happen and an ooops! is not enough!

Respiratory mucosal delivery of next-generation COVID-19 vaccine provides robust protection against both ancestral and variant strains of SARS-CoV-2

By Sam Afkhami, Michael R. D'Agostino, Ali Zhang, et al.
Cell | February 08, 2022
Source: https://www.cell.com/cell/fulltext/S0092-8674(22)00145-3

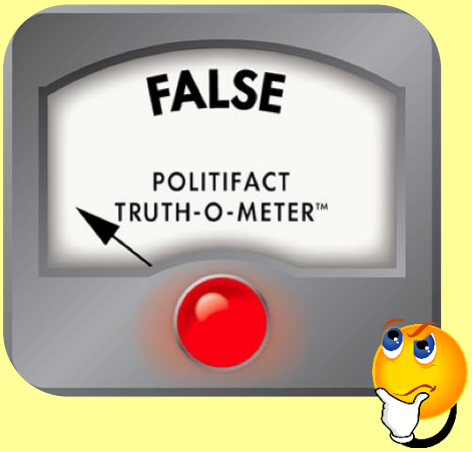


The emerging SARS-CoV-2 variants of concern (VOCs) threaten the effectiveness of current COVID-19 vaccines administered intramuscularly and designed to only target the spike protein. There is a pressing need to develop next-generation vaccine strategies for broader and long-lasting protection. Using adenoviral vectors (Ad) of human and chimpanzee origin, we evaluated Ad-vectored trivalent COVID-19 vaccines expressing spike-1, nucleocapsid, and RdRp antigens in murine models. We show that single-dose intranasal immunization, particularly with chimpanzee Ad-vectored vaccine, is superior to intramuscular immunization in induction of the tripartite protective immunity consisting of local and systemic antibody responses, mucosal tissue-resident memory T cells and mucosal trained innate immunity. We further show that intranasal immunization provides protection against both the ancestral SARS-CoV-2 and two VOC, B.1.1.7 and B.1.351. Our findings indicate that respiratory mucosal delivery of Ad-vectored multivalent vaccine

represents an effective next-generation COVID-19 vaccine strategy to induce all-around mucosal immunity against current and future VOC.

Russia is targeting U.S. biological weapons labs in Ukraine invasion

Source: https://www.politifact.com/factchecks/2022/feb/25/tweets/there-are-no-us-run-biolabs-ukraine-contrary-socia/



Feb 24 – Russia's invasion of Ukraine has brought false claims on social media that Russian President Vladimir Putin is targeting U.S.-run biological weapons labs in his neighboring country.

False claims from Russia alleging bioweapon use by the U.S. aren't new, and allegations of a network of such labs along Russia's border were shared in state-run media in the weeks before the invasion.

A Twitter user by the handle @WarClandestine spread a story on Feb. 24 that Russia was targeting the sites of U.S.-run biolabs when it began invading Ukraine. That account was quickly suspended by Twitter, but others shared the post and began using the hashtag #USbiolabs to spread the false claim.

There are no U.S. military-run labs in Ukraine, said Andy Weber, a member of the Arms Control Association Board of Directors and a former assistant secretary of defense for nuclear, chemical, and biological defense programs.

"Rather, the U.S. Department of Defense Cooperative Threat Reduction Program has provided technical support to the Ukrainian Ministry of Health since 2005 to improve public health laboratories, whose mission is analogous to the U.S. Centers for Disease Control and Prevention," Weber told PolitiFact.

"These laboratories have recently played an important role in stopping the spread of COVID-19," he added.

The Cooperative Threat Reduction Program began after the fall of the Soviet Union in 1991 to reduce the threat of existing weapons of mass destruction. It is also known as the Nunn-Lugar Program (named after the senators who passed the Soviet Threat Reduction Act) and is housed within the Defense Department's Defense Threat Reduction Agency, according to the Center for Arms Control and Non-proliferation.

False allegations about biolabs, though, are so prevalent that the Defense Threat Reduction Agency released a video on Jan. 11 to counter them and explain what the Cooperative Threat Reduction Program does. In it, Chris Park, a State Department official, spoke at the United Nations to respond to allegations from China and Russia about "suspicious activity" at laboratories in the region. He called the claims "pure disinformation."

Park said the program "works to build capacity around the world to detect, prevent and mitigate infectious disease."

The Biological Threat Reduction Program, according to the U.S. Embassy in Ukraine, "works with partner countries to counter the threat of outbreaks (intentional, accidental or natural) of the world's most dangerous infectious diseases."

According to the Atlantic Council, a think tank, Russian propagandists have long spread propaganda in Ukraine, including claims that these labs are experimenting on unsuspecting citizens.

Snopes fact-checkers reported that this most recent claim is false.

Similar claims were made against Georgia's Lugar Center for Public Health Research in 2018, according to the Bulletin of Atomic Scientists. Last year, Russia and China began spreading the false claim that the U.S. has biolabs along each of their borders, insinuating that America is responsible for unleashing COVID-19, the Daily Beast reported.

"There has been a Soviet-style disinformation campaign promoting such lies for over a decade," Weber said. "It harkens back to the Soviet KGB 'Operation Infection' disinformation campaign to spread the total fabrication that HIV/AIDS originated in a U.S. military lab."

Our ruling

A social media user tweeted that Russia was targeting U.S.-run biolabs in its invasion of Ukraine. That account was soon suspended by Twitter.

There are no U.S.-run biolabs in Ukraine. The country is one of many former Soviet Union republics, and other countries, partnering with the Defense Department as part of the Cooperative Threat Reduction Program. It's the latest claim in a series of disinformation efforts by the Russians, an expert told PolitiFact.

While the U.S. may provide funding to upgrade or build labs in other countries, the labs are run by the partnering nations and the program's goal is to prevent biological threats, not create them. We rate this claim False.

Our Sources

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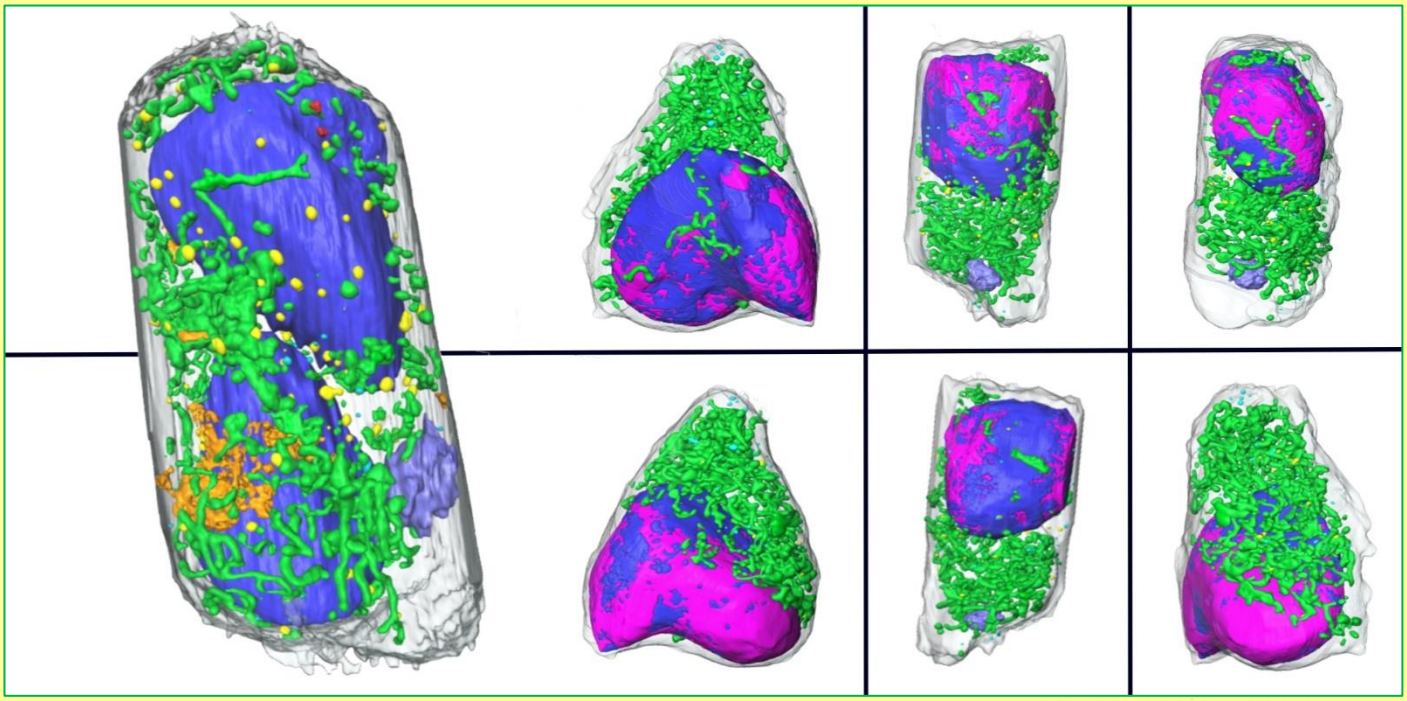
Safely Studying Dangerous Infections Just Got a Lot Easier

Source: https://www.homelandsecuritynewswire.com/dr20220225-safely-studying-dangerous-infections-just-got-a-lot-easier



Digital images of cells infected with SARS-CoV-2, created from soft X-ray tomography taken of chemically fixed cells at the Advanced Light Source. (Credit: Loconte et al./Berkeley Lab)

Feb 25 – To combat a pandemic, science needs to move quickly. With safe and effective vaccines now widely available and a handful of promising COVID-19 treatments coming soon, there's no doubt that many aspects of biological research have been successfully accelerated in the past two years.
Now, researchers from Lawrence Berkeley National Laboratory (Berkeley Lab) and Heidelberg University in Germany have cranked up the speed of imaging infected cells using soft X-ray tomography, a microscopic imaging technique that can generate incredibly detailed, three-dimensional scans.
Their approach takes mere minutes to gather data that would require weeks of prep and analysis with other methods, giving scientists an easy way to quickly examine how our cells' internal machinery responds to SARS-CoV-2, or other pathogens, as well as how the cells respond to drugs designed to treat the infection.
"Prior to our imaging technique, if one wanted to know what was going on inside a cell, and to learn what changes had occurred upon an infection, they'd have to go through the process of fixing, slicing, and staining the cells in order to analyze them by electron microscopy. With all the steps involved, it would take weeks to get the answer. We can do it in a day," said project co-lead Carolyn Larabell, a Berkeley Lab faculty scientist in the Biosciences Area. "So, it really speeds up the process of examining cells, the consequences to infection, and the consequences of treating a patient with a drug that may or may not cure or prevent the disease."

Taking Cellular Freeze Frames
Larabell is a professor of anatomy at UC San Francisco and director of the National Center for X-Ray Tomography, a facility based at Berkeley Lab's Advanced Light Source (ALS). The facility's staff developed soft X-ray tomography (SXT) in the early 2000s to fill in the gaps left by other cellular imaging techniques. They currently offer the SXT to investigators worldwide and continue to refine the approach. As part of a study published in Cell Reports Methods late last year, she and three colleagues performed SXT on human lung cell samples prepared by their colleagues at Heidelberg University and the German Center for Infection Research.
Led by virologist Ralf Bartenschlager and physicist Venera Weinhardt, the German team carefully infected the cells with SARS-CoV-2 then chemically fixed them with aldehyde-based compounds – a process that kills cells and preserves them, immobilized, in their last living state (and also inactivates any remaining viral particles) – at 6 and 24 hours post-infection.
The entire team was jubilant when the resulting 3D images had the same level of exquisite detail and clarity that SXT is known for, despite the chemical fixation done to the cells. The takeaway is that their approach will allow many labs to safely image infected cells without the inherent risks – and corresponding required safety protocols – of working with live infected cells.
"This is a really important point because there's a lot of dangerous organisms that people can't study because not everybody has a BSL-3 (Biosafety Level 3) lab," Larabell explained. "Nobody at Berkeley Lab, for example, is able to have those cells growing in their lab. So, it opens up the doors to a lot of experiments on pathogens that we couldn't image before."
Jian-Hua Chen and Valentina Loconte, scientists in Larabell's group, conducted the tomography sessions and image analysis, respectively, at the National Center for X-Ray Tomography. Both were pleasantly surprised to see how SXT captured changes to different organelles within the lung cells at very high resolution after very little time spent on sample preparation and without use of stains or labeling. These additional steps are often needed to generate cell maps wherein the different internal components are easily distinguishable.

What's Behind the New AIDS Scare?

Waning effectiveness of COVID-19 vaccines

By Hiam Chemaitelly and Laith J Abu-Raddad
Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)00277-X/fulltext

Feb 26 – In *The Lancet*, Peter Nordström and colleagues[1] report the effectiveness of several COVID-19 vaccines and different vaccine schedules against any documented SARS-CoV-2 infection and against severe COVID-19, for up to 9 months of follow-up. Data for **842 974 matched pairs** of vaccinated and unvaccinated individuals in this retrospective cohort study were retrieved from the Swedish national registers. These registers track health outcomes for all registered individuals nationwide. Both cohorts had a median age of 52·7 years (IQR 37·0–67·5) and included mostly women (500 297 [59·3%] in each cohort) and individuals born in Sweden (703 666 [83·5%] in the vaccinated cohort *vs* 578 647

[68·6%] in the unvaccinated cohort). Follow-up started 14 days after the second dose for each person vaccinated with BNT162b2 (Pfizer–BioNTech), mRNA-1273 (Moderna), ChAdOx1 nCoV-19 (Oxford–AstraZeneca), or mixed ChAdOx1 nCoV-19 and an mRNA vaccine and their unvaccinated matches. Effectiveness estimates were adjusted for date of second dose, age, sex, domestic support (proxy for disability), education, place of birth, and comorbidities. The study was completed on Oct 4, 2021, before the advent of the omicron (B.1.1.529) variant.

Nordström and colleagues[1] found that although all vaccines elicited strong protection against SARS-CoV-2 infection in the first month after the second dose (>90% for BNT162b2 and mRNA-1273, >85% for mixed ChAdOx1 nCoV-19 plus an mRNA vaccine, and around 70% for ChAdOx1 nCoV-19), this protection waned to negligible levels within 7 months for BNT162b2 [Pfizer] and 4 months for ChAdOx1 (AstraZeneca] nCoV-19. Similar, but slower waning was noted for mRNA-1273 (Moderna – effectiveness of 59% [95% CI 18–79] from day 181) and for ChAdOx1 nCoV-19 plus an mRNA vaccine (66% [41–80] from day 121).

Of greatest concern is waning effectiveness against severe COVID-19, which for all vaccines combined declined to 64% (95% CI 44–77) 121 days after the second dose, despite having been stable at around 90% initially. However, it remains unclear whether this combined statistic is exacerbated by accelerated waning of the ChAdOx1 nCoV-19 vaccine. The evidence from Nordström and colleagues' study[1] suggests lower effectiveness for older individuals and for men. The latter finding seems to be unique to this study and merits replication in other countries. The importance of this study is that it had a longer follow-up period than most studies, it examined several vaccines and different schedules, and it captured a national population in its entirety. The study manifests the true meaning of real-world vaccine effectiveness and its findings are integral to our understanding of waning vaccine protection. This study also demonstrates the expanding power of biomedical research in the era of digitised health information platforms. In the context of other evidence on COVID-19 vaccine effectiveness, Nordström and colleagues' study[1] highlights several patterns. Unlike natural immunity, which appears robust with little waning for a year following infection,[2, 3, 4] there is gradual but relatively rapid waning in vaccine immunity against infection following the second dose.[5, 6, 7, 8]

Vaccines differ in effectiveness and durability of protection, with mRNA-1273 showing the highest effectiveness and slowest waning, perhaps owing to its large dose.[8, 9]

Yet, vaccine-induced immunity against severe COVID-19 is more robust than that against infection and wanes more slowly. The gradient in effectiveness, highest against the most severe forms of infection and lowest against the least symptomatic forms, might explain the faster waning reported in studies that assessed effectiveness against infection of any severity,[5, 6, 8] such as Nordström and colleagues' study,[1] versus studies that assessed effectiveness against graded symptomatic infection.[7]

Although Nordström and colleagues' study[1] answered important questions, it raised concerns, especially with the emergence of the immune-evasive omicron variant. Omicron appears to accentuate the rapid waning of vaccine protection.[10]

Effectiveness against this variant is also considerably lower than against earlier variants, even in the first month after a booster dose, when protection is presumed to be highest.[10, 11] Has the current generation of vaccines reached its maximum potential?

We believe that the Nordström and colleagues' study[1] and other supporting evidence constitute a wake-up call that the world's community are insufficiently prepared for future chapters in this evolving pandemic. For vaccines to have optimal value as public health tools, the rapid waning in vaccine immunity, in contrast to natural immunity, needs to be understood in order to develop vaccines that elicit durable protection. The ecological reality of new variants and perhaps an expanding enzootic viral reservoir demonstrate the need for vaccines that are protective against a broader spectrum of potential variants.[12]

SARS-CoV-2 is unlikely to be eliminated soon, if ever, and as long as it continues to circulate, it remains a threat to human health, societies, and economies. It is urgent that we develop coronavirus vaccines that are more broadly protective, with durable protection against both infection and disease.

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

There's a Reason 90% of Drugs Fail Clinical Trials, And We Can Fix It

By Duxin Sun

Source: https://www.sciencealert.com/there-s-a-reason-90-of-drugs-fail-clinical-trials-and-we-can-fix-it

Feb 24 – It takes 10 to 15 years and around US$1 billion to develop one successful drug. Despite these significant investments in time and money, 90 percent of drug candidates in clinical trials fail.

Whether because they don't adequately treat the condition they're meant to target or the side effects are too strong, many drug candidates never advance to the approval stage.
As a pharmaceutical scientist working in drug development, I have been frustrated by this high failure rate. Over the past 20 years, my lab has been investigating ways to improve this process.
We believe that starting from the very early stages of development and changing how researchers select potential drug candidates could lead to better success rates and ultimately better drugs.

How does drug development work?
Over the past few decades, drug development has followed what's called a classical process. Researchers start by finding a molecular target that causes disease – for instance, an overproduced protein that, if blocked, could help stop cancer cells from growing. They then screen a library of chemical compounds to find potential drug candidates that act on that target. Once they pinpoint a promising compound, researchers optimize it in the lab. Drug optimization primarily focuses on two aspects of a drug candidate.
First, it has to be able to strongly block its molecular target without affecting irrelevant ones. To optimize for potency and specificity, researchers focus on its structure-activity relationship, or how the compound's chemical structure determines its activity in the body.
Second, it has to be "druglike," meaning able to be absorbed and transported through the blood to act on its intended target in affected organs.
Once a drug candidate meets the researcher's optimization benchmarks, it goes on to efficacy and safety testing, first in animals, then in clinical trials with people.

Why does 90 percent of clinical drug development fail?
Only one out of 10 drug candidates successfully passes clinical trial testing and regulatory approval. A 2016 analysis identified four possible reasons for this low success rate. The researchers found between 40 percent and 50 percent of failures were due to a lack of clinical efficacy, meaning the drug wasn't able to produce its intended effect in people. Around 30 percent were due to unmanageable toxicity or side effects, and 10-15 percent were due to poor pharmacokinetic properties, or how well a drug is absorbed by and excreted from the body. Lastly, 10 percent of failures were attributed to lack of commercial interest and poor strategic planning.
This high failure rate raises the question of whether there are other aspects of drug development that are being overlooked. On the one hand, it is challenging to truly confirm whether a chosen molecular target is the best marker to screen drugs against.
On the other hand, it's possible that the current drug optimization process hasn't been leading to the best candidates to select for further testing.

With each successive step of the drug development process, the probability of success gets increasingly smaller. *(*Duxin Sun and Hongxiang Hu)

Drug candidates that reach clinical trials need to achieve a delicate balance of giving just enough drug so it has the intended effect on the body without causing harm. Optimizing a drug's ability to pinpoint and act strongly on its intended target is clearly important in how well it's able to strike that balance.

But my research team and I believe that this aspect of drug performance has been overemphasized. Optimizing a drug's ability to reach diseased body parts in adequate levels while avoiding healthy body parts – its tissue exposure and selectivity – is just as important.

For instance, scientists may spend many years trying to optimize the potency and specificity of drug candidates so that they affect their targets at very low concentrations.

But this might be at the expense of ensuring that enough drug is reaching the right body parts and not causing harm to healthy tissue. My research team and I believe that this unbalanced drug optimization process may skew drug candidate selection and affect how it ultimately performs in clinical trials.

Improving the drug development process

Over the past few decades, scientists have developed and implemented many successful tools and improvement strategies for each step of the drug development process.

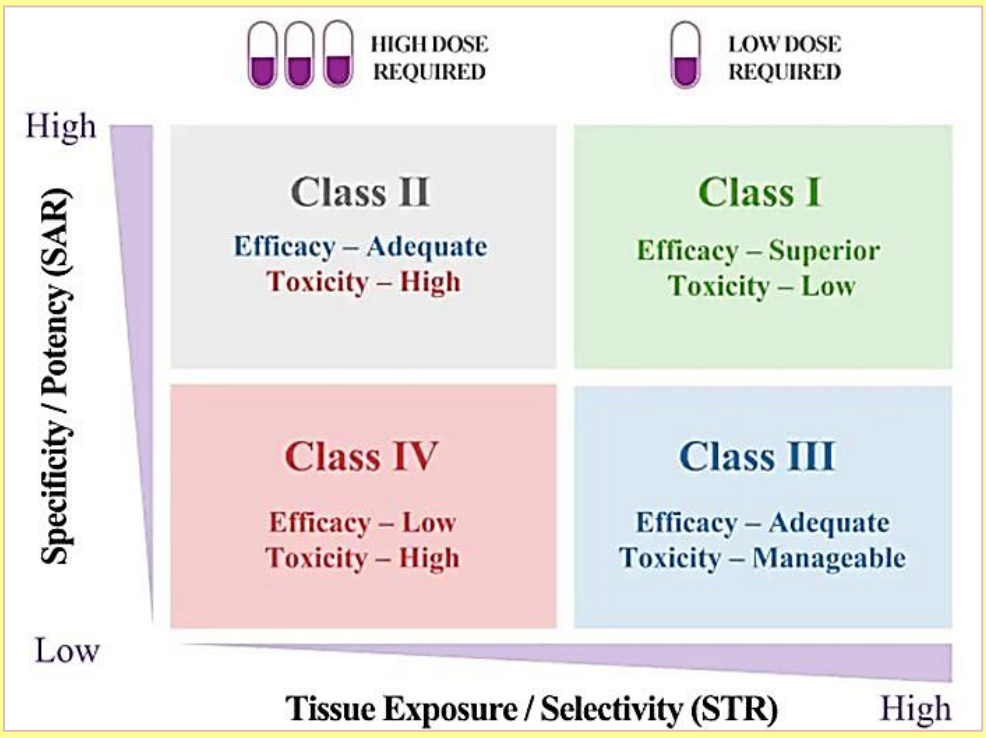
These include high-throughput screening that uses robots to automate millions of tests in the lab, speeding up the process of identifying potential candidates; artificial intelligence-based drug design; new approaches to predict and test for toxicity; and more precise patient selection in clinical trials.

Despite these strategies, however, the success rate still hasn't changed by much.

My team and I believe that exploring new strategies focusing on the earliest stages of drug development when researchers are selecting potential compounds may help increase success.

This could be done with new technology, like the gene editing tool CRISPR, that can more rigorously confirm the correct molecular target that causes disease and whether a drug is actually targeting it.

And it could also be done through a new STAR system my research team and I devised to help researchers better strategize how to balance the many factors that make an optimal drug.



Our STAR system gives the overlooked tissue exposure and selectivity aspect of a drug equal importance to its potency and specificity. This means that a drug's ability to reach diseased body parts at adequate levels will be optimized just as much as how precisely it's able to affect its target.

The STAR system provides a systematic way to approach drug candidate selection, taking into account different factors that play a role in how clinically successful a drug may be. (Duxin Sun and Hongxiang Hu)

To do this, the system groups drugs into four classes based on these two aspects, along with recommended dosing. Different classes would require different optimization strategies before a drug goes on to further testing.

A Class I drug candidate, for instance, would have high potency/specificity as well as high tissue exposure/selectivity. This means it would need only a low dose to maximize its efficacy and safety and would be the most desirable candidate to move forward.

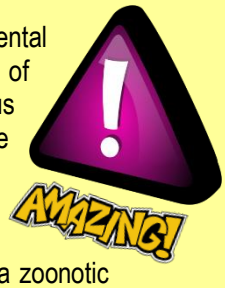
A Class IV drug candidate, on the other hand, would have low potency/specificity as well as low tissue exposure/selectivity. This means it likely has inadequate efficacy and high toxicity, so further testing should be terminated.
Class II drug candidates have high specificity/potency and low tissue exposure/selectivity, which would require a high dose to achieve adequate efficacy but may have unmanageable toxicity. These candidates would require more cautious evaluation before moving forward.
Finally, Class III drug candidates have relatively low specificity/potency but high tissue exposure/selectivity, which may require a low to medium dose to achieve adequate efficacy with manageable toxicity. These candidates may have a high clinical success rate but are often overlooked.

Realistic expectations for drug development
Having a drug candidate reach the clinical trial stage is a big deal for any pharmaceutical company or academic institution developing new drugs. It's disappointing when the years of effort and resources spent to push a drug candidate to patients so often lead to failure.
Improving the drug optimization and selection process may significantly improve success of a given candidate.
Although the nature of drug development may not make reaching a 90 percent success rate easily achievable, we believe that even moderate improvements can significantly reduce the cost and time it takes to find a cure for many human diseases.

Duxin Sun is a Professor of Pharmaceutical Sciences @ University of Michigan.

Scientists are working on vaccines that spread like a disease. What could possibly go wrong?

By Filippa Lentzos and Guy Reeves
Source: https://thebulletin.org/2020/09/scientists-are-working-on-vaccines-that-spread-like-a-disease-what-could-possibly-go-wrong/

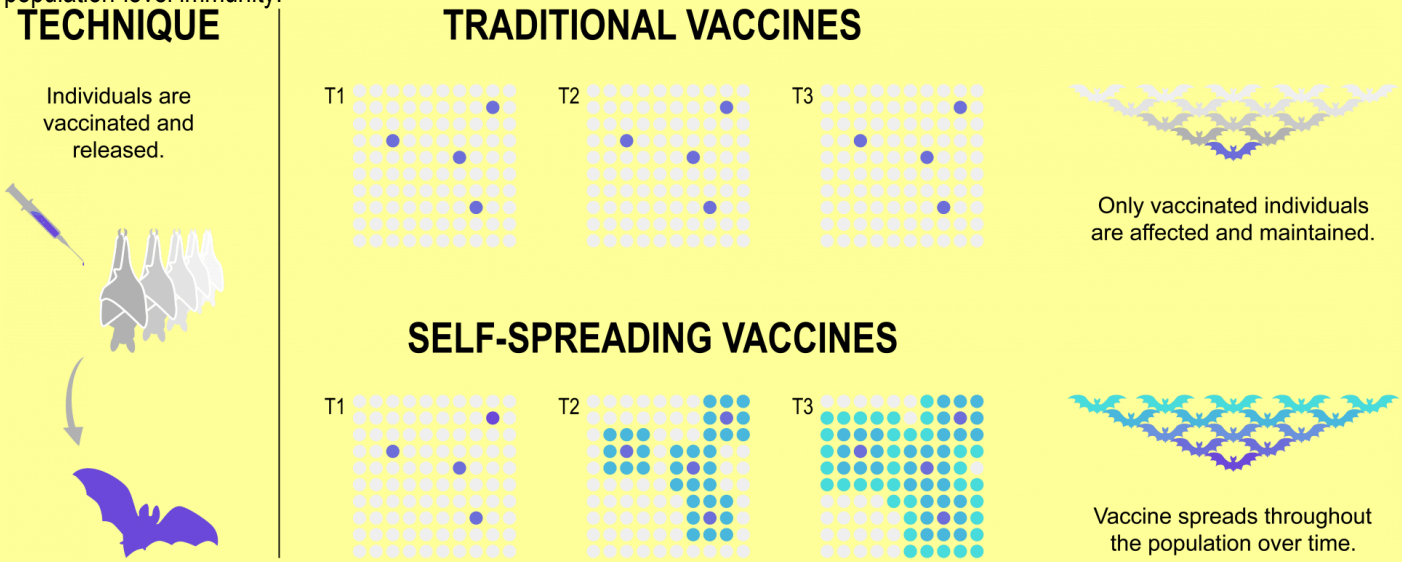


Sept 2020 – Once a COVID-19 vaccine is approved for public use, officials around the world will face the monumental challenge of vaccinating billions of people, a logistical operation rife with thorny ethical questions. What if instead of orchestrating complicated and resource-intensive campaigns to vaccinate humans against emerging infectious diseases like COVID-19, we could instead stop the zoonotic diseases that sometimes leap from animals to people at their source? A small, but growing number of scientists think it's possible to exploit the self-propagating properties of viruses and use them to spread immunity instead of disease. Can we beat viruses like SARS-CoV-2, the novel coronavirus, at their own game?
A virus that confers immunity throughout an animal population as it spreads in the wild could theoretically stop a zoonotic spillover event from happening, snuffing out the spark that could ignite the next pandemic. If the wild rats that host the deadly Lassa virus, for example, are vaccinated, the risks of a future outbreak among humans could be reduced. For at least 20 years, scientists have been experimenting with such self-spreading vaccines, work that continues to this day, and which has gained the attention of the US military.
For obvious reasons, public and scientific interest in vaccines is incredibly high, including in self-spreading vaccines, as they could be effective against zoonotic threats. The biologists Scott Nuismer and James Bull generated fresh media attention to self-spreading vaccines over the summer after publishing an article in the journal *Nature Ecology & Evolution*. But the subsequent reporting on the topic gives short shrift to the potentially significant downsides to releasing self-spreading vaccines into the environment.
Self-spreading vaccines could indeed entail serious risks, and the prospect of using them raises challenging questions.
Who decides, for instance, where and when a vaccine should be released? Once released, scientists will no longer be in control of the virus. It could mutate, as viruses naturally do. It may jump species. It will cross borders. There will be unexpected outcomes and unintended consequences. There always are.
While it may turn out to be technically feasible to fight emerging infectious diseases like COVID-19, AIDS, Ebola, and Zika with self-spreading viruses, and while the benefits may be significant, how does one weigh those benefits against what may be even greater risks?

How they work

Self-spreading vaccines are essentially genetically engineered viruses designed to move through populations in the same way as infectious diseases, but rather than causing disease, they confer protection. Built on the chassis of a benign virus, the vaccines have genetic material from a pathogen added to them that stimulates the creation of antibodies or white blood cells in "infected" hosts.

These vaccines could be particularly useful, some scientists say, for wildlife populations where direct vaccination is difficult due to issues like inaccessible habitats, poor infrastructure, high costs, or lack of resources. The idea, essentially, is to vaccinate a small proportion of a population through direct inoculation. These so-called founders will then passively spread the vaccine to other animals they encounter either by touch, sex, nursing, or breathing the same air. Gradually, these interactions could build up population-level immunity.



A diagram of how a self-spreading vaccine could spread among bats. "Founder" bats inoculated with a self-spreading vaccine passively spread the vaccine to other bats they encounter over time, gradually building up population-level immunity. Credit: Derek Caetano-Anollés.

Self-spreading vaccines have some of their roots in efforts to reduce pest populations. Australian researchers described a virally spread immunocontraception, which hijacked the immune systems of infected animals—in this case a non-native mouse species in Australia—and prevented them from fertilizing offspring. The earliest self-spreading vaccine efforts targeted two highly lethal infectious diseases in the European rabbit population (myxoma virus and rabbit hemorrhagic disease virus). In 2001, Spanish researchers field-tested a vaccine in a wild rabbit population living on Isla del Aire, a small Spanish island just off Menorca. The vaccine spread to more than half the 300 rabbits on the island, and the trial was deemed a success.

In 2015, another team of researchers speculated on the development of a self-spreading vaccine for the Ebola virus that could be used on wild great apes like chimpanzees. Since then, scientists have come to see a wide array of animals—from wildlife such as bats, birds, and foxes to domesticated animals like dogs, pigs, and sheep—as amenable to self-spreading vaccines.

So far, researchers have not developed experimental self-spreading vaccines for humans; there is no clear evidence that anybody is actively working on the technology. Nuismer and Bull argue, rather, that self-spreading vaccines present a revolutionary approach to control emerging infectious diseases before they even spill over from animals into the human population.

Zoonotic spillover is certainly a pressing problem; alongside SARS-CoV-2, HIV, Ebola virus, and the Zika virus, there are over a thousand other new viruses with zoonotic potential that have been detected in wild animals over the last decade. Prevention is better than a cure, Nuismer and Bull say in a *New Scientist* article. In their *Nature Ecology & Evolution* article, they claim they are "poised to begin developing self-disseminating vaccines to target a wide range of human pathogens" in animals.

Outside of an experiment, scientists would face massive technical and practical hurdles in identifying the most appropriate targets for intervention and ensuring immunity is maintained in the wildlife populations. Despite these substantial challenges, the potential security implications of self-spreading vaccines are even more serious.

The principal security concern is that of dual-use. In essence, this means that the same research that is used to develop self-spreading vaccines to prevent disease, could also be used to deliberately cause harm. You could, for instance, engineer triggers into a virus that cause immune system failures in infected people or animals, a bit like HIV does naturally. Or

you could create triggers in a virus that cause a harmful autoimmune response, where the body starts attacking its own healthy cells and tissues.

The bioweapon question

While researchers may intend to make self-spreading vaccines, others could repurpose their science and develop biological weapons. Such a self-spreading weapon may prove uncontrollable and irreversible.

We don't have to dig very deep for a historical example of weaponized biology. As the apartheid-era South African biowarfare program shows, social, political, and scientific pressures can lead to the misuse of biological innovation.

Codenamed Project Coast, South Africa's program was primarily focused on covert assassination weapons for use against individuals deemed a threat to the racist apartheid government. In addition to producing contraptions to inject poisons, Project Coast researchers developed techniques to lace sugar cubes with salmonella and cigarettes with Bacillus anthracis.

While there have been many biowarfare programs, including several that were far more elaborate and sophisticated, the South African program is particularly relevant in thinking through malicious uses of self-spreading vaccines. One of Project Coast's research projects aimed at developing a human anti-fertility vaccine.

The idea took hold during a time of widespread concern over worldwide population explosion. Schalk Van Rensburg, who oversaw fertility-related work at a Project Coast laboratory, told South Africa's post-apartheid Truth and Reconciliation Commission, a forum for examining the sordid history of the era and laying the foundation for future peace and tolerance, that he thought the project was in line with the World Health Organization's attempts to curb rising global birth rates. He believed it could bring his lab international acclaim and funding. According to Van Rensburg, Wouter Basson, the director of the biowarfare program, said the military needed an anti-fertility vaccine so that female soldiers would not fall pregnant.

While some of the scientists involved in the project denied awareness of ulterior intentions or even that their fertility work was part of a military endeavor, Van Rensburg and Daniel Goosen, a lab director, told the Truth and Reconciliation Commission that the real intention behind the project was to selectively administer the contraceptive in secret to unwitting Black South African women.

In the end, the anti-fertility vaccine was not produced before Project Coast was officially closed down in 1995, 12 years after it was initiated. An early version was tested in baboons, but never in humans. South Africa isn't the only country to try and forcibly sterilize parts of its population. European countries, including Sweden and Switzerland, sterilized members of the Roma minority in the early half of the 20th century and some, like Slovakia, continued even beyond that. More recently, analysts have alleged that the Chinese government is sterilizing women in Xinjiang, a province with a large population of Uighur Muslims.

It doesn't take a massive leap of the imagination to see how the aims of South Africa's anti-fertility vaccine project would have benefited from research into self-spreading vaccines, particularly if you combine it with current developments in pharmacogenomics, drug development, and personalized medicine. Taken together, these strands of research could help enable ultra-targeted biological warfare.

An expanding potential for abuse

The Biological Weapons Convention, the treaty that bans biological weapons, is nearly 50 years old. Negotiated and agreed to in the depths of the Cold War, the convention suffers from outdated modes of operation. There are also significant compliance assessment challenges. The convention certainly didn't stop South Africa from pursuing Project Coast in the early 1980s.

Self-spreading vaccine research is a small but growing field. At the moment, about 10 institutions are doing significant work in the area. These laboratories are primarily located in the United States, but some are in Europe and Australia, as well. As the field expands, so does the potential for abuse.

So far research has primarily been bankrolled by US government science and health funders like the National Science Foundation, the National Institutes of Health, and the Department of Health and Human Services. Private organizations like the Gates Foundation and academic institutions have also financed projects. Recently, the Defense Advanced Research Projects Agency (DARPA), sometimes thought of as the US military's research and development wing, has gotten involved in the research. The University of California, Davis, for example, is working on a DARPA administered project called Prediction of Spillover Potential and Interventional En Masse Animal Vaccination to Prevent Emerging Pathogen Threats in Current and Future Zones of US Military Operation. According to a pamphlet, the project is "creating the world's first prototype of a self-disseminating vaccine designed to induce a high level of herd immunity (wildlife population level protection) against Lassa virus … and Ebola."

Military investment in biological innovation for defensive or protective purposes is permissible under the Biological Weapons Convention, but it can still send the wrong signals. It could cause countries to doubt one another's intentions and lead to tit-for-tat

investment in potentially risky research, including in self-spreading vaccines. The result of research gone awry or biowarfare could be catastrophic for health and the environment.

At a time when the norm against chemical weapons is degrading, underscored most recently by the poisoning of Russian opposition leader Alexei Navalny with the nerve agent Novichok—a crime for which many European officials blame Russia—the international community simply can't afford to have the same thing happen to the norm against the use of biological weapons. It would completely defy the spirit of the treaty if it seemed like states would even want to pursue high-risk dual use activities in biology.

Early, open, good-faith conversations about scientific aims and advances that cause particular dual-use concerns, as self-spreading vaccines do, are essential to exploring the broader stakes of certain technical trajectories. The University of California, Davis program is pursuing ways to incorporate an "off switch" to safely control the technology. And DARPA says any field experimentation related to the project would follow biosafety protocols. But these pledges won't suffice. Our ambition must be to make a collective decision about the technical pathways we are willing, or not willing, to take as a society.

Filippa Lentzos is a Senior Lecturer in Science & International Security at the Department of War Studies and Co-Director of the Centre for Science and Security Studies (CSSS) at King's College London. She is also an Associate Senior Researcher at the Stockholm International Peace Research Institute (SIPRI) and a Non-Resident Scholar at the James Martin Center for Nonproliferation Studies (CNS). Her research focuses on biological threats and on the security and governance of emerging technologies in the life sciences. A biologist and social scientist by training, Dr Lentzos has researched and been actively involved in biological disarmament and non-proliferation for nearly 20 years.

Guy Reeves is a post-doctoral researcher at the Max Planck Institute for Evolutionary Biology in Germany.

US official: Russian invasion of Ukraine risks release of dangerous pathogens

By Matt Field

Source: https://thebulletin.org/2022/02/us-official-russian-invasion-of-ukraine-risks-release-of-dangerous-pathogens/

A research lab in Kyiv, Ukraine built by the Cooperative Threat Reduction Program. Credit: Defense Threat Reduction Agency

Feb 25 – The Russian invasion of Ukraine may put at risk a network of **US-linked labs in Ukraine that work with dangerous pathogens**, said Robert Pope, the director of the Cooperative Threat Reduction Program, a 30-year-old Defense Department program that has helped secure the former Soviet Union's weapons of mass destruction and redirect former bioweapons facilities and scientists toward peaceful endeavors.

The labs in Ukraine are not bioweapons facilities. The US government maintains the overseas facilities in Ukraine and other countries that receive US support are public health and animal health facilities operated by host countries. Although a long-running Russian disinformation campaign has painted a picture of a network of US military labs in Ukraine, Georgia, and other former Soviet republics involved in bioweapons or risky research, Pope said the labs conduct peaceful scientific research and disease surveillance. Outside experts have also said Pope's program is not a covert bioweapons operation.

While the United States isn't maintaining bioweapons facilities, Pope said, war could put pathogen collections in Ukraine at risk.

"I would say from every facility that we have worked with them in, we have confidence that as long as the electrical power is turned on and the people we have trained are present at the facility, the biosafety officers, that these pathogens are safe and secure to international standards," Pope said. "Should these facilities be damaged by conflict, that could change."

The pathogens with which the Cooperative Threat Reduction Program labs work are generally kept frozen, so they can't replicate and become infectious. The risk the pathogens pose would increase if a building lost power and suffered damage. "If you lose the electrical power, the pathogens in the freezers warm up," he said. "If the ventilation system is damaged, or the building itself is damaged, and these now ambient-temperature pathogens are able to escape the facility, then they can be potentially infectious in the region around the facility."

Although Russian officials and media have misrepresented the US-supported labs in Ukraine and other former Soviet countries in disinformation campaigns, Pope doesn't believe the Russians will deliberately aim weapons at the labs during the invasion.

"I think the Russians know enough about the kinds of pathogens that are stored in biological research laboratories that I don't think they would deliberately target a laboratory," Pope said. "But what I do have concerns about is that they would … be accidentally damaged during this Russian invasion."

The invasion could also provide fodder for new disinformation narratives around the labs, Pope feared. The Russians, he said, "could potentially go to one of these facilities and fabricate something that they call evidence of nefarious activity at the facility."

The pathogens in Ukrainian labs vary by facility, Pope said, but some can be characterized as presenting a concern in the Ukrainian environment. As an example, he cited African swine fever virus, which is highly contagious in pigs and has caused hundreds of outbreaks in Ukraine since 2012. Some labs, he said, may hold pathogen strains left over from the Soviet bioweapons program, preserved in freezers for research purposes.

"There is no place that still has any of the sort of infrastructure for researching or producing biological weapons," Pope said. "Scientists being scientists, it wouldn't surprise me if some of these strain collections in some of these laboratories still have pathogen strains that go all the way back to the origins of that program."

The program is encouraging host countries to reduce the scope of their pathogen holdings to as small of a collection as necessary for legitimate scientific research, Pope said.

"What we have today and what these countries maintain are small amounts of various pathogens that by and large are things that are collected out of their environment that they need for research to be able to legitimately surveil disease and develop vaccines against," he said.

This work, Pope said, continued in Ukraine until recently. "They have more pathogens in more places than we recommend," he said. The program had been helping Ukrainian researchers sift through their frozen pathogen collections, with the goal of persuading the Ukrainians to preserve their genetic information of samples via sequencing before destroying the live samples.

Pope said his program had been close to an agreement with the Ukrainians on consolidating samples, but the invasion has now made that project uncertain. "All of that, obviously, has been derailed here with the recent events," he said.

The Cooperative Threat Reduction Program, Pope said Thursday, has not had contact with biosafety staff at the labs in Ukraine since the Russian invasion. Phone lines have been jammed in Ukraine, he said, and "I don't know what kind of contact we will have in these labs in the near future."

Some Ukrainian labs, like the Ukrainian Ministry of Health's Public Health Center, Pope said, are major facilities, others small. Some are new, while others date back to the Soviet-era and the country's bioweapons program.

The US government has worked with 26 facilities in Ukraine. Before the invasion, the program provided direct material support to six Ukrainian labs. The program also provides biosafety and scientific mentorship training to Ministry of Health personnel throughout the country.

Researchers consider the Soviet bioweapons program to be the most extensive and sophisticated to have existed, employing some 65,000 scientists. While both the United States and the Soviet Union signed the 1972 Biological Weapons Convention banning biological weapons, the Soviet Union went on to secretly expand its program. The country's program had a forward-looking orientation; it sought, for instance, to develop chimeric viruses that had the genetic properties of two viruses and even to create viral/bacterial hybrids, biosecurity experts Milton Leitenberg and Raymond Zilinskas wrote a well-regarded history of the program in 2012.

The Cooperative Threat Reduction Program began with heavy Russian involvement. In the early 1990s, "employees at the multiple former biological weapon facilities operated by Biopreparat, the non-military part of the program, were increasingly desperate to support themselves and their families," according to a 2020 account published by the US National Academies of Sciences, Engineering, and Medicine. An agreement among the European Union, the United States, Russia, and Japan led to the development of the International Science and Technology Center in Moscow, which channeled US Cooperative Threat Reduction Program resources and funds from other countries into scientific projects involving former biological weapons experts.

The technology center, supported thousands of "former weaponeers," who worked on projects in areas such as lab safety, infectious disease research, medical countermeasures, and diagnostic test development.

The Pentagon even sponsored Western scientists to work in former Russian bioweapons labs. By 2012, however, the arrangement between Russia, the United States, and others began to unravel, and Russia ended its agreement to host the International Science and Technology Center, which has since moved to Kazakhstan.

Cooperative Threat Reduction Program efforts have continued in the former Soviet republics of Ukraine and Georgia. After 9/11, the program began to focus more on how terrorists could misuse biological research and the program's biological threat reduction component, as opposed to programs involving nuclear or chemical weapons, Pope said. Now, 62 percent of the program's $360 million budget for this fiscal year is focused on biological issues.

At some point after Russia pulled out of the Cooperative Threat Reduction Program, disinformation campaigns involving Russian officials, state media, and others began to allege that the United States was running a bioweapons program on Russia's periphery, or that it was jeopardizing the health of local citizens with dangerous experimentation. As Russia's march to war in Ukraine heated up, so too did a campaign to discredit US-affiliated labs in the country.

Pope suspects the Russian disinformation campaign against the Cooperative Threat Reduction Program stems from Russian President Vladimir Putin's vision of wielding influence in the countries surrounding Russia

"You look at the partners we have in several of the former Soviet republics, like Armenia, Azerbaijan, Georgia, Kazakhstan, Ukraine, and Uzbekistan, where we have had great partnerships over many years—I think Vladimir Putin looks at that as a zero-sum game of, 'if they are partnering with the US, then that is a threat to the Russian sphere of influence,'" Pope said.

Putin's end game in Ukraine remains unclear. On the second day of the invasion, Russian troops had reportedly advanced into the capital Kyiv. By any measure, Ukraine's popular government is teetering on the edge. Pope said he's anxious to resume working with his partners in Ukraine. That is not a sure prospect at this point.

Matt Field is Editor, Disruptive Technologies at the *Bulletin of the Atomic Scientists*. Before joining the *Bulletin*, he covered the White House, Congress, and presidential campaigns as a news producer for Japanese public television. He has also reported for print outlets in the Midwest and on the East Coast. He holds a master's degree in journalism from Northwestern University.

EDITOR'S COMMENT: You have already read the article at the beginning of this chapter entitled "*Russia is targeting U.S. biological weapons labs in Ukraine invasion*" – it seems that there is no smoke without fire or what?

Strange Evolutionary Pace of SARS-CoV-2 Mutations Is Finally Revealed in New Study

Source: https://www.sciencealert.com/the-coronavirus-spawns-new-variants-with-alarming-speed-and-we-may-finally-know-how

Feb 28 – The timeline of the COVID-19 pandemic has been marked by a series of catastrophic waves: surging crests of infection spreading around the world, often spearheaded by newly evolved variants of the pathogen, such as Delta and Omicron.

This is simply how viral evolution can play out, of course. But SARS-CoV-2 is an unusually successful and dangerous virus; part of what makes the 'novel coronavirus' so formidable is

its ceaseless novelty – the unusually rapid pace at which new variants appear to be spawning.
"What we were seeing with the variants of SARS-CoV-2, particularly the variants of concern, is that they have undergone many more mutations than we would expect under the normal evolutionary pace of similar coronaviruses," explains infectious disease researcher Sebastian Duchene from the Peter Doherty Institute for Infection and Immunity in Australia.
Ordinarily, Duchene notes, viruses tend to mutate at a relatively constant pace, taking perhaps a year or longer for a new viral variant to emerge. But the coronavirus doesn't seem to stick to that calendar.
"The Delta variant, for example, emerged within just six weeks from its ancestral form," Duchene says.
In a new study, Duchene and fellow researchers sought to investigate where this dramatically accelerated timeframe comes from.
They analyzed SARS-CoV-2 genome sequence data to examine how the emergence of variants of concern (VOCs, the most virulent and harmful lineages) might be linked to changes in the substitution rate of the virus: the rate at which new mutations arise in the pathogen's genetic code.
According to the researchers, the background substitution rate of SARS-CoV-2 suggests the virus accrues approximately two mutations each month.
But VOCs are a different beast, with variants such as Alpha, Beta, Gamma, and Delta acquiring numerous mutations in relatively short timeframes, each of which can alter things like the variants' infectiousness, ability to replicate, level of fitness, and so on.
"The sheer number of mutations observed in these four VOCs is much higher than what would be expected under phylogenetic estimates of the nucleotide evolutionary rate of SARS-CoV-2," the researchers explain in their paper, led by first author John Tay, a bioinformatics researcher at the Doherty Institute.
According to the team, the secret of the VOCs' accelerated mutation is not a constant, ongoing phenomenon, but rather something that appears to happen temporarily in the virus's evolution, taking place shortly before variants emerge.
"We find compelling evidence that episodic, instead of long term, increases in the substitution rate underpin the emergence of VOCs," the team writes.
The increased rate of substitutions is about four times higher than the background phylogenetic rate estimate for SARS-CoV-2, but the analysis suggests the accrual of mutations happens in a compressed burst: perhaps as short as four weeks for the Beta variant, and six weeks for the Delta variant.
Other variants took longer, with the Gamma variant thought to have evolved over the course of 17 weeks, while Alpha required 14 weeks.
That's the how of it, but as for why these mutation bursts occur at all, we're not entirely sure.
The researchers say the emergence of VOCs is probably driven by natural selection. Other relevant factors could include infections in unvaccinated populations – which may enable the virus to spread and evolve more easily – and persistent infections in particular individuals, such as immunocompromised patients, which may also lead to altered viral dynamics.
While there's still much we don't fully understand about what triggers so many rapid mutations in SARS-CoV-2, the fact that we can see and track this happening means ongoing genomic monitoring of the virus is crucial.
Doing so might just give us a chance to stop the next wave – instead of catching it.
"This makes the case for very good genomic surveillance, because we didn't catch the intermediate forms of Omicron, and surely there were a few," Duchene told *The Sydney Morning Herald*.
"Imagine if you could have detected Omicron in the first few patients – if you could prevent it spreading from there, then we wouldn't be in the situation we are now."

●▶ **The findings are reported in** *Molecular Biology and Evolution*.

COVID-related cases of diabetes may be temporary, study finds

Source: https://newatlas.com/health-wellbeing/covid19-diabetes-temporary/

Feb 27 – A relationship between COVID-19 and diabetes was seen by doctors early in the pandemic. Not only were cases of COVID-19 more severe in patients with pre-existing diabetes but a number of subjects were seen to develop symptoms of diabetes during their acute SARS-CoV-2 infection.
Several studies subsequently pointed to higher rates of newly diagnosed diabetes cases in COVID-19 patients. The correlation was seen in both adults and children but researchers did not know if this novel coronavirus was directly causing a new kind of diabetes.

Was COVID-19 directly speeding up development of the disease in those already prone with prediabetes? Is the nature of the pandemic simply leading to doctors catching more cases of undiagnosed diabetes in the general population? And what are the long-term outcomes for these COVID-19 patients with newly diagnosed diabetes?

A new study led by Harvard Medical School researchers at Massachusetts General Hospital has attempted to tease out some answers to these questions. The researchers studied medical records from several hundred subjects presenting to hospital with COVID-19 in 2020.

Of those cases studied, the researchers homed in on 78 subjects who had no pre-existing diagnosis of diabetes, yet presented upon admission with diabetic symptoms. The first observation was that demographic data indicated these new COVID-related cases of diabetes were more likely to appear in young subjects with limited English proficiency and low levels of health insurance.

This led the researchers to hypothesize that COVID-19 was not necessarily a direct cause of diabetes. Instead it was possible hospitalization with the disease was allowing doctors to identify either prediabetic patients or undiagnosed diabetic patients, at higher rates than normal.

"This suggests the term 'newly diagnosed diabetes' may be more appropriate than 'new-onset diabetes,' as it is unclear in many cases whether the diabetes is truly new-onset or merely newly recognized," the researchers wrote in the new study.

"Additionally, given this finding, we believe it is possible that infection with COVID-19 may not directly cause diabetes, but instead may push patients with pre-diabetes into frank diabetes and push patients with undiagnosed diabetes into extremis, as suggested by some experts."

Another observation in the new study supporting this hypothesis is the novel long-term follow up data on the COVID-19 patients experiencing newly diagnosed diabetes. Almost all the newly diagnosed COVID-related diabetic cases somewhat resolved within a year of hospital discharge, with only 7.8 percent of those new diabetes diagnoses requiring insulin at the 12-month follow-up.

"This suggests to us that newly diagnosed diabetes may be a transitory condition related to the acute stress of COVID-19 infection," said Sara Cromer, lead author on the new study. "Instead of directly causing diabetes, COVID-19 may push patients with pre-existing but undiagnosed diabetes to see a physician for the first time, where their blood sugar disorder can be clinically diagnosed. Our study showed these individuals had higher inflammatory markers and more frequently required admission to hospital ICUs than COVID-19 patients with pre-existing diabetes."

The temporary nature of diabetic symptoms in many COVID-19 patients strengthens the idea that the virus is not directly infecting and damaging insulin-producing beta cells. But it's more probable, according to the researchers, these cases of new-onset diabetes are due to a condition called stress hyperglycemia.

Stress hyperglycemia is when an acute illness causes a temporary spike in blood glucose levels. For most people the condition recedes when the illness-related stress dissipates, but for a small amount of people it can lead to full-blown diabetes.

"Our results suggest that acute insulin resistance is the major mechanism underlying newly diagnosed diabetes in most patients with COVID-19, and that insulin deficiency, if it occurs at all, is generally not permanent," Cromer explained. "These patients may only need insulin or other medications for a short time, and it's therefore critical that physicians closely follow them to see if and when their conditions improve."

The study is certainly not the definitive answer to the COVID-diabetes mystery, but it does offer one of the first longitudinal investigations into those new diabetes cases that seem to appear alongside COVID-19. More work will be needed to validate these findings in other cohorts and better understand exactly how a SARS-CoV-2 infection is directly triggering acute hyperglycemia.

●▶ **The new study was published in the** *Journal of Diabetes and its Complications*.

Scientists make bioactive glass 100 times more lethal to bacteria

Source: https://newatlas.com/materials/bioactive-glass-combinations-metal-oxides/

Feb 25 – For some time now, an antimicrobial material known as bioactive glass has been put forward for use in applications such as medical implants, hospital surfaces and wound dressings. Now, scientists report that they have boosted its bacteria-killing effect by over 100 times.

Typically, bioactive glass incorporates nanoparticles of a specific antibacterial metal oxide. Therefore, one might assume that if two types of oxides were used, the effect would be doubled.

However, researchers at Britain's Aston University have discovered that depending on which two metal oxides are combined, the resulting bioactive glass can actually be *much* more effective than glass made with either one of the oxides on its own.
Led by Prof. Richard Martin, the team created samples of bioactive glass which contained either zinc, copper or cobalt alone, along with samples that incorporated two of the metal oxides in different combinations. These samples were each ground into a powder, sterilized, then added to colonies of toxic *Escherichia coli* and *Staphylococcus aureus* bacteria, and to cultures of *Candida abicans* fungus.

Samples of the glass are poured in the lab (Aston University)

After 24 hours, glass that combined copper with either zinc or cobalt proved to be over 100 times more effective at killing *E. coli* than samples which contained only one oxide. The glass that specifically combined copper with zinc was similarly effective at eradicating *S. aureus*. Glass made with a combination of cobalt and zinc, on the other hand, was shown to be best at killing the fungus.
"It was exciting to run our experiments and find something that is significantly better at stopping infection in its tracks and could potentially reduce the number of antibiotic treatments that are prescribed," said Martin. "We believe combining antimicrobial metal oxides has significant potential for numerous applications."

●▶ **The research is described in a paper that was recently published in the journal** *ACS Biomaterials Science & Engineering*.

COVID-19 Proteases Inhibited by Repurposed FDA-Approved Drugs

Source: https://www.genengnews.com/topics/drug-discovery/covid-19-proteases-inhibited-by-repurposed-fda-approved-drugs/

Feb 28 – Two notorious SARS-CoV-2 proteases—Mpro and PLpro—were inhibited by drugs that have already been approved for indications other than COVID-19. The

identification of potentially useful SARS-CoV-2 antiviral drugs is obviously welcome, but in this case, the findings are especially encouraging. Why? Because the discovery of the inhibitors was accomplished with a novel screening strategy, one that could be used in additional screening studies.

Details about the protease inhibitors—and the screening strategy—appeared in *Communications Biology*, in an article titled, "Identification of SARS-CoV-2 inhibitors targeting Mpro and PLpro using in-cell protease assay." The in-cell protease assay (ICP) indicated in the article's title is just one part of the screening strategy. Other parts include antiviral and biochemical activity assessments, as well as structural determinations for rapid identification of protease inhibitors with low cytotoxicity.

The assay strategy was developed by scientists at Pennsylvania State University and their colleagues at Cardiff University and the University of California, San Diego. These scientists noted that proteases are attractive targets because they are well conserved and crucial for virus replication.

"The SARS-CoV-2 vaccines target the spike protein, but this protein is under strong selection pressure and, as we have seen with Omicron, can undergo significant mutations," said Penn State's Joyce Jose, PhD, the senior author of the current study. "There remains an urgent need for SARS-CoV-2 therapeutic agents that target parts of the virus other than the spike protein that are not as likely to evolve."

One of the study's co-authors, Penn State's Katsuhiko Murakami, PhD, noted that Mpro and PLpro are essential for SARS-CoV-2 replication in infected cells because of their protein-cleaving capabilities.

"SARS-CoV-2 produces long proteins, called polyproteins, from its RNA genome that must be cleaved into individual proteins by these proteases in an ordered fashion leading to the formation of functional virus enzymes and proteins to start virus replication once it enters a cell," he explained. "If you inhibit one of these proteases, further spread of SARS-CoV-2 in the infected person could be stopped."

To rapidly identify inhibitors of the Mpro and PLpro proteases, the researchers led by Jose designed a novel assay. "Other assays are available," Jose said, "[but] we designed our novel assay so it could be conducted in live cells, which enabled us to simultaneously measure the toxicity of the inhibitors to human cells."

The researchers used their assay to test a library of 64 compounds—including inhibitors of HIV and hepatitis C proteases; cysteine proteases, which occur in certain protozoan parasites; and dipeptidyl peptidase, a human enzyme involved in type 2 diabetes—for their ability to inhibit Mpro or PLpro.

"After prioritizing compounds based on inhibitory activity against the target protease combined with low cellular toxicity, six inhibitors for Mpro (MG-101, Lycorine HCl, BMS-707035, Atazanavir, Lomibuvir, and Nelfinavir mesylate) and two inhibitors for PLpro (Sitagliptin and Daclastavir) were selected," the article's authors wrote. "Additionally, we show that the combined inhibition of Mpro and PLpro is more effective in inhibiting SARS-CoV-2 and the Delta variant."

The researchers also reported that MG-101 hindered the virus's ability to infect cells by inhibiting protease processing of the spike protein: "The X-ray crystal structure of Mpro in complex with MG-101 shows a covalent bond formation between the inhibitor and the active site Cys145 residue indicating its mechanism of inhibition is by blocking the substrate binding at the active site."

"By understanding how the MG-101 compound binds to the active site, we can design new compounds that may be even more effective," Murakami asserted. Indeed, the team is in the process of designing new compounds based on the structures they determined by X-ray crystallography. They also plan to test the combination drugs that they already demonstrated to be effective in vitro in mice.

Although the scientists studied the Delta variant of SARS-CoV-2, they said the drugs will likely be effective against Omicron and future variants because they target parts of the virus that are unlikely to mutate significantly. "The development of broad-spectrum antiviral drugs against a wide range of coronaviruses is the ultimate treatment strategy for circulating and emerging coronavirus infections," Jose declared. "Our research shows that repurposing certain FDA-approved drugs that demonstrate effectiveness at inhibiting the activities of Mpro and PLpro may be a useful strategy in the fight against SARS-CoV-2."

New studies point to nerve damage as a cause of long COVID

Source: https://newatlas.com/health-wellbeing/nerve-damage-vagus-long-covid/

Mar 01 – New research from the Massachusetts General Hospital (MGH) and the National Institutes of Health hypothesizes nerve damage as the cause of long COVID symptoms in some people. The small study found treating patients with immunotherapies targeting the neuropathy could improve long COVID symptoms.

Scientists and doctors are continuing to grapple with the emergence of long COVID, a post-viral condition characterized by persistent symptoms of COVID-19. It is still unclear exactly what causes long COVID, how long the condition may last, and perhaps most importantly, how to treat the chronic illness.

Lead author on the new research, Anne Louise Oaklander, from the Department of Neurology at MGH, said as the acute impact of COVID-19 begins to settle around the world, it will become increasingly important to understand how to best treat long COVID. The overall prevalence of the condition is not clear, but it is suspected anywhere from 10 to 30 percent of those contracting COVID could experience symptoms that persist for longer than three months. "This is one of the early papers looking into causes of long-COVID, which will steadily increase in importance as acute COVID wanes," said Oaklander. "Our findings suggest that some long-COVID patients had damage to their peripheral nerve fibers, and that damage to the small-fiber type of nerve cell may be prominent." The small new study followed 17 patients with a variety of long COVID symptoms. The researchers evaluated the patients for a condition known as peripheral neuropathy, a type of nerve damage signaled by pain in the hands or feet, weakness, fatigue and sensory changes.

The study found 59 percent of the long COVID patients could effectively fit a clinical diagnosis of peripheral neuropathy. Even more significantly, the researchers found treating some of the patients with immunotherapies used to target inflammatory neuropathy led to improvements in symptoms.

Oaklander does point out not all patients responded to neuropathy treatments and some patients spontaneously improved without any kind of immunotherapy, so she suspects not all cases of long COVID can be characterized by this kind of nerve damage. However, it could be valuable for patients to consult with a neurologist if their symptoms are not improving.

"Research from our team and others is clarifying what the different types of post-COVID neuropathy are, and how best to diagnose and treat them," Oaklander said. "Most long-COVID neuropathies described so far appear to reflect immune responses to the virus that went off course. And some patients seem to improve from standard treatments for other immune-related neuropathies."

The MGH finding is not the first to suggest some kind of nerve damage may be playing a role in the pathology of long COVID. Another new study set to be presented at next month's European Congress of Clinical Microbiology and Infectious Diseases presents evidence to suggest dysfunction in the vagus nerve may be a central feature of long COVID. The vagus nerve is the longest nerve in the human body, extending from the brain down into the heart and intestines. It plays a critical role in regulating a wide variety of crucial bodily functions, from controlling heart rate to managing digestion. The new research initially gathered a cohort of 348 long COVID patients and found 66 percent displayed symptoms of vagal nerve dysfunction (VND). A smaller group of 22 patients with VND symptoms were closely studied and ultrasounds revealed a quarter of those patients displayed visible alterations to the vagus nerve. The researchers hypothesize COVID-related inflammation causes vagus nerve dysfunction, which is the source of a number of long COVID symptoms including gastrointestinal problems and breathing impairments. "In this pilot evaluation, most long COVID subjects with vagus nerve dysfunction symptoms had a range of significant, clinically-relevant, structural and/or functional alterations in their vagus nerve, including nerve thickening, trouble swallowing, and symptoms of impaired breathing," the researchers said in a statement. "Our findings so far thus point at vagus nerve dysfunction as a central pathophysiological feature of long COVID." Commenting on the vagus nerve research, David Strain, from the University of Exeter, said the new findings are useful but more clinical work will be needed to home in on effective ways to treat long COVID. Strain agreed that some long COVID symptoms are possibly related to the direct effects of COVID-19 on the nervous system, but he said it is unlikely all aspects of long COVID can be linked to the vagu s nerve.

"It is entirely possible that people susceptible to nerve damage are at the greatest risk of developing long COVID; in this case this observation tells us little more than nerve damage is an result of COVID, this is greater in those with long COVID, and the damage is easy to detect in a long, complex nerve," said Strain. "Treatment with agents that have been demonstrated to be efficacious against vagal nerve dysfunction may provide relief for patients, however, are unlikely to treat the underlying diagnosis, and thus patients would be at risk of rebound symptoms once treatment stops."

●▶ **The neuropathy study was published in the journal** *Neurology: Neuroimmunology & Neuroinflammation*.

New Study: mRNA Vaccines Alter Human Liver DNA In Vitro?

Source: https://trialsitenews.com/new-study-mrna-vaccines-alter-human-liver-dna-in-vitro/

Feb 26 – **Pfizer's BioNTech vaccine causes intracellular reverse transcription of BNT162b2 mRNA into human DNA in vitro, renewing concerns that vaccines may introduce spike protein into the nuclei of cells.**

The findings emerged Friday in a peer-reviewed article entitled "Intracellular Reverse Transcription of Pfizer BioNTech COVID-19 mRNA Vaccine BNT162b2 In Vitro in Human Liver Cell Line" in the *Current Issues in Molecular Biology Journal*, an imprint of MDPI, the largest open-access publisher in the world and the fifth-largest publisher overall in terms of journal paper output.

Researchers Warn: Pfizer Vaccine May Affect Integrity of Genomic DNA

"Our study shows that BNT162b2 can be reverse transcribed to DNA in liver cell line Huh7, and this may give rise to the concern if BNT162b2-derived DNA may be integrated into the host genome and affect the integrity of genomic DNA, which may potentially mediate genotoxic side effects," the authors warn.

The study, authored by a team of Swedish researchers at Lund University, concluded that Pfizer's COVID-19 mRNA vaccine entered the human liver cell line Huh7 in vitro and BNT162b2 mRNA was subsequently transcribed intracellularly into DNA within six hours of exposure.

An "Immortal" Human Cell Line

The Huh7 cell line is a permanent line of liver cells derived from male hepatoma tissue that was surgically removed from a 57-year-old Japanese man in 1982. For the next 40 years, Huh7 and its derivatives were used in thousands of laboratories across the planet as a convenient experimental substitute for primary hepatocytes.

Hepatocytes, the major parenchymal cells in the liver, play pivotal roles in metabolism, detoxification, and protein synthesis. Hepatocytes also activate innate immunity against invading microorganisms by secreting innate immunity proteins.

In Vitro Vs. In Vivo Caveats

Researchers who conduct in vitro studies commonly remind that results that emerge from laboratories and test tubes often differ from results which are derived in living, fully intact organisms. And the Huh7, itself, has limitations that could introduce errors or anomalies into laboratory results.

Still, the study conducted by researchers at one of Europe's oldest and most prestigious research institutions raises serious questions about Pfizer's mRNA vaccines' impact on human DNA, which have yet to be subjected to the typical years-long (or decades-long) battery of long-term safety monitoring protocols.

Changes in Gene Expression of LINE-1

The study authors exposed Huh7 cells to Pfizer's BNT162b2 mRNA and then performed a quantitative polymerase chain reaction on RNA extracted from the cells. The research team discovered high levels of BNT162b2 in Huh7 cells and changes in gene expression of long interspersed nuclear element-1, or LINE-1, which is an endogenous reverse transcriptase.

BNT162b2 mRNA Reverse Transcribed Into DNA Within Six Hours Of Exposure

The authors conclude that BNT162b2 transfects into human liver cell line huh7 in vitro, altering LINE-1 expression and distribution. The authors also find that "BNT162b2 mRNA is reverse transcribed intracellularly into DNA in as fast as six hours upon BNT162b2 exposure."

BNT162b2 is a lipid nanoparticle (LNP)–encapsulated, nucleoside-modified RNA vaccine (modRNA) which resembles gene therapy platforms. Pfizer's mRNA vaccine encodes the full-length of SARS-CoV-2 spike protein. That spike protein is modified by two proline mutations to ensure antigenically optimal pre-fusion conformation, mimicking the intact virus to elicit virus-neutralizing antibodies.

A recent study showed that SARS-CoV-2 RNAs can be reverse-transcribed and integrated into the genome of human cells, which the authors said led them to investigate whether spike transfected by mRNA vaccines might have comparable effects.

CDC Says mRNA Vaccines Does Not Enter Nuclei or Interact With DNA

mRNA vaccines were not designed to invade human cells' nuclei. In fact, the United States Centers for Disease Control claimed in December that "COVID-19 vaccines do not change or interact with your DNA in any way."

"The genetic material delivered by mRNA vaccines never enters the nucleus of your cells, which is where your DNA is kept," the government agency website said. "Viral vector COVID-19 vaccines deliver genetic material to the cell nucleus to allow our cells to build protection against COVID-19. However, the vector virus does not have the machinery needed to integrate its genetic material into our DNA, so it cannot alter our DNA."

The Nucleus is the "Brain" of Human Cells, Site of DNA Replication

Some biologists refer to the nucleus, metaphorically, as the "brain" of the cell. The nucleus is the most prominent of cells' organelles and contain genetic information in the form of deoxyribonucleic acid (DNA) and is the site of DNA replication. The nucleus is also the site for the synthesis of ribonucleic acid (RNA) which is the template for synthesis of other cell proteins and for protein factories of the cell called ribosomes. Transfection of spike protein into the nucleus opens the possibility of DNA modification, the authors wrote.

mRNA Vaccines Effect on "Genomic Integrity" Should Be Studied

"At this stage, we do not know if DNA reverse transcribed from BNT162b2 is integrated into the cell genome," the authors wrote. "Further studies are needed to demonstrate the effect of BNT162b2 on genomic integrity, including whole genome sequencing of cells exposed to BNT162b2, as well as tissues from human subjects who received BNT162b2 vaccination."

BNT162b2
5.3.6 Cumulative Analysis of Post-authorization Adverse Event Reports

5.3.6 CUMULATIVE ANALYSIS OF POST-AUTHORIZATION ADVERSE EVENT REPORTS OF PF-07302048 (BNT162B2) RECEIVED THROUGH 28-FEB-2021

The list Pfizer wanted to keep secret for 75 years … (sample below)

disease;Coronary artery embolism;Coronary artery thrombosis;Coronary bypass thrombosis;Coronavirus infection;Coronavirus test;Coronavirus test negative;Coronavirus test positive;Corpus callosotomy;Cough;Cough variant asthma;COVID-19;COVID-19 immunisation;COVID-19 pneumonia;COVID-19 prophylaxis;COVID-19 treatment;Cranial nerve disorder;Cranial nerve palsies multiple;Cranial nerve paralysis;CREST syndrome;Crohn's disease;Cryofibrinogenaemia;Cryoglobulinaemia;CSF oligoclonal band present;CSWS syndrome;Cutaneous amyloidosis;Cutaneous lupus erythematosus;Cutaneous sarcoidosis;Cutaneous vasculitis;Cyanosis;Cyclic neutropenia;Cystitis interstitial;Cytokine release syndrome;Cytokine storm;De novo purine synthesis inhibitors associated acute inflammatory syndrom;Death neonatal;Deep vein thrombosis;Deep vein thrombosis postoperative;Deficiency of bile secretion;Deja vu;Demyelinating polyneuropathy;Demyelination;Dermatitis;Dermatitis bullous;Dermatitis herpetiformis;Dermatomyositis;Device embolisation;Device related thrombosis;Diabetes mellitus;Diabetic ketoacidosis;Diabetic mastopathy;Dialysis amyloidosis;Dialysis membrane reaction;Diastolic hypotension;Diffuse vasculitis;Digital pitting scar;Disseminated intravascular coagulation;Disseminated intravascular coagulation in newborn;Disseminated neonatal herpes simplex;Disseminated varicella;Disseminated varicella zoster vaccine virus infection;Disseminated varicella zoster virus infection;DNA antibody positive;Double cortex syndrome;Double stranded DNA antibody positive;Dreamy state;Dressler's syndrome;Drop attacks;Drug withdrawal convulsions;Dyspnoea;Early infantile epileptic encephalopathy with burst-suppression;Eclampsia;Eczema herpeticum;Embolia cutis medicamentosa;Embolic cerebellar infarction;Embolic cerebral infarction;Embolic pneumonia;Embolic stroke;Embolism;Embolism arterial;Embolism venous;Encephalitis;Encephalitis allergic;Encephalitis autoimmune;Encephalitis brain stem;Encephalitis haemorrhagic;Encephalitis periaxialis diffusa;Encephalitis post immunisation;Encephalomyelitis;Encephalopathy;Endocrine disorder;Endocrine ophthalmopathy;Endotracheal intubation;Enteritis;Enteritis leukopenic;Enterobacter pneumonia;Enterocolitis;Enteropathic spondylitis;Eosinopenia;Eosinophilic

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FDA-CBER-2021-5683-0000085

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Bark of neem tree may protect against coronavirus variants, study finds

University of Colorado Anschutz Medical Campus
Source: https://www.sciencedaily.com/releases/2022/02/220228114351.htm

Feb 28 – Extract from the bark of the Neem tree (*Azadirachta indica*) may help treat and reduce the spread of coronavirus, according to a new study led by scientists at the University of Colorado Anschutz Medical Campus and the Indian Institute of Science Education and Research Kolkata.
The study, reported recently in the journal *Virology*, shows that components of Neem bark may target a wide range of viral

proteins, suggesting its potential as an antiviral agent against emerging variants of coronaviruses (including SARS-CoV-2). The Neem tree, indigenous to India, has been used for thousands of years for its anti-parasitic, anti-bacterial and antiviral properties. The bark extract has helped treat malaria, stomach and intestinal ulcers, skin diseases and many other diseases.
"The goal of this research is to develop a Neem-based medication that can reduce the risk of serious illness when someone is infected with coronaviruses," said study co-author Maria Nagel, MD, research professor in the department of neurology and ophthalmology at the University of Colorado School of Medicine on the CU Anschutz Medical Campus. "We hope that scientists won't have to continuously develop new therapies every time a new SARS-CoV-2 variant emerges," she said. "Just like how we take penicillin for strep throat, we envision taking the Neem-based drug for COVID, allowing us to resume our normal lives without fear of hospitalization and death." The scientists investigated the impact of the bark extract against coronaviruses in their laboratories. In India, researchers tested it in animal models and showed that it had antiviral properties against coronavirus. Using computer modeling, the researchers predicted that Neem bark extract will bind to the SARS-CoV-2 spike protein at various locations, preventing virus entry to host cells. At CU Anschutz, Nagel's lab tested the Neem bark extract in SARS-CoV-2 human lung cells. It proved as effective as a preventive drug for infection and also decreased virus replication and spread after infection. "The next step in our research is to identify the specific components in Neem bark extract that are antiviral. Because these components bind to various regions of SARS-CoV-2, we believe that it will be effective on emerging variants with spike mutations," said Nagel. "We will then determine the formulation of dosage for an antiviral drug to treat coronavirus infections." The scientists said this research could guide new antiviral therapeutic efforts to combat the ongoing pandemic, while holding out the promise for treating new coronavirus strains.

How a 19th-Century Breakthrough Could Revolutionize COVID-19 Diagnosis

By Naeem Ramzan, Gabriel Okolo, and Stamos Katsigiannis
Source: https://www.sciencealert.com/how-a-19th-century-breakthrough-could-revolutionize-covid-19-diagnosis

Mar 03 – It sounds simple, but to treat someone you suspect has COVID, you need to confirm they are actually infected with the coronavirus. In the UK, it is easy to take this for

granted – we've had a reliable detection method for diagnosing infected patients widely available since early on in the pandemic. This allowed for people to be treated and cared for promptly, saving lives. The main technique for identifying whether someone has COVID is called reverse transcription polymerase chain reaction testing – or RT-PCR. This process can tell whether the coronavirus's genetic material is present in a sample taken from a person, usually gathered my swabbing inside the nose or throat. This testing is normally done in a lab, and the resources needed mean that doing it at scale is a major challenge.

High-income countries have been able to scale up their COVID testing at great cost, but in some low- and middle-income countries – such as Pakistan, Sri Lanka, India and many African countries – health staff haven't been able to carry out large numbers of COVID tests due to a lack of resources. This is a particular problem in remote locations.

On top of this, PCR testing isn't very quick. It typically takes around two hours, and longer if extra time is needed to get the test sample to a suitable lab for testing.

In many cases, confirming whether someone has the virus needs to happen much more rapidly. When someone has severe COVID, treatment really needs to start immediately. Quickly diagnosing the disease is potentially life saving.

So, our team investigated whether a quick and reliable alternative to PCR testing could be provided by using commonly available hospital equipment – namely, the machines available in the radiography department.

COVID shows up in chest scans

Chest-imaging techniques – such as computed tomography (CT) or X-ray – can be analyzed by radiologists to search for visual markers of a COVID infection.

Investigations early on in the pandemic found that abnormalities showed up in the chest radiography images of patients with the virus, leading the World Health Organization to recommend using radiography for diagnosing COVID when PCR testing isn't available, especially for severe patients.

But there's a resource bottleneck here, too. Using X-rays and CT scans for diagnosis requires radiologists to carefully decipher the chest images, since COVID's visual pointers can be hard to spot. So, we created an artificial intelligence program to do this instead, to speed up diagnosis and allow radiologists to get on with their jobs.

The program is based on something called a deep convolutional neural network, a type of algorithm typically used to analyze images. Such algorithms can pick out the key features of images and classify those that have similarities and differences.

We began by training and testing a number of different algorithms – some already existing, some that we had created – using a database of around 3,000 chest X-rays. These were a mix of scans from patients with COVID, healthy individuals and people with viral pneumonia.

As we worked, we tweaked the algorithms to make them better at spotting the differences between the X-rays. Over time, we found that one clearly performed better than the others.

We then evaluated this top performer by giving it a completely new set of X-rays that it hadn't seen before, and asked it to determine whether each came from a COVID patient or not. The program got the answer right 98.04 percent of the time.

How could this be used?

Following these results, **we developed an app that could run the program outside of our lab, so that it could be used in places where it could make a difference. The app doesn't require lots of computer memory or power to run and so can be installed on normal PCs and laptops.**

It has been designed in such a way that no additional equipment is needed. Patient X-rays just have to be uploaded to the app via USB or the web, and then the algorithm analyses the image and gives back a result indicating if it is COVID-positive or not.

This app will not replace PCR. But it could be very effective in A&E departments where patients come in with severe illness. It would allow for a chest X-ray to be quickly taken and analyzed, and if the patient is positive, for treatment to start straightaway rather then waiting for lab results.

As well as being beneficial for patients, this could also speed up their passage onto suitable wards elsewhere in the hospital, and so relieve the strain on hard-pressed A&E departments.

The app could also be very effective at diagnosing COVID cases in low-income countries and remote areas where PCR is not readily available. So, as a next step, we're planning to test it out in Pakistan, as part of the EU-funded SAFE RH project, to see what impact it can have in the real world.

Naeem Ramzan is Professor of Computing Engineering @ University of the West of Scotland;

Gabriel Okolo is a PhD Candidate, School of Computing, Engineering & Physical Sciences @ University of the West of Scotland;
Stamos Katsigiannis is Assistant Professor in Computer Science @ Durham University.

Has Covid-19 ended the handshake for good?

Source: https://www.thenationalnews.com/uae/2022/02/27/has-covid-19-ended-the-handshake-for-good/

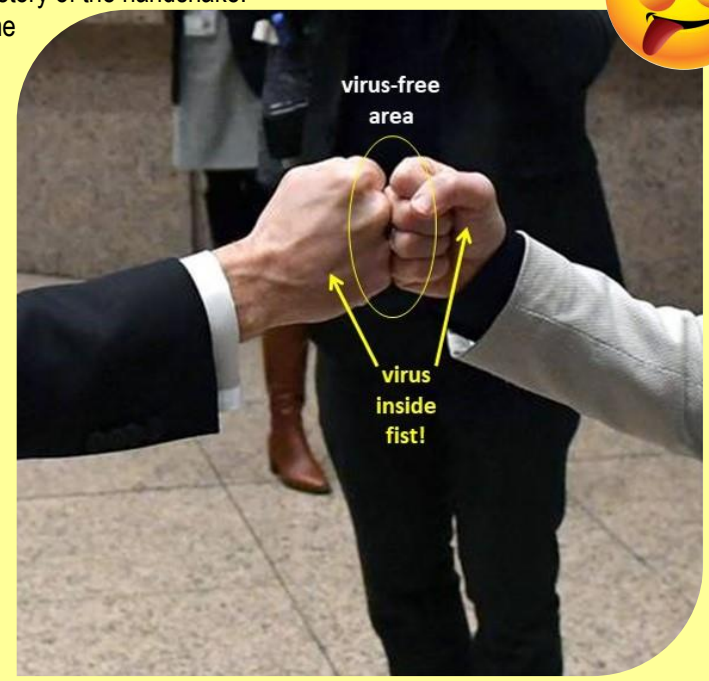
Mar 03 – In a beautiful 2,800-year-old stone relief held at the Iraq Museum in Baghdad, the Assyrian King Shalmaneser III is seen shaking hands with Babylon's King Marduk-zakir-shumi I.

Originating from the ancient city of Nimrud, south of Mosul, as well as the incredible craftsmanship of the time, this depiction of two Mesopotamian leaders demonstrates the long history of the handshake.

Artefacts and literature left behind by Ancient Greece and Rome suggest that in their cultures too, people clasped hands to cement relationships.

Possibly originating to show that no one was carrying weapons, the handshake is thought to have been revived in the 1600s by the Quakers religious group.

When the coronavirus swept across the globe two years ago, the continued use of this gesture — common in many but not all cultures — was called into question.



Editor's comment ▶

Indeed, in April 2020, Dr Anthony Fauci, director of the US National Institute of Allergy and Infectious Diseases, told a podcast that he did not think that people "should ever shake hands again", saying that staying apart would prevent the spread of influenza, as well as Covid-19.

"As a society, just forget about shaking hands. We don't need to shake hands. We've got to break that custom," he said in another interview at the time.

Today, with nearly two-thirds of people in the world at least partially vaccinated against Covid-19, should proffering a hand — or even a cheek to be kissed — still be considered a faux pas?

"Now it's not the behaviour people had in April 2020, when everybody was panicking. We've seen behaviour to some extent return to normal," says Prof Marc Oliver Rieger of the University of Trier in Germany, who in 2020 surveyed the public's views and co-wrote a study titled, Kisses, Handshakes, Covid-19 — Will the Pandemic Change us For Ever?

Although people may have become more relaxed about social distancing as time has gone on, and countries have removed Covid-related restrictions, history suggests that long-term changes to social greetings to prevent disease can happen.

Lessons from history

King Henry VI of England banned cheek kissing in 1439, and the practice reportedly did not become commonplace again for centuries.

In the previous century, the Black Death had ravaged populations in Europe, Asia and North Africa, so his concerns that kissing spread disease may not have been misplaced.

Modern-day science shows that close-contact greetings can pass on pathogens.

Kissing can spread the Epstein-Barr virus, which causes mononucleosis or glandular fever, notes Dr Richard Watkins, an infectious disease physician and professor of medicine at the Northeast Ohio Medical University in the US.

As with kissing, research shows that shaking hands can spread disease.

In a 2013 paper in *The Journal of Hospital Infection*, researchers at West Virginia University in the US described handshaking as "a known vector" for transmission of bacteria. The researchers said that the fist bump was safer.

"We have determined that implementing the fist bump in the healthcare setting may further reduce bacterial transmission between healthcare providers by reducing contact time and total surface area exposed when compared with the standard handshake," they wrote.

The 2,800-year-old stone relief held at The Iraq Museum in Baghdad. Assyrian King Shalmaneser III is seen shaking hands with Babylon's King Marduk-zakir-shumi. Osama Shukir Muhammed Amin / Wikimedia Commons

Today, Dr Watkins advises people to persist with social distancing, including not shaking hands, to avoid the spread of pathogens such as Sars-CoV-2.

"I recommend people continue to use alternative forms of greeting. A smile and a wave are good ways to convey that you are happy to see someone," he says.

But as the pandemic has often demonstrated, science and human nature do not always move in lockstep.

The issue of gesture politics

Prof Rieger notes that in places where the pandemic has become highly politicised, some people have rejected measures such as vaccination, mask-wearing and other government instructions.

"[Some people think that] you keep shaking hands to show you're not one of those sheep that follows the government," he says.

Aside from such politicised approaches, psychologists say that for social animals like humans, touch and all that goes with it is important.

"A handshake is typically accompanied by eye contact and recognition. The physical touch is a form of connection," says Prof Cristine Legare, professor of psychology and the director of the Centre for Applied Cognitive Science at The University of Texas at Austin.

"There's trustworthiness: someone who provides a firm handshake, who looks you in the eye, signals: 'I'm attending to you. You can trust me. I'm invested in this.'"

This ties in with studies that indicate that people are more likely to do business with people who they have shaken hands with.
Humans, she says, need close contact with others "psychologically, even physiologically" and it is "a huge part of our physical and emotional well-being".
"Long-term social distancing I think it's unsustainable," she says. "I don't think people can tolerate it any more, now we're two years into it. The costs have been so high that even when there's still some risk, I think the costs of continuing to distance are intolerable for most people."
Although people can "self-select out" by living by themselves and working remotely, she thinks just "a tiny proportion" will go against a return to the social norms such as shaking hands. Even those who would prefer not to press the flesh again may find it difficult to resist social pressure.
"If you have groups of people greeting each other with handshakes and you opt out, there's negative social feedback, even if no one says anything," Prof Legare says.
Declining to shake hands, analysts have noted, may also be seen as passing judgment on others who proffer their hand in greeting.
But Prof Rieger thinks things have changed and that now "it's socially acceptable to forgo some greetings in certain circumstances". In healthcare, for example, long-term efforts to reduce handshaking may have been helped by the pandemic.
"Now it's much easier to say, 'In this hospital or in this physician['s clinic], we don't shake hands. We smile and say hello,'" he says.
Just as the long-term effects of the pandemic on our social habits may vary according to the social or professional setting, so they may not be consistent from one country to the next.
Prof Rieger says that before the pandemic, kissing as a greeting had become popular among young women in Germany, but such less-established practices may never return.
"I think these really new ways of behaving that are not established in the whole population will have the hardest time to survive. It's easiest to drop them," he says.
By contrast, in countries such as France, where the greeting has a long tradition, he suggests it is less likely to disappear because of the upheaval of the past two years. The kiss is also, of course, an established greeting in parts of the Middle East.
As familiar forms of greeting return, at least in some circumstances, so more recent arrivals like the fist or elbow bump introduced in their place may fade away.
"In five years, people will think it's funny if someone is doing it: 'We just don't have any tradition [of this]. It's weird,'" Prof Rieger says.

NATIONAL COVID-19 PREPAREDNESS PLAN

MARCH 2022

The White House

Prepare to Prevent the Next "Disease X"

Fact checked by Robert Carlson, MD
Source: https://www.precisionvaccinations.com/prepare-prevent-next-disease-x

Mar 01 – 'Vaccines are at the heart of how modern societies counter infectious disease threats. They are our most potent tool against pandemic risks and will be critical to any future response," wrote Dr. Richard Hatchett, CEO of the Coalition for Epidemic Preparedness Innovations (CEPI).
"The faster an effective vaccine is developed, the faster an incipient pandemic can be contained and controlled."
Excerpts for Dr. Hatchett's December 2021 post are inserted below:
"The X in "Disease X" stands for everything we don't know.
It's a new disease, about which we will know very little when it first emerges: it may or may not be deadly, highly contagious, and a threat to our way of life.
We also don't know when or how it will come across the viral frontier and infect people.
But we do know that the next Disease X is coming, and we must be ready.
In many ways, the COVID-19 pandemic is 'proof of concept' for the prototype-vaccine approach to rapidly developing vaccines against new viral threats.

The aspiration of the CEPI is for the world to be able to respond to the next "Disease X" with a new vaccine in just 100 days.
That's just three months to defuse the threat of a pathogen to cause a pandemic.
Coupled with improved surveillance providing early detection and warning, and with swift and effective use of non-pharmaceutical interventions, delivering a vaccine in 100 days would give the world a fighting chance to extinguish the existential threat of a future pandemic virus.
Before the SARS-CoV-2 virus emerged, the previous vaccine-development record was for a live attenuated mumps vaccine, which took less than five years.
By comparison, the 326 days it took from the SARS-CoV-2 virus being identified to bring a COVID-19 vaccine into emergency use represented a quantum leap.
With tightening and shortening at each development stage and rethinking how we establish safety and efficacy for emergency response vaccines, cutting that timeline to 100 days is entirely feasible.
Scientifically, it's about making advances across the whole life cycle of pandemic preparedness—from the moment a new pathogen is identified, through the rapid prototyping of a vaccine candidate, the testing and authorization of that vaccine to get it into the arms of people at risk.
Not all new diseases have pandemic potential.
There are around 260 viruses—belonging to roughly twenty-five viral families—known today to be able to infect humans.
Realistically, we can't create individual new vaccines against several hundred or more potential or developing threats, let alone the 1.6 million or so more viral species that may exist in mammal or bird hosts and have yet to be discovered, but we can develop vaccines against prototypes of these threats.
In other words, we can focus our efforts on pathogens that exemplify some or all of the worst traits of a particular viral family.
For several years before the emergence of SARS-Cov-2, scientists were already working on vaccines against MERS and SARS, pathogens from the same coronavirus family.
What they learned enabled them to pivot quickly and respond at lightning speed to the new virus, laying the groundwork for the record-breaking effort to develop COVID-19 vaccines.
Scientists have been honing so-called rapid-response platforms to make "plug-and-play" vaccines. Some used mRNA technology, and others, like the University of Oxford's ChAdOx, used viral vectors.
These innovations empower vaccine makers to 'plug' in the genetic code from a novel coronavirus that would trigger a protective immune response.
In this way, when a newly emerging virus comes across the frontier—and that is most certainly a "when" and not an "if"—we'll have banked a vast amount of data on safety and immunogenicity regarding platform technology and the antigens of viruses that are closely related, if not precisely the same, as the new Disease X.
Creating the vaccine library could mean developing as many as 100 prototype vaccines to ensure we've got something in the knowledge bank to help us cover almost any threat.
If there's one thing we found out during the COVID-19 crisis, it's that pandemics are devastatingly expensive.
Unfortunately, being correctly prepared doesn't come cheap.
By the end of 2025, it is forecast that COVID-19 will have cost the world $28 trillion over five years. The human cost is something we will never quantify, but its effects will undoubtedly reverberate for generations.
For its part, CEPI has a $3.5 billion pandemic-busting plan that will kickstart and coordinate this work.
Compared with the trillions lost to COVID-19, at $3.5 billion, this plan is not only value for money; it's exactly what the world needs to ensure that our children never again face the hardship and loss we've had to endure from COVID-19," concluded Dr. Hatchett's blog post.
In the U.S., the government has been focused on preparing for an influenza pandemic for years.
The U.S. CDC says the annual 'flu shot' does not prevent zoonotic influenza infections in humans.
Pandemic influenzas are novel contagious respiratory diseases past between people in which the severity is unpredictable because human immune systems have not established natural defenses.
The most recent influenza pandemic occurred in 2009, which caused up to 400,000 deaths globally, with about 12,000 people in the U.S.
And during 2022, the U.S. Department of Agriculture's Animal and Plant Health Inspection Service has already confirmed avian influenza in 'birds' in various states. However, in China, human cases of avian influenza A(H5N6) and related fatalities have been reported by Mainland health authorities in 2022.

The U.S. government is focused on these threats. Recently, the U.S. National Influenza Vaccine Modernization Strategy and the White House American Pandemic Preparedness Plan outlined their priorities.
And the CDC's Influenza Risk Assessment report was recently issued in Dec. 2021. Furthermore, on Feb. 25, 2022, the U.S.'s BARDA requested that Seqirus provide pandemic influenza vaccines (AUDENZ) and adjuvants for pre-pandemic stockpiling or for manufacture to support rapid response to an influenza pandemic or other public health emergency.

U.S. NIH Ranks COVID-19 Treatments

Fact checked by Robert Carlson, MD
Source: https://www.precisionvaccinations.com/us-nih-ranks-covid-19-treatments

Mar 02 – The U.S. NIH's COVID-19 Treatment Guidelines Panel today announced a change to its previous recommendations for COVID-19 treatments.
The purpose of this new NIH statement is to provide clinicians with guidance on the role of bebtelovimab a U.S. FDA Authorized monoclonal antibody treatment, as an additional option for this patient population.
For nonhospitalized patients with mild to moderate COVID-19 who are at high risk of progressing to severe disease, the Panel recommends using one of the following therapies, listed in order of preference:

- **Nirmatrelvir** 300 mg with ritonavir 100 mg (Paxlovid) orally twice daily for five days, initiated as soon as possible and within five days of symptom onset in those aged ≥12 years and weighing ≥40 kg.
- **Sotrovimab** 500 mg as a single intravenous infusion (IV), administered as soon as possible and within seven days of symptom onset in those aged ≥12 years and weighing ≥40 kg.
- **Remdesivir** 200 mg IV on Day 1, followed by remdesivir 100 mg IV once daily on Days 2 and 3, initiated as soon as possible and within seven days of symptom onset in those aged ≥12 years and weighing ≥40 kg.
- **Bebtelovimab** 175 mg as a single IV infusion, administered as soon as possible and within seven days of symptom onset in those aged ≥12 years and weighing ≥40 kg, ONLY if none of the preferred therapies are available, feasible to deliver, or clinically appropriate.
- **Molnupiravir** 800 mg orally twice daily for five days, initiated as soon as possible and within five days of symptom onset in those aged ≥18 years, ONLY if none of the preferred therapies are available, feasible to deliver, or clinically appropriate.

As noted above, multiple therapeutic agents are currently available and recommended by the Panel to treat nonhospitalized patients with mild to moderate COVID-19 who are at high risk of disease progression, while Omicron is the predominant variant in the U.S. The Panel favors ritonavir-boosted nirmatrelvir, sotrovimab, or remdesivir as the preferred therapies for these patients, primarily based on a 79% to 88% reduction in hospitalization or death in treated patients, as well as on the agents' in vitro activities against the Omicron VOC. The Panel's recommendation on bebtelovimab is primarily based on laboratory data showing its potent activity against the Omicron VOC, its BA.1 and BA.2 subvariants, other VOCs, and on limited clinical trial data.
The assessment of the clinical efficacy of bebtelovimab is limited to 1 small, Phase 2, randomized, placebo-controlled trial in patients at low risk of disease progression and one small randomized controlled trial that compared bebtelovimab to an anti-SARS-CoV-2 mAb combination of bamlanivimab, etesevimab, and bebtelovimab in patients at high risk of disease progression.
More detailed information regarding these therapies can be found in Therapeutic Management of Nonhospitalized Adults With COVID-19.

Robert Carlson, M.D., serves on the Medical Advisory Board at Precision Vax LLC. Dr. Robert Carlson was the Chief, Ambulatory Care at Southeast Alaska Regional Health Consortium. His specialties include Family Medicine and Geriatric Medicine. Dr. Carlson is a graduate of the Columbia University College of Physicians and Surgeons, NY, NY; the Columbia-Presbyterian Alumni Society awarded him a Distinguished Alumni Award.

U.S. military's innovative device will be used to deal with biological threats

Source: https://i-hls.com/archives/113348

Feb 28 – The U.S. military had developed a portable device to take samples of various tests before Coronavirus spread, and now it has a commercial version.

The U.S. military's Chemical-Biological Center in Maryland and TechLink, the Department of Defense's technology mediator, have announced licensing agreements for the IP package that includes colorimetric sensors, which detect light, and VK3, which is a chemical- biological sampling device.

The patent registration period for chemical-biological sampling kits was extended by 20 years by this invention. The intellectual property includes both a device and a method for collecting, analyzing, and identifying solid or liquid chemical and biological samples. In time, this unique method enables the identification of reactions and the creation of classifications for a wide range of chemicals and biological substances.

According to iotworldtoday.com, It is now possible for various companies to license small, lightweight devices that detect atmospheric threats from a biological source, such as viruses. **The device uses filtered UV light (LED) to survey ambient air flowing naturally into the sample chamber in the range of 260-380 nanometers.** A constitutive plate coated with gold nanoparticles, hydroxyl apatite, and aliphatic-based polymers. Then photodiodes sense to **detect fluorescence** and determine whether a targeted biological material is present in the sampling environment.

Additionally, this technology can be applied in a variety of ways, including attaching it to clothing or masks.

The Soviet-era Russian laboratory where Putin's 'bioweapon arsenal of smallpox, anthrax and Ebola is being kept'

Source: https://www.dailymail.co.uk/news/article-10569361/The-Soviet-era-Russian-laboratory-Putins-bioweapon-arsenal-kept.html

Mar 03 – It may look like a villain's lair straight out of a **James Bond** film.

But this is the Soviet-era facility in Siberia where **Vladimir Putin**'s arsenal of bioweapons may be being housed today.

The State Centre for Research on Virology and Biotechnology in Novosibirsk Oblast is in possession of devastating diseases like smallpox and anthrax, as well as more recent killer pathogens like **Ebola**.

Opened during the height of the Cold War in 1974 as a bioterrorism research centre, it is still one of **Russia**'s most heavily guarded sites, fenced off with barbed-wire with armed soldiers permanently stationed at its gates.

The 70,000sqft centre is about the same size as a football pitch and is one of 100 research and administrative buildings in the facility, known in Russia as 'Vector'.

It is one of just 59 maximum-security biolabs in the world, a status it shares with the Wuhan Institute of Virology — the site at the centre of the origins of the Covid pandemic.

Vector has clearance to handle the world's deadliest pathogens and workers responsible for studying the viruses wear military green, full-body hazmat suits.

The secretive level four facility is nestled in the foothills of southwestern Siberia on the border of Kazakhstan, one of the harshest and most isolated places on earth, where temperatures can plunge to as low as -35C in winter.

Russia claims the lab, one of a dozen involved in the USSR's manufacturing of bioweapons, shut down research into the weapons in 1992 after the fall of the Soviet Union.

Officially, the lab now focuses on developing vaccines for lethal viruses. Last year it launched research into prehistoric viruses found in paleolithic horses recovered from melted permafrost in Siberia.

But a US State Department report last year claimed Russia 'maintains an offensive biological weapons program' despite the country insisting it had ceased such research.
It comes after the US ambassador to the United Nations claimed that Putin could use bioweapons to overthrow the Ukrainian Government, warning 'nothing is off the table' for the Russian dictator.
Russia itself has accused the US of developing bioweapons in Ukrainian labs as part of its justification for the war, although these claims have been denied by global experts.
Former US officials and non-proliferation experts also insist the labs are working to detect and prevent the spread of bioweapons, and have also helped in containing disease outbreaks.
The lab hit the headlines in 2019 when a gas explosion left one worker with second and third degree burns.
Bosses were forced to deny that the fire had exposed the public to pathogens stored inside.
Fifteen years earlier, lab worker Antonina Presnyakova died after she accidentally pricked herself with a needle which contained the Ebola virus.

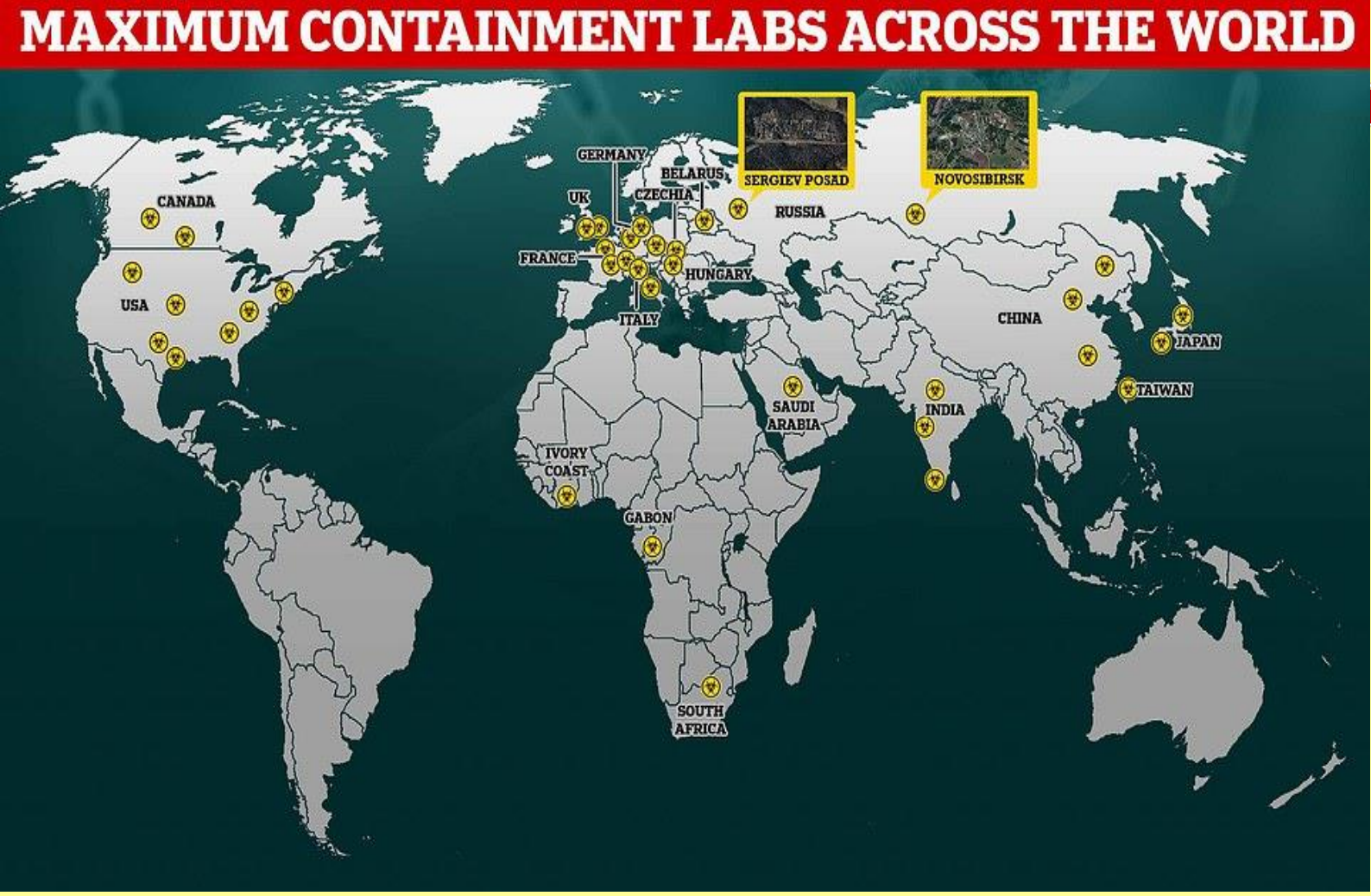
The State Centre for Research on Virology and Biotechnology in Novosibirsk Oblast (pictured) houses Russia's bioweapon arsenal of smallpox, anthrax and Ebola

And its former boss Professor Ilya Drozdov went missing in 2017 after being accused of stealing two million roubles — then worth around £27,000 — from the facility.
Professor Drozdov was put on Interpol's wanted list but has still not been found five years later, with authorities fearing he escaped abroad.
The facility — also called the Vector Institute — is believed to be one of the locations where Russia may have continued the bioweaponary scheme, which was named Biopreparat in the Cold War era.
A US state department report last year stated that Russia 'maintains an offensive biological weapons program and is in violation of its obligation under Articles I and II of the Biological Weapons Convention'.
The document said: 'The issue of compliance by Russia with the BWC has been of concern for many years.'

The convention, which forced the USSR to officially disband Biopreparat, is an international treaty banning countries from developing and stockpiling biological weapons.
Biopreparat agency — which spearheaded the country's biological warfare programme — was founded in 1974, the same year as the lab. It employed up to 40,000 workers across five military-focused institutes.
The Vector facility, which now employs around a third of the number 4,500 staff it had back in the Soviet era, is one of 59 level four security labs dotted around 23 different countries.
The largest facility in the world is the Wuhan Institute of Virology in China, where some believe the coronavirus pandemic began.
There are seven in the UK, the best known of which is the Defence Science and Technology Laboratory, run by the Ministry of Defence at its base in Porton Down, Wiltshire — where two labs research the threat from biological weapons.

Vector is also one of just two labs to house the deadly smallpox virus, with the other being the Centers for Disease Control and Protection (CDC) in Atlanta, US

Another high-security lab, run by the National Institute of Medical Research, is based in Camden, North London, and studies flu viruses capable of causing pandemics.
Experts are becoming increasingly concerned about the control and management of the dangerous organisms in these labs, with some warning that the safety measures are nowhere near sufficient to prevent a global pandemic caused by escaped viruses.
Filippa Lentzos, a senior lecturer in science and international security at King's College London, said 75 per cent of high-security labs around the world are sited in urban areas — increasing the likelihood of rapid transmission in the event of a virus escaping.
Vector is also one of just two labs to house the deadly smallpox virus, with



the other being the Centers for Disease Control and Protection (CDC) in Atlanta, US. They are the only facilities in the world allowed to keep the virus under an international agreement.

They are both inspected for safety by the World Health Organization (WHO) every two years, with the Vector Institute's last check-up coming in 2019 before the start of the pandemic.

The last naturally occurring case of smallpox was in 1977 and by 1980 the World Health Organization had declared it globally eradicated.

Smallpox is estimated to have killed up to 300million people in the 20th century.

Scientists at the lab had also previously weaponised Marburg virus — which kills 88 per cent of people that it infects.

A researcher who injected himself with the virus and died in 1988 is reportedly buried in a zinc-lined grave at a cemetery in the lab complex.

His death came 16 years before Ms Presnyakova accidentally pricked herself with Ebola and died while working in the lab.

In 2017, Professor Drozdov disappeared without a trace after a complicated legal wrangle.

He was head of the facility for five years and knew some of Moscow's biggest biological secrets.

A court ordered Drozdov to be arrested 'in absentia' over alleged fraud, in a mysterious case linked to Vector which was only launched four years after he left the research centre, reported **The Siberian Times**.

After leaving the institute in 2010, he returned to the southern Russian city of Saratov, where he had earlier headed another major complex called Russian Scientific Research Anti-Plague Institute 'Microbe', providing protection against dangerous deceases like bubonic plague, anthrax, and cholera.

Colleagues at Vector claimed that as director he paid 'exorbitant' salaries to executives, while laboratory workers received 'humiliatingly low wages'.
And in 2019 the lab made the news again when a gas cylinder explosion threatened to leak some of its deadly viruses.
Russia claims there is no sustained threat after a gas cylinder exploded on the fifth floor.
Authorities scrambled 13 fire engines and 38 firefighters to tackle the blaze — which the lab claims covered 30 square metres.
The mayor of Koltsovo claimed that no biologically hazardous materials were released in the explosion.
Since the Soviet Union collapsed, the United States has invested an estimated £7.5million at Vector to encourage the site to abandon bioweapon research in favour of vaccine development.
The lab claims it now only works on vaccine research and is no longer involved in biological warfare.
In recent years Vector has been involved in efforts to find cures and antidotes to killers such as bubonic plague, anthrax, hepatitis B, HIV and cancer.

Health care workers don unnecessary protective gear. The CDC and WHO needs to update their PPE guidance

By Bruce Farber and Aradhana Khameraj
Source: https://www.statnews.com/2022/03/04/health-care-workers-donning-unnecessary-protective-gear/

James Samuel Pope removes a gown after seeing a patient with Covid-19 in the ICU at Hartford Hospital in Hartford, Conn. Disposing of unnecessary garb is costly and damages the environment. *JOSEPH PREZIOSO/AFP via Getty Images*

Mar 04 – Every time we enter a Covid patient's room, we first don gloves, and a disposable gown. When we come out of the room, we remove that gear and put it in one of the many bulging disposal bags lining the halls of our hospital. We go through the same process for the next patient, as do health care workers across the country and around the world. It would not be uncommon for this to happen 30 times a day for each patient as nurses, physicians, aides, and others provide care.
Multiply our actions by the thousands of health care workers who see patients every day, and the nearly 800 days since Covid-19 was declared a public health emergency in the U.S. and around the world, and the scope of the disposal problem becomes huge.
Donning and doffing personal protective equipment (PPE) made sense in early 2020, when Covid-19 began its relentless march around the globe. It was prudent to institute various infection-control practices because no one knew then how SARS-CoV-2, the virus that causes Covid-19, was transmitted.
As the pathogen spread, health care workers were often infected with it. **In our health care system, Northwell Health, more than 20 of our colleagues died of Covid-19 during the first three months of the pandemic**. Frantic attempts to obtain enough personal care equipment to protect front-line workers became a major responsibility of health systems across the country.
Given all the uncertainty about viral transmission, the Centers for Disease Control and Prevention and the World Health Organization conservatively assumed the virus could be transmitted by droplets, aerosols, or direct contact. The transmission of pathogens spread droplets and aerosols can be prevented by using masks and eye protection, which is what health care workers have traditionally used when seeing patients who have or might have

by

influenza. Gowns, gloves, and other gear are needed to prevent the transmission of pathogens spread by direct contact.
Early in the pandemic, people were being urged to disinfect everything they touched, including their packages. Hand sanitizers are still present in virtually every public venue, including schools. New York City spent hundreds of millions of dollars disinfecting the subways each night. Many other public venues still have special cleaning protocols. Current guidelines from the CDC and WHO require health care workers who provide direct care to patients to wear masks, protective eyewear or face shields, gowns, and gloves. Many health care workers have also requested to use scrubs, shoe covers, and bouffant hair coverings, items that were once supplied only to those working in operating rooms. Gowns, coverings, and gloves are to be replaced between each patient contact. National data on the use of personal protective equipment are hard to come by. Our health system alone, which is the largest provider of health care in New York State, used more than 2.5 million isolation gowns a month during the first wave of Covid-19 in March and April 2020. During the Omicron wave of December and January, the number had dropped to about 800,000 per month, but that is still twice the volume used before the pandemic. There were also large increases in the use of scrubs, gloves, and bouffants. Similar patterns have occurred in hospitals and nursing homes across the country.
Health care systems have spent billions of dollars acquiring personal protective equipment. But there's a hidden cost that has largely gone unnoticed: All of these items are disposable, and medical waste is not recycled. Disposing this gear is costly, and damages the environment. The Environmental Protection Agency estimated that about 3 million tons of medical waste was generated yearly in the United States alone prior to the pandemic. On February 1, 2022, the WHO issued a report on the need to deal with the critical problem of medical waste and its adverse impact on the environment. It highlights the expense and climate implications of the incineration of the mostly plastic waste.
Given what is known today about the transmission of SARS-CoV-2, the CDC and WHO have failed to update their two-year-old policies on protective personal equipment that add to the waste problem. Although the CDC guidelines do not carry the force of law, states and medical centers feel an obligation to follow them.
Having taken care of hundreds of Covid-19 patients, we would have no concern about entering a patient's room without an isolation gown, because this infection is transmitted through the air via droplets and aerosols, not by touching a contaminated surface. Although hand washing is always an important part of infection prevention efforts, contamination of one's clothes, hair and shoes have never been shown to be a problem. It makes no sense for health care workers to gown up to go into the rooms of Covid-19 patients they often have fleeting contact with.
The CDC also needs to dial back on its messaging that cleaning surfaces and using hand sanitizer will decrease the risk of Covid transmission when there is no evidence to support either.
As Covid moves from a pandemic to an endemic infection, it is important to communicate accurately what really is important in preventing spread. There is no doubt that proper ventilation, the use of masks, and most importantly vaccines can prevent spread both inside and outside of hospital settings.
Using unnecessary garb to interrupt a theoretical mechanism of spread is not worth the cost and damage to the environment and erodes public confidence in the CDC and its expertise.

Bruce Farber is an infectious disease physician, chief of public health and epidemiology at Northwell Health, and chief of infectious diseases at North Shore University Hospital and LIJ Medical Center.
Aradhana Khameraj is a registered nurse and director of infection prevention at North Shore University Hospital.

EDITOR'S COMMENT: Suddenly we remembered the economy and the environment but are we ready to remove the protective gowns the moment that many physicians and nurses are moving around with unbuttoned white coats? The virus does not die the moment it exits the body and its airborne nature makes deposition on surfaces easy. The virus does enter the body only via the nose/mouth pathway but also via the eyes. Personal protective equipment is not comfortable that is for sure and PARP devices are expensive but human life is valuable and above money and pollution.

Arthritis drug reduces mortality in severe COVID-19, huge clinical trial finds

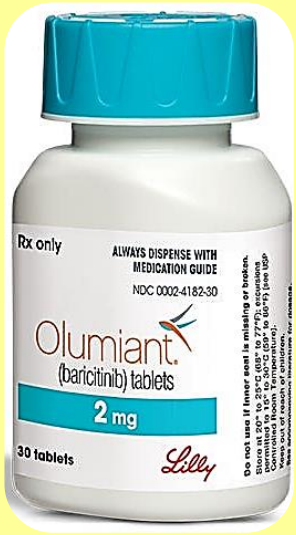
By Kai Kupferschmidt

Source: https://www.science.org/content/article/arthritis-drug-reduces-mortality-severe-covid-19-huge-clinical-trial-finds

Mar 03 – **Baricitinib**, an oral drug that dampens an overactive immune system and is commonly used by people with **rheumatoid arthritis**, reduced hospitalized COVID-19

patients' risk of dying by 13%, investigators of the world's largest trial of coronavirus treatments announced today. Patients in the study also took other drugs, such as the steroid dexamethasone, that act on the immune system and have already been shown to help against COVID-19. "Adding baricitinib on top of whatever else the doctors are currently prescribing … is beneficial," says University of Oxford clinical scientist Martin Landray, one of the principal investigators of the United Kingdom's Recovery trial.

Scientists and doctors welcomed the addition of the pill to the few treatments already shown to help treat severe COVID-19. "The pandemic is far from over, and we will likely have to contend with additional case surges in the future. It is heartening to have more mortality-reducing therapeutic options," says Emory University virologist Boghuma Titanji, noting that the baricitinib comes in generic versions that low- and middle-income countries can afford.



Baricitinib inhibits enzymes in the Janus kinase (JAK) family, which play an important role in regulating immune responses. Several smaller randomized trials had concluded that baricitinib helped against COVID-19, and it is already being used in some countries to treat severe cases. But some of these trials only included patients that did not receive other drugs targeting the immune system, and the Recovery trial is by far the largest test of the drug yet.

The researchers compared **4148 hospitalized patients** who received usual COVID-19 care plus baricitinib with 4008 hospitalized patients who only received the usual care. Of the patients who took baricitinib, 513 people (12%) died within 28 days of randomization versus 546 deaths (14%) in the control group, the researchers write in a preprint. That protective effect is smaller than found in previous trials of the drug. The new result "is likely a better reflection of the actual treatment effect," says Eric Topol, director of the Scripps Research Translational Institute, because the "finding reflects a more current, real-world background of standard treatments for severe COVID." A meta-analysis of Recovery and the other eight completed trials that investigated baricitinib or another JAK inhibitor suggests a 20% reduction in deaths, the researchers write.

The COVID-19 treatment landscape has changed dramatically since the Recovery trial announced the first therapy shown to be effective, in June 2020: It found that dexamethasone, a widely available steroid, reduced deaths in ventilated patients by one-third. In February 2021, the Recovery trial announced that tocilizumab, another drug acting on the immune system, further reduced deaths in hospitalized patients taking dexamethasone. Now, baricitinib reduces deaths even further. "This is a drug that is just as effective as tocilizumab," Landray says. "The effect size is very similar."

Drugs targeting the virus, rather than the body's response to it, have also proved their worth. Intravenous antibody treatments given early in disease have been shown to protect some patients against hospitalization. And more recently, oral antivirals from Merck and Pfizer have demonstrated they can cut COVID-19 deaths if given early enough. This week, the World Health Organization (WHO) updated its treatment guidelines to include the first such drug: Merck's molnupiravir. "As this is a new medicine, there is little safety data," the agency cautioned, recommending prescribing only for those at highest risk of hospitalization and active monitoring for side effects.

But the rise of the Omicron variant of SARS-CoV-2 has also challenged progress in treating COVID-19. Several antibody treatments are ineffective against this variant, which now dominates infections across the globe. In its recent guideline update, WHO recommended that an antibody cocktail, casirivimab-imdevimab, only be given when a different variant has caused an infection. There are also indications that an antibody therapy called sotrovimab, one of the only antibodies known to work against the Omicron subtype BA.1, has lost some efficacy against the spreading BA.2 subtype of Omicron, says Leif Erik Sander, an immunologist at Charité University Hospital in Berlin. "Still, we are in a much better position now to treat the sick patients we see in the hospital than we were a year ago." And other treatments are on the horizon. For instance, after Eli Lilly and Company's cocktail of the antibodies etesevimab and bamlanivimab was found ineffective against the Omicron variant, the company brought forward a new antibody, bebtelovimab. It received emergency use authorization from the U.S. Food and Drug Administration in February. Dozens of other drug candidates in testing, with results expected within months.

The **Recovery trial**, which started in March 2020, has so far enrolled more than 47,000 hospitalized patients. Most have been treated at U.K. clinics, but the trial has expanded to include locations in South Africa, Ghana, Vietnam, Indonesia, and Nepal. In addition to identifying three drugs that treat COVID-19, the study helped rule out several others, including aspirin, the antimalarial hydroxychloroquine, the HIV drug combination lopinavir/ritonavir, and colchicine, an anti-inflammatory drug.

Recovery is still testing molnupiravir, sotrovimab, and the diabetes drug empagliflozin. It is also testing higher doses of corticosteroids such as dexamethasone in the hope that using them alone would work just as well as combining them with more expensive immune-modulating drugs.

Kai Kupferschmidt is a contributing correspondent for *Science* magazine based in Berlin, Germany. He is the author of a book about the color blue, published in 2019.

Despite Putin's nuclear bluster, the use of biological weapons in Ukraine is much more likely

By Ben Wright

Source: https://www.telegraph.co.uk/global-health/terror-and-security/despite-putins-nuclear-bluster-use-biological-weapons-ukraine/

Mar 05 – In the early hours of August 21, 2013 rockets containing the nerve agent sarin hit the Ghouta suburb of Syria's capital. It was the deadliest chemical weapon attack since the Iran-Iraq war. Estimates vary wildly but somewhere between 281 and 1,729 men, women and children died before dawn broke over Damascus.

Eyewitnesses described how victims managed to escape from their houses, only to collapse in the street with foam bubbling out of their mouths and noses. Those exposed to a lethal dose of the nerve agent died from suffocation as a result of respiratory paralysis. The production and stockpiling of sarin was outlawed in 1997 by the Chemical Weapons Convention.

In abhorrence at the breaking of what defence experts refer to as the "one hundred year taboo" against the use of chemical and biological weapons, a coalition of countries headed by the US and France prepared to carry out air strikes against the regime of Syrian president Bashar al-Assad. But despite crossing what US president Barack Obama and many in the West had long said was an indelible "red line", a last-minute deal was done in which Syria agreed to destroy its stockpiles of illegal chemical weapons.

Andy Weber, Obama's assistant secretary of defense responsible for nuclear, chemical and biological defense programmes, was the man tasked with finding, removing and destroying this hideous arsenal. Over the course of several weeks 1,300 tons of mustard gas, and the nerve agents sarin and VX were destroyed by his team. Despite this, chemical agents – most notably chlorine – would be used repeatedly by the Russian-backed Assad regime in Syria.

This week Weber, who now sits on the Council on Strategic Risks, warned that chemical – or even disease-inducing biological – weapons may be used in Ukraine. Indeed he believes the chances of a chemical or biological attack being launched by the Russian military are much higher than the risk of a nuclear strike.

"Despite Putin's reckless bluster on nuclear weapons, the use of biological weapons in Ukraine is much more likely," Weber told The Telegraph this week.
"The USSR had the largest biological weapons programme the world has ever known and parts of it have continued uninterrupted since the break-up of the Soviet Union. Russia has three military biological facilities that have never, to our knowledge, been visited by non-Russians. We don't fully know what they're up to."
As if on cue, Russian foreign minister Sergei Lavrov publicly raised the spectre of chemical and biological weapons on Tuesday. Russia, he claimed – without providing evidence – had information that the US was worried about the prospect of losing control over secret Western chemical and biological laboratories in Ukraine.
"I think, and I won't reveal secrets, but we have data that the Pentagon is very much concerned about the fate of chemical and biological facilities in Ukraine," Lavrov said during a speech at the United Nations HQ in New York on Tuesday. "They are worried that they will lose control over these facilities."
Western defence sources do not share this view. "Ukraine has no such weapons labs," says Rear Admiral John Gower, a former assistant chief of defence staff and long-term counterpart to Weber at the Ministry of Defence, where he specialised in nuclear weapons and counter-CBRN (chemical, biological, radioactive and nuclear) policy. "It is signatory to the Chemical Weapons Convention and the Biological and Toxin Weapons Convention – both of which have norms or inspections regimes with which Ukraine is compliant."
Weber worries the Kremlin is playing up a fictitious threat of weapons of mass destruction to create a justification – a so-called "false flag" – for Putin to widen his range of military options. He points out that this would follow the Syrian playbook: Assad's regime would blame Isis or al Qaeda affiliates whenever it conducted a chemical attack.
As Hamish de Bretton Gordon, the British Army's former chemical and nuclear weapons chief puts it: "The Putin playbook seems to have been developed in the last five years in Syria. Of course chemical weapons are part of it – particularly fighting in towns and cities."
The sickening images coming out of Ukraine over the last 48 hours certainly hark back to the destruction Assad and Russian forces unleashed on Aleppo and other Syrian cities, but is the use of chemical and biological agents really a clear and present danger in the current conflict?
And, if so, what makes Weber, one of the world's foremost authorities on weapons of mass destruction, so convinced Putin would use them ahead of nuclear?

Russia's willingness to use weapons of mass destruction

There is no doubt that Russia has a long history of producing chemical and biological weapons. It has also shown a willingness to deploy them both on home soil and abroad with terrifying and lethal results.
When Chechen rebels stormed a Moscow theatre in 2002, Russian troops pumped in a gas containing carfentanil, an opiod 10,000 times more powerful than morphine. The idea was to incapacitate the terrorists, but the gas ended up killing 120 of the hostages.
Then there have been attacks using WMD not just in continental Europe, but in Britain.
In November 2006, Russian agents poisoned Alexander Litvinenko, a former KGB officer, in a London hotel with the radioactive isotope polonium 210. He died in hospital in agony three weeks later of acute radiation poisoning. No charges were ever brought but the killers left a radiation trail stretching all the way back to Russia.
"The evidence suggests that the only credible explanation is in one way or another the Russian state is involved in Litvinenko's murder," concluded Scotland Yard at a non-judicial public hearing in 2014–2015. In September 2021, the European Court of Human Rights ruled that Russia was responsible for the murder and ordered Russia to pay Litvinenko's wife €100,000 in damages plus €22,500 in costs.
If a nuclear poisoning was not evidence enough of Russia's willingness to deploy WMD, in 2018, two active Russian military intelligence officers poisoned Sergei Skripal, a former Russian military officer and double agent for British intelligence, in Salisbury with the nerve agent novichok.
"The fact that Russia used a chemical weapon in Salisbury demonstrates their willingness to use weapons of mass destruction in an attack," says Weber. "The perfume bottle that was found had 10,000 lethal doses. The mission of those two GRU operatives was to kill one person. But it demonstrates that one or two covert operatives delivering chemical or biological weapons could kill or incapacitate tens or hundreds of thousands of people."
Weber reasons that if Putin has weapons of mass destruction and was willing to use them in peacetime there will be little or nothing to hold him back during a hot war in Ukraine.
"In the past there were terrorist groups that had the intent to develop and use weapons of mass destruction, but never really developed the capability. Now you have this new

phenomenon: state-sanctioned covert operations using weapons of mass destruction. And that's a very real possibility in the current scenario. "There's been a Soviet-style disinformation campaign for over a decade, accusing the US of creating biological weapons labs around the periphery of Russia. In the last few weeks, the same disinformation campaign has been directed at Ukraine. And I fear that that is a cover for an impending false-flag attack." While chemical weapons, including the nerve agents sarin and novichok, are terrifying, biological weapons – which spread disease and pestilence – could be much worse.

President Richard Nixon committed the US to destroying its stockpiles of biological weapons in 1969, but the Soviet Union maintained its programme, unbeknownst to the Americans, in what Weber describes as the worst intelligence failure of the Cold War. There is a wide spectrum of biological weapons. They range from bugs that can cause food poisoning within a specific geography to man-made plagues. "It's very hard to attribute these attacks," says Weber. "With chemical attacks it's easier, because the impact is immediate. But with a bioweapon, it might be four days or a week before people even start displaying symptoms and by then the perpetrators are long gone."

Nuclear sabre-rattling

On nuclear weapons, many experts believe Putin is bluffing and simply trying to win advantage by shifting the focus from areas where he is weak, like the economy, to an area where Russia is more equal to the West. Nevertheless, Weber warns that Russia may be willing to use smaller battlefield nukes – and that this poses a stark risk of miscalculation. "The types of weapons that President Putin has threatened to use are these so-called theatre nuclear weapons – tactical nuclear weapons or non-strategic nuclear weapons – that are delivered by the same missiles that he's using today.

"This whole concept that you can have a limited nuclear war and that you can control escalation, is a myth. Unfortunately, it's one that Putin has bought into. It's called an "escalate-to-de-escalate doctrine". The concept is that they will use one small nuclear weapon in Ukraine, in Belarus or even on their own territory and get everybody to back off. That's not a good plan."

Nato has been judicious and clear about not getting involved militarily in Ukraine but this would change "the second Russia detonates a nuclear weapon", says Weber. Indeed, on Wednesday, the Pentagon delayed a long-planned missile test in order that it not be "misconstrued" by Moscow.

"Putin is surrounded by sycophants; he's been very isolated over the last two years due to his fear of Covid," says Weber. "It's clear that he's been very surprised and upset by the reaction to his invasion of Ukraine. "If they, God forbid, use even one nuclear weapon, the world will change at that moment and I think it would likely escalate to a full nuclear exchange. I'm worried that, if Putin delegates to the military leadership, their use could become more likely." "We know that the actual warheads are in central storage locations. If we start to observe those being mated with the delivery systems in Belarus, that would be very, very, very concerning."

But for the moment Nato and the West are not rising to Putin's nuclear bait. "We don't want to respond to Putin's recent nuclear saber-rattling by talking about nuclear weapons or raising our own alert status," says Weber. "This is a conventional conflict and needs to stay conventional."

Combating biological weapons

As for protection against chemical and biological weapons, Weber believes the UK should invest in a new biosecurity centre – doubling down in two areas in which the country is at the forefront of scientific breakthroughs: mass genetic sequencing and mRNA vaccines. Huge leaps have been made in this area in the past couple of years. When a Chinese laboratory posted the SARS-CoV-2 sequence, Moderna, a company that has long been supported by the US Defense Advanced Research Projects Agency, developed a mRNA vaccine prototype within days. Such techniques should be ramped up to help combat biological weapons as well as naturally-occuring pandemics. "Putin's over-reaching. It's very troubling that an unchecked leader is acting in such a reckless way. It's the beginning of his end. But in the interim, we've got to survive it."

Ben Wright is a columnist and associate editor for The Telegraph. He was previously business editor and before joining the Telegraph was City correspondent at the Wall Street Journal and editor of Financial News.

EDITOR'S COMMENT: It will take some time to read objective articles regarding CBRN threat assessment because even good journalists feel that they have to be in line with national policies. The fact is that countries that had, in the past, chemical or biological weapons, know how to produce them again taking into advantage modern dual technologies and dissemination means (i.e., drones). Besides, some say that in love and war everything is permitted.

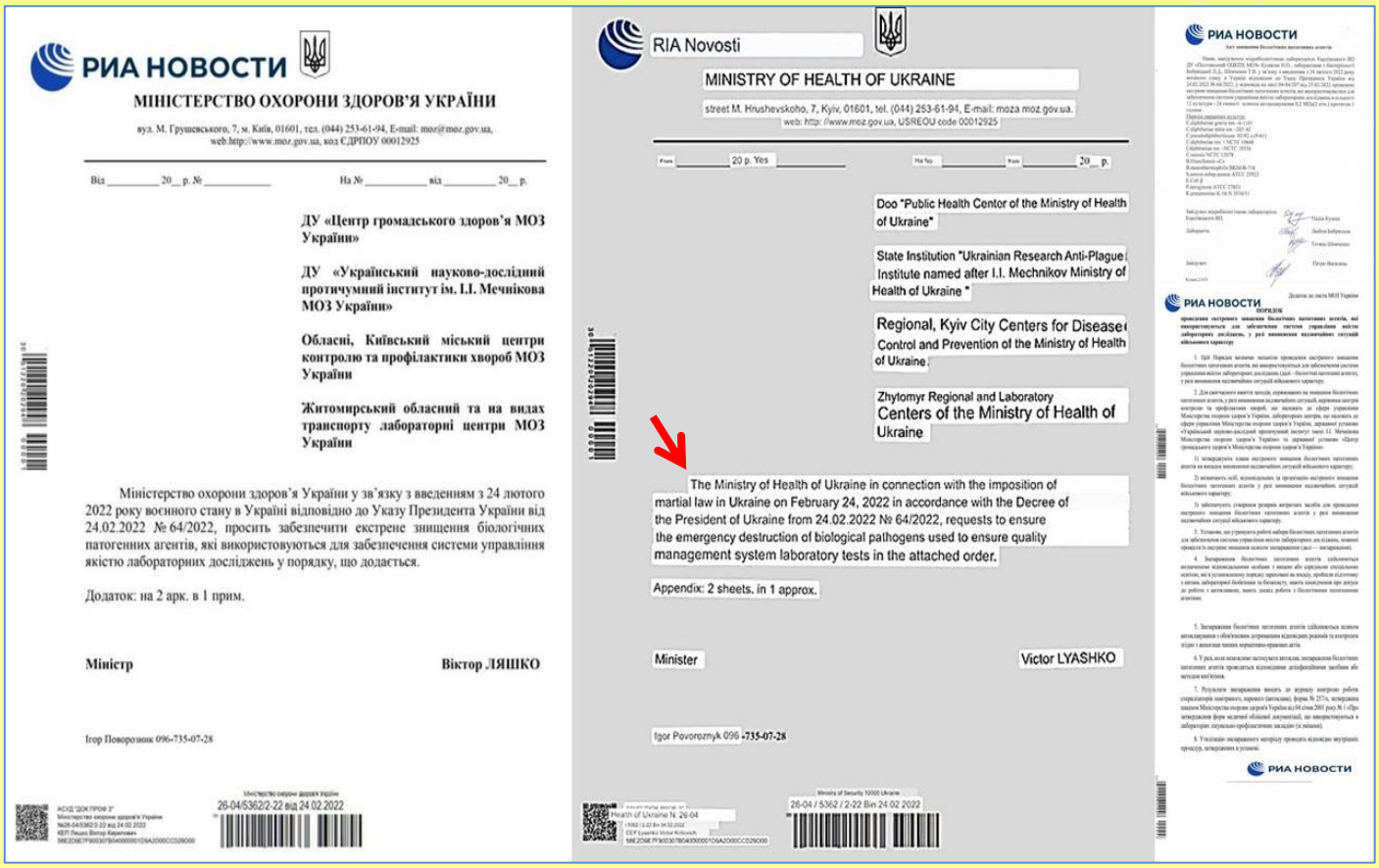
Russia targets Ukrainian arms industry – Factories located in residential areas says Zelensky

Source: https://newsbulletin247.com/world/58276.html

Mar 06 – Russia's armed forces intend to intensify their attacks on Ukraine's arms industry, a Russian Defense Ministry spokesman said on Sunday.

"As part of the task of demilitarizing Ukraine, the Russian armed forces will target Ukrainian arms companies," he said, striking "high-precision strikes," said Russian Defense Ministry spokesman Igor Konashenkov.

He further added that the Russian military had discovered that "traces of a biological weapons program were destroyed by the Kiev regime". He said Ukrainian forces had destroyed pathogens, including cholera and plague, on the first day of a Russian-led invasion on February 24. The Russian Defense Ministry released documents in Ukrainian, claiming that the program was funded by the United States.



РИА НОВОСТИ

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ

вул. М. Грушевського, 7, м. Київ, 01601, тел. (044) 253-61-94, E-mail: moz@moz.gov.ua, web:http://www.moz.gov.ua, код ЄДРПОУ 00012925

ДУ «Центр громадського здоров'я МОЗ України»

ДУ «Український науково-дослідний протичумний інститут ім. І.І. Мечнікова МОЗ України»

Обласні, Київський міський центри контролю та профілактики хвороб МОЗ України

Житомирський обласний та на видах транспорту лабораторні центри МОЗ України

Міністерство охорони здоров'я України у зв'язку з введенням з 24 лютого 2022 року воєнного стану в Україні відповідно до Указу Президента України від 24.02.2022 № 64/2022, просить забезпечити екстрене знищення біологічних патогенних агентів, які використовуються для забезпечення системи управління якістю лабораторних досліджень у порядку, що додається.

Додаток: на 2 арк. в 1 прим.

Міністр Віктор ЛЯШКО

Ігор Поворознюк 096-735-07-28

26-04/5362/2-22 від 24.02.2022

RIA Novosti

MINISTRY OF HEALTH OF UKRAINE

street M. Hrushevskoho, 7, Kyiv, 01601, tel. (044) 253-61-94, E-mail: moza moz.gov.ua, web: http: //www.moz.gov.ua, USREOU code 00012925

Doo "Public Health Centor of the Ministry of Health of Ukraine"

State Institution "Ukrainian Research Anti-Plague Institute named after I.I. Mechnikov Ministry of Health of Ukraine "

Regional, Kyiv City Centers for Disease Control and Prevention of the Ministry of Health of Ukraine

Zhytomyr Regional and Laboratory Centers of the Ministry of Health of Ukraine

The Ministry of Health of Ukraine in connection with the imposition of martial law in Ukraine on February 24, 2022 in accordance with the Decree of the President of Ukraine from 24.02.2022 № 64/2022, requests to ensure the emergency destruction of biological pathogens used to ensure quality management system laboratory tests in the attached order.

Appendix: 2 sheets. in 1 approx.

Minister Victor LYASHKO

Igor Povoroznyk 096 -735-07-28

26-04 / 5362 / 2-22 Bin 24 02 2022

РИА НОВОСТИ

Igor Konashenkov also said that Ukrainian fighters had flown to Russia, and warned that Moscow would consider any country allowing Ukrainian Air Force aircraft to use its airports was involved in the armed conflict.

Efficacy and safety of novel probiotic formulation in adult Covid19 outpatients: a randomized, placebo-controlled clinical trial

By Pedro Gutiérrez-Castrellón, Tania Gandara-Martí, Ana Teresa Abreu, et al.

Gut Microbes 2022

Source: https://www.medrxiv.org/content/10.1101/2021.05.20.21256954v1.full.pdf

Probiotics have been proposed as adjuvants for Coronavirus Disease 2019 (Covid19) but randomized controlled trials (RCT) are lacking.

Methods: Single-center, quadruple-blinded RCT. Symptomatic Covid 19 outpatients (aged 18 to 60 years) with positive SARS-CoV2 nucleic acids test were randomized to active (n=150; ≥2×10⁹ colony-forming units (CFU) of probiotic strains *Lactiplantibacillus plantarum* KABP022, KABP023 and KAPB033, plus strain *Pediococcus acidilactici* KABP021) or placebo (n=150), take **orally once daily for 30 days**. Oral acetaminophen was allowed and controlled as co-intervention. Primary endpoint included: i) proportion of patients in complete remission (both symptoms and nucleic acids test) or progressing to moderate or severe disease with hospitalization; ii) death rate and duration on Intensive Care Unit (ICU). Safety was assessed in all patients. This study is registered at ClinicalTrials.gov (NCT04517422).

Findings: 300 subjects were randomized (median age 37.0 years [range 18 to 60], 161 [53.7%] women, 126 [42.0%] having known metabolic risk factors), and 293 completed the study (97.7%). Remission was achieved by 78 of 147 (53.1%) in the active group compared to 41 of 146 (28.1%) in placebo (P<0.0001; ARR=25.0% [95%CI 14.1-35.9%]), still significant after multiplicity correction for the primary endpoint. No hospitalizations or deaths occurred during the study, precluding the assessment of efficacy on these endpoints. No serious adverse events occurred during the study. Replication studies with this probiotic formula are warranted.

Conclusion: Remission of symptoms was achieved in 53.1% of KABPO21 patients in the probiotic group, compared to 28.1% of patients in the placebo group (p<0.0001).

Genetic study reveals a causal link between blood type and COVID severity

Source: https://newatlas.com/health-wellbeing/causal-link-blood-type-covid19-severity-genetic-study/

Mar 06 – Very early in the pandemic doctors began tracking the association between COVID-19 disease severity and a patient's blood type. Now researchers have validated those early observations, finding several blood proteins are causally linked to an increased risk of hospitalization and death from COVID-19.

BLOOD TYPE	CAN GIVE TO	CAN RECEIVE FROM
A+	A+, AB+	A+, A-, O+, O-
O+	O+, A+, B+, AB+	O+, O-
B+	B+, AB+	B+, B-, O+, O-
AB+	AB+	EVERYONE
A-	A+, A-, AB+, AB-	A-, O-
O-	EVERYONE	O-
B-	B+, B-, AB+, AB-	B-, O-
AB-	AB+, AB-	AB-, A-, B-, O-

Some of the earliest observational studies to come out of Wuhan in 2020 pointed to a correlation between a person's blood type and their risk of serious illness from a SARS-CoV-2 infection. The general observation was that those with type A blood seemed to be at a much higher risk of hospitalization and death compared to those with type O blood.

A new study published in the journal *PLOS Genetics* has offered the clearest insight to date into the causal relationship between blood type and COVID-19 severity. The research used an analytical method called Mendelian randomization to assess the relationship between the gene variants that govern levels of blood proteins and COVID-19 disease outcomes.

"Causality between exposure and disease can be established because genetic variants inherited from parent to offspring are randomly assigned at conception similar to how a randomized controlled trial assigns people to groups," explained co-first author on the new study Vincent Millischer. "In our study the groups are defined by their genetic propensity to different blood protein levels, allowing an assessment of causal direction from high blood protein levels to COVID-19 severity whilst avoiding influence of environmental effects."

The researchers **screened over 3,000 blood proteins**, and COVID-19 severity was determined by either hospitalization or death.

One of the key findings was a causal association between COVID-19 severity and an enzyme known as ABO, which determines a person's blood type.

Christopher Hübel from King's College London said the new research did not interrogate the relationship between specific blood types and COVID-19 severity. However, he does point out the ABO findings do validate prior observational studies linking **type A blood with an increased COVID-19 risk.**

"The enzyme helps determine the blood group of an individual and our study has linked it with both risk of hospitalization and the need of respiratory support or death," said Hübel, co-last author on the study. "Our study does not link precise blood group with risk of severe COVID-19 but since previous research has found that proportion of people who are group A is higher in COVID-19 positive individuals, this suggests that blood group A is more likely candidate for follow-up studies."

Of course, there are a number of risk factors beyond blood type known to play a role in COVID-19 severity, from age to pre-existing illness. So these findings should not be a cause for concern to those with type A blood.

Instead, as co-last author on the study Gerome Breen explains, these findings help researchers investigate novel therapeutic pathways to help treat COVID-19. For example, several blood proteins were identified in the study as causally linked to a decreased risk of severe disease.

These proteins, known as adhesion molecules, play a role in the interactions between immune cells and blood vessels. The researchers hypothesize these adhesion molecules may be helping moderate the severity of late-stage COVID-19 and it may be possible to turn this discovery into a therapy to prevent sick patients deteriorating in hospital.

"What we have done in our study is provide a shortlist for the next stage of research," said Breen. "Out of 1,000s of blood proteins, we have whittled it down to about 14 that have some form of causal connection to the risk of severe COVID-19 and present a potentially important avenue for further research to better understand the mechanisms behind COVID-19 with an ultimate aim of developing new treatments but potentially also preventative therapies."

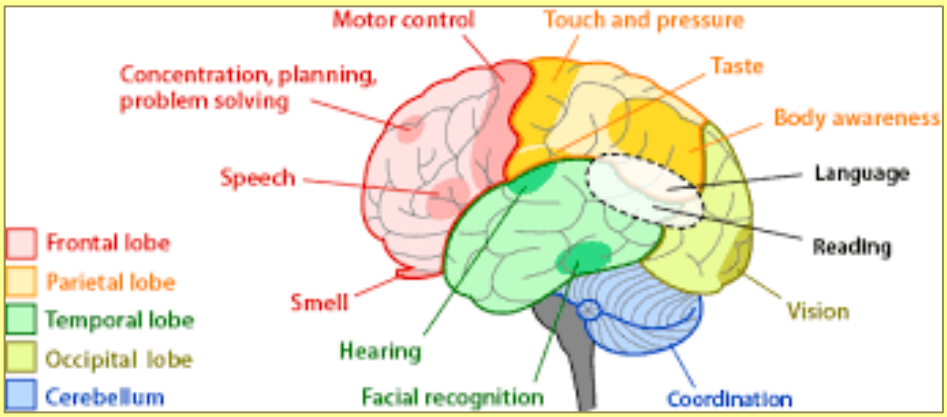
●▶ **The new study was published in the journal** *PLOS Genetics*.

Brain regions related to smell show decline following mild COVID-19

Source: https://www.ox.ac.uk/news/2022-03-07-brain-regions-related-smell-show-decline-following-mild-covid-19

Mar 07 – Researchers from the University of Oxford have used data from UK Biobank participants to look at changes to the brain on average 4.5 months after mild SARS-CoV-2 infection.

The findings, published in *Nature*, reveal tissue damage and greater shrinkage in brain areas related to smell. This new insight into the damaging effects of COVID-19 will contribute to our overall understanding of how the disease spreads through the central nervous system. Whether these effects persist in the long term, or are partially reversed, requires further investigation.



Research has already shown that COVID-19 may cause brain-related abnormalities, but most studies have focused on hospitalized patients with severe disease, and have been limited to post-infection data. The effects of SARS-CoV-2 on the brain in milder (and more common) cases were unknown until now, and investigating these cases could reveal possible mechanisms that contribute to brain disease or damage.

Professor Gwenaëlle Douaud and colleagues investigated changes in the brains of 785 participants in UK Biobank, a large-scale biomedical database and research resource. Participants were aged 51–81 and underwent two brain scans, on average 38 months apart, as well as cognitive tests. A total of 401 participants tested positive for infection with SARS-CoV-2 between their two scans, of whom 15 were hospitalised. The remaining 384 individuals, who did not get infected, were similar to the infected group in age, sex, and many risk factors, including blood pressure,

obesity, smoking, socio-economic status and diabetes.
The study, led by the Wellcome Centre for Integrative Neuroimaging at the University of Oxford, identified a number of effects, on average 4.5 months following infection, including a greater reduction in grey matter thickness in the regions of the brain associated with smell (the orbitofrontal cortex and parahippocampal gyrus). UK Biobank participants who had COVID-19 also displayed evidence of greater tissue damage in regions connected with the primary olfactory cortex, an area linked to smell, and a reduction in whole brain size. **These effects ranged from 0.2 to 2% additional change compared with the participants who had not been infected.**
On average, the participants who were infected with SARS-CoV-2 also showed greater cognitive decline between their two scans, associated with the atrophy of a specific part of the **cerebellum** (a brain structure) linked to cognition. Separately, the authors studied people who developed pneumonia not related to COVID-19, showing that the changes were specific to COVID-19, and not due to the generic effects of contracting a respiratory illness.
Professor Gwenaëlle Douaud, lead author on the study, said: 'Using the UK Biobank resource, we were in a unique position to look at changes that took place in the brain following mild—as opposed to more moderate or severe—SARS-CoV-2 infection. Despite the infection being mild for 96% of our participants, we saw a greater loss of grey matter volume, and greater tissue damage in the infected participants, on average 4.5 months after infection. They also showed greater decline in their mental abilities to perform complex tasks, and this mental worsening was partly related to these brain abnormalities. All these negative effects were more marked at older ages. A key question for future brain imaging studies is to see if this brain tissue damage resolves over the longer term.'
Professor Stephen Smith, senior author on the study, also from the Wellcome Centre for Integrative Neuroimaging, commented: 'Another strength of this study is that it investigated the same people at two different times. Importantly here, the first scan of UK Biobank participants was obtained before they became infected with SARS-CoV-2, and the second scan after infection. The fact that we have the pre-infection scan helps us distinguish brain changes related to the infection from differences that may have pre-existed in their brains.'
Professor Naomi Allen, Chief Scientist at UK Biobank, said: 'The UK Biobank COVID-19 Repeat Imaging study is the only study in the world to be able to demonstrate "before vs after" changes in the brain associated with SARS-CoV-2 infection. Collecting a second set of multi-organ imaging scans from some people who had been infected with SARS-CoV-2 and from others who had not been infected has generated a unique resource to enable scientists to understand how the virus affects internal organs. We are incredibly grateful to all of the UK Biobank participants for taking the time to be imaged more than once, to enable researchers to gain valuable insights into long term health effects of SARS-CoV-2 infection.'
These findings may be the hallmarks of the degenerative spread of COVID-19, either via pathways related to the sense of smell, inflammation or immune response of the nervous system, or a lack of sensory input owing to a loss of smell. The future vulnerability of the brain regions affected in these participants requires further investigation.

●▶ **The paper** 'SARS-CoV-2 is associated with changes in brain structure in UK Biobank' **by Douaud et al. can be read in *Nature*.**

Covid Can Shrink the Brain as Much as a Decade of Aging, Study Finds

Source: https://www.bloomberg.com/news/articles/2022-03-07/brain-shrinkage-cognitive-decline-found-months-after-mild-covid

Feb 07 – Even a mild case of Covid-19 can damage the brain and addle thinking, scientists found in a study that highlights the illness's alarming impact on mental function.
Researchers identified Covid-associated brain damage months after infection, including in the region linked to smell, and shrinkage in size equivalent to as much as a decade of normal aging. The changes were linked to cognitive decline in the study, which was published Monday in the journal Nature.
The findings represent striking evidence of the virus's impact on the central nervous system. More research will be required to understand whether the evidence from the Wellcome Centre for Integrative Neuroimaging at the University of Oxford means Covid-19 will exacerbate the global burden of dementia -- which cost an estimated $1.3 trillion in the year the pandemic began -- and other neurodegenerative conditions.
"It is a very novel study with conclusive data," said Avindra Nath, clinical director of the U.S. National Institute of Neurological Disorders and Stroke, who wasn't involved in the

research. "The findings are very intriguing, with important implications for the population at large."
The SARS-CoV-2 virus is widely considered a respiratory pathogen that attacks the lungs. Taking a narrow view of it, however, misses myriad neurologic complications -- including confusion, stroke, and neuromuscular disorders -- that manifest during the acute phase of the illness. Other effects like impaired concentration, headache, sensory disturbances, depression, and even psychosis may persist for months as part of a constellation of symptoms termed long Covid.
To investigate changes in the brain, neuroscientist Gwenaelle Douaud and colleagues leveraged the world's largest magnetic resonance imaging database. Initial MRI scans of the brains of 785 volunteers were taken before the pandemic began as part of U.K. Biobank research, which marries large-scale genomic and detailed clinical data for half a million people.

Image showing the greatest areas of reduced gray matter thickness between participants who'd had COVID-19 and those who hadn't. (Douaud et al., Nature, 2022)

A subsequent scan was taken an average of 38 months later. By then, 401 participants had tested positive for Covid. The uninfected remainder served as a control group that was similar to the survivors in age, sex, and many risk factors, including blood pressure, obesity, smoking, socio-economic status and diabetes. The participants in the study, aged 51 to 81, were mostly Caucasian.

'Quite Surprised'
"We were quite surprised to see some clear differences in how the brain had changed in the participants who have become infected," Douaud said in an interview. Whether the effects persist, or can be partially reversed as neuronal networks repair, requires further investigation, she said. "The brain is 'plastic' and can heal itself."
Among those infected an average of 4.5 months prior to their second scan, the researchers found a greater reduction in grey matter thickness in the regions of the brain associated with smell, known as the orbitofrontal cortex and parahippocampal gyrus. The finding may help explain the impaired olfaction many Covid patients experience, as a result of either direct viral damage or inflammation spurred by the body's immune response to the virus.
A loss of grey matter, which makes up the outer most layer of the brain, represents degeneration, said Leah Beauchamp, a neuropharmacologist at the Florey Institute of Neuroscience and Mental Health in Melbourne. "This is really concerning," she said.
The infected group also displayed a 0.2%-to-2% greater reduction in brain size compared with those who hadn't been infected and showed greater cognitive decline based on their performance undertaking complex tasks. This was associated with atrophy, or shrinkage, in

a specific part of the cerebellum -- an area at the back and bottom of the brain -- linked to cognition. Differences between infected and non-infected participants was more marked in older people.

'Identify the Mechanisms'

"What is going to be pertinent now is to identify the mechanisms that are leading to this degeneration in the acute phase of disease so that we can attempt to intervene," Beauchamp said. Studies of blood and central nervous system samples from patients are needed to tease out the mechanisms that result in these brain changes, said Serena Spudich, the Gilbert H. Glaser professor of neurology at Yale School of Medicine in New Haven, Connecticut. Recent research revealed the plasticity of brain connectivity and structure, she said. The findings suggest there may be renewal of damaged neuronal pathways that could ultimately result in full recovery for affected patients, she said. "We are fortunate to have extremely resilient brains that can function with many potential insults without experiencing any impairment," she said in an email. "Hopefully, these neuroimaging findings equate to few clinical consequences in most people who are infected with SARS-CoV-2."

Study participants weren't selected because they were experiencing long Covid symptoms. It's possible some of the findings were incidental and have no impact. Still, both Nath and Beauchamp said it will be important to identify whether long Covid symptoms correlate with brain abnormalities or the results of any other pathology tests.

Subtle Changes

The size of the changes on individual scans were "subtle" and not visible to the naked eye, Douaud said. A 0.2% reduction in grey matter represents about a year of normal aging in an older person's brain. A 2% reduction represents about 10 years of aging.

Almost all of the infected participants recovered at home, which suggests the findings might be relevant for the majority of Covid survivors worldwide. Among the 15 who were hospitalized for Covid, there were hints of even stronger and more widely distributed effects in the brain, Douaud said. The research supports growing evidence that brain-based changes can occur following a SARS-CoV-2 infection, even in people who didn't need hospitalization, said Joanna Hellmuth, a neurologist and assistant professor at the University of California, San Francisco's Memory and Aging Center. "Future research efforts can help us understand if these brain changes are clinically relevant, and if they associate with specific neurological issues after Covid," she said.

Network of 30 biolaboratories was created in Ukraine — Russian military

Source: https://tass.com/world/1418339

Mar 07 – A network of more than 30 biological laboratories was formed on the Ukrainian territory at the request of the US Department of Defense's Threat Reduction Agency, the chief of Russia's radiation, chemical and biological protection force, Igor Kirillov, said on Monday. "The Russian Defense Ministry has repeatedly drawn attention to the military-biological programs the Pentagon is implementing in the post-Soviet space. In Ukraine, a network of more than 30 biological laboratories was created. Some of them are research laboratories and others, sanitary-epidemiological ones," he said. Taking part in the projects is the Black and Veatch company, affiliated with the Department of Defense. Research proceeds along three main tracks.

"Firstly, the biological situation is monitored in areas where, the Pentagon says, the deployment of NATO's military contingents is likely. Secondly, there is the collection and transportation to the United States of samples of highly pathogenic microorganisms. And thirdly, research into likely agents of biological weapons, specific for the given region, which have natural froci and can be transmitted to humans," Kirillov said.

He said that since 2021 the Pentagon had been working on a $11.8-million project for the diagnosis, surveillance and prevention of zoonotic diseases in the Ukrainian army.

"In 2020-2021 the German Defense Ministry conducted research in Ukraine into the pathogens of Crimean-Congo hemorrhagic fever, leptospirosis, meningitis and hantaviruses under a Ukrainian-German initiative for biological safety on the European Union's perimeter borders," Kirillov stressed.

China demands answers from US for '26 biolabs in Ukraine'

Source: https://www.aa.com.tr/en/americas/china-demands-answers-from-us-for-26-biolabs-in-ukraine-/2528207#

Mar 08 – China asked Washington on Tuesday to release "relevant details as soon as possible" regarding alleged US biological laboratories in Ukraine.

"According to the data released by the US itself, the US has 26 biological laboratories and other related facilities in Ukraine which has indeed attracted great attention," Foreign Ministry spokesman Zhao Lijian said at a news conference in Beijing.

A similar claim was made Sunday by Russian Defense Ministry that there was "evidence of a US-financed military biological program developed in Ukraine."

Moscow said the lab was "revealed during Russia's special operation in that country."

"All dangerous viruses in Ukraine must be stored in these laboratories. All research activities are led by the US. No information is allowed to be disclosed without the permission of the US side," claimed Zhao, according to a transcription of the news conference.

He claimed the Pentagon "has absolute control" over these alleged labs.

Russia's war on Ukraine has drawn international condemnation, led to financial sanctions on Moscow, and spurred an exodus of global firms from Russia.

The West has also imposed biting export restrictions on key technologies that are now prohibited from being sent to Russia.

"Under the current situation, we call on all parties concerned to ensure the safety of these laboratories, starting from the health and safety of people in Ukraine and surrounding areas and around the world," said Zhao.

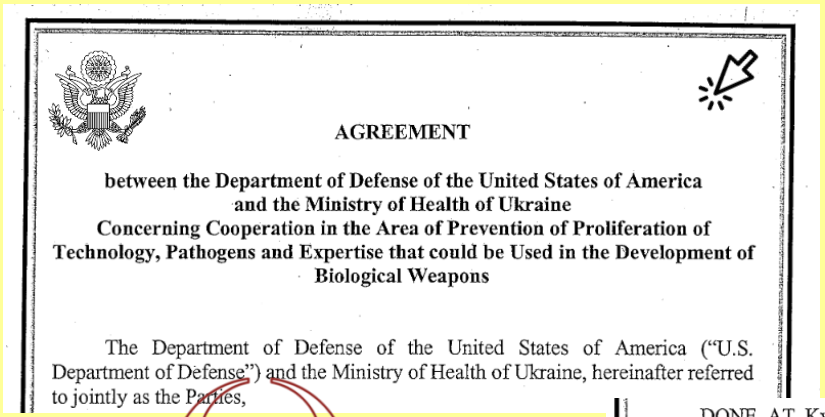
Russia says documents suggest 'components of bioweapons were being developed in Ukraine'

Russian Foreign Ministry spokeswoman says evidence received from employees of Ukraine's biological labs

Elena Teslova | 09.03.2022

"In particular, the US, as the party that knows these laboratories best, should announce the relevant details as soon as possible, including which viruses have been stored and which research has been carried out," he said. "The revelation of the US bio-military activity in Ukraine is just the tip of the iceberg."

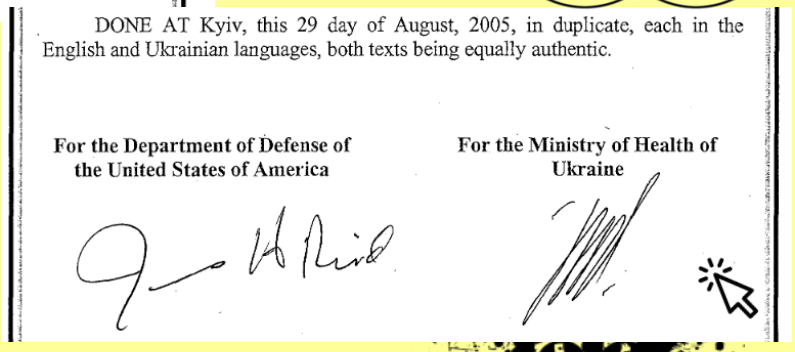
"The **US Department of Defense controls 336 biological laboratories in 30 countries** around the world under the names of 'cooperating to reduce biosecurity risks and strengthening global public health,'" Zhao added.



AGREEMENT

between the Department of Defense of the United States of America and the Ministry of Health of Ukraine Concerning Cooperation in the Area of Prevention of Proliferation of Technology, Pathogens and Expertise that could be Used in the Development of Biological Weapons

The Department of Defense of the United States of America ("U.S. Department of Defense") and the Ministry of Health of Ukraine, hereinafter referred to jointly as the Parties,



DONE AT Kyiv, this 29 day of August, 2005, in duplicate, each in the English and Ukrainian languages, both texts being equally authentic.

For the Department of Defense of the United States of America

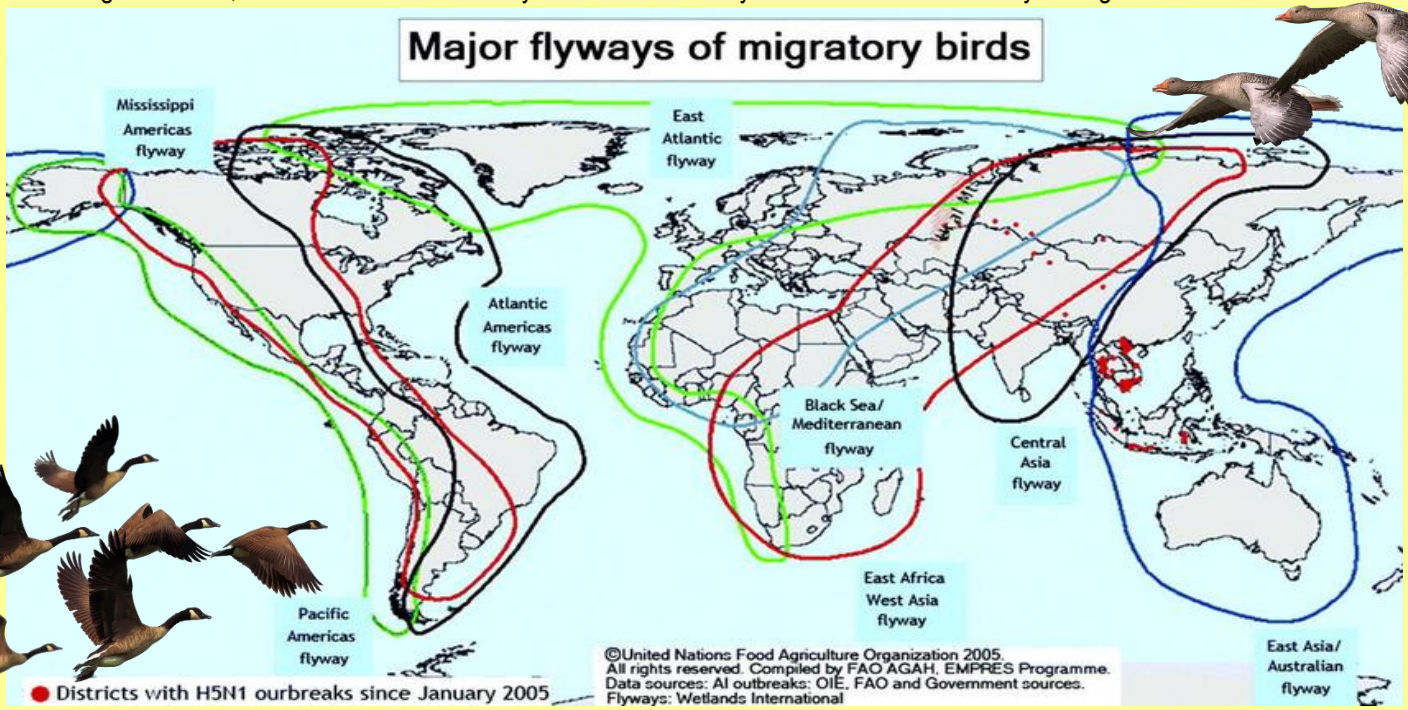
For the Ministry of Health of Ukraine

US studied spread of infections via migrating birds in Ukrainian labs — Defense Ministry

Source: https://tass.com/politics/1419999

Mar 10 – Russian Defense Ministry obtained information about US Project UP-4 on research of particularly dangerous infections of migrating birds, including H5N1 flu and Newcastle disease, which had been developed in Ukrainian biological laboratories, head of Russian Nuclear, Chemical and Biological Protection Troops Igor Kirillov said Thursday.

According to Kirillov, Russian Defense Ministry continues to study the materials on military biological



programs, carried out by the US and its NATO allies in Ukraine, and the data obtained from various sources confirm the leading role of the US Department of Defense's Defense Threat Reduction Agency (DTRA) in funding and carrying out military biological researches in Ukraine.

"We've discovered details about Project UP-4, implemented with involvement of laboratories in Kiev, Kharkov, Odessa, and planned for period until 2020. The project's goal was to research a potential of spread of particularly dangerous infections via migrating birds, including the highly pathogenic H5N1 flu, whose lethality for humans can reach 50%, as well as Newcastle disease," Kirillov said.

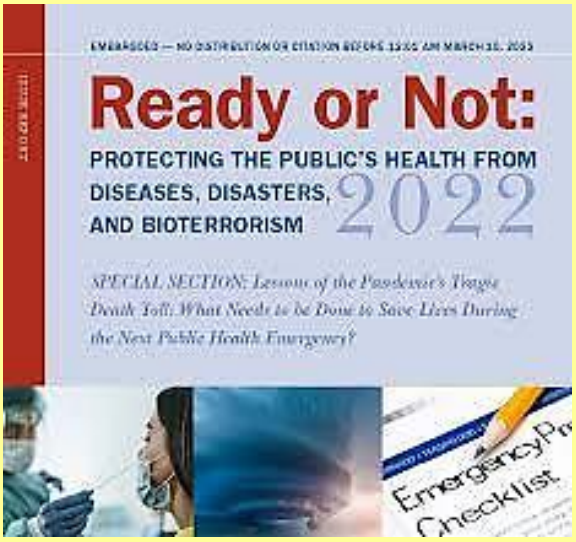
According to Kirillov, due to Ukraine having a unique geographical location, where transcontinental migration routes intersect, a total of 145 species were studied. "At least two species of migrating birds were discovered, whose migration routes go predominantly over Russian territory. At the same time, [the project] summarized data on migration of birds over Eastern Europe," Kirillov said.

EDITOR'S COMMENT: Remember that story with the bubonic plague-infected fleas during the Chinese-Japanese war (Ningbo, south of Shanghai, in November and December 1940) and Japanese Unit 731?

Annual Report: Mass. Among States Best Prepared for Health Emergencies

Source: https://www.nbcboston.com/news/local/annual-report-mass-among-states-best-prepared-for-health-emergencies/2666373/

Mar 11 – A nonprofit organization dedicated to health policy considers Massachusetts one of the states more prepared for health emergencies like the COVID-19 pandemic.



Trust for America's Health released its annual report, "Ready or Not: Protecting the Public's Health From Diseases, Disasters and Bioterrorism," on Thursday. The Bay State was included with 16 other states and the District of Columbia at the top level of preparedness this year.

"We did find that Massachusetts was in our high tier this year, where we look at 10 indicators of how states are doing to prepare for a range of public health emergencies, not just disasters," Dara Lieberman, director of government relations at Trust for America's Health, told NBC10 Boston.

Connecticut and Vermont are also in the high tier. Maine, New Hampshire and Rhode Island are among 20 states in the middle tier, as is New York.

Lieberman said the report's goal is "to give states actions that they can take to better prepare for any kind of emergency."

She noted that investing in public health is the organization's top recommendation to lawmakers.

"We found that Massachusetts increased its public health funding levels for the past three years, which is good — they had a slight increase last year — but there certainly needs to be more," she said. "We've had decades of underfunding of public health, both at the state and the national level."

Exclusive: WHO says it advised Ukraine to destroy pathogens in health labs to prevent disease spread

Source: https://www.reuters.com/world/europe/exclusive-who-says-it-advised-ukraine-destroy-pathogens-health-labs-prevent-2022-03-11/

Mar 10 – The World Health Organization advised Ukraine to destroy high-threat pathogens housed in the country's public health laboratories to prevent "any potential spills" that would spread disease among the population, the agency told Reuters on Thursday.

Biosecurity experts say Russia's movement of troops into Ukraine and bombardment of its cities have raised the risk of an escape of disease-causing pathogens, should any of those facilities be damaged.

Like many other countries, Ukraine has public health laboratories researching how to mitigate the threats of dangerous diseases affecting both animals and humans including, most recently, COVID-19. Its labs have received support from the United States, the European Union and the WHO.

In response to questions from Reuters about its work with Ukraine ahead of and during Russia's invasion, the WHO said in an email that it has collaborated with Ukrainian public health labs for several years to promote security practices that help prevent "accidental or deliberate release of pathogens."

"As part of this work, WHO has strongly recommended to the Ministry of Health in Ukraine and other responsible bodies to destroy high-threat pathogens to prevent any potential spills," the WHO, a United Nations agency, said.

The WHO would not say when it had made the recommendation nor did it provide specifics about the kinds of pathogens or toxins housed in Ukraine's laboratories. The agency also did not answer questions about whether its recommendations were followed.

Ukrainian officials in Kyiv and at their embassy in Washington did not respond to requests for comment.

Ukraine's laboratory capabilities are at the center of a growing information war since Russia began moving troops into Ukraine two weeks ago.

On Wednesday, Russian foreign ministry spokesperson Maria Zakharova repeated a longstanding claim that the United States operates a biowarfare lab in Ukraine, an accusation that has been repeatedly denied by Washington and Kyiv.

Zakharova said that documents unearthed by Russian forces in Ukraine showed "an emergency attempt to erase evidence of military biological programmes" by destroying lab samples. Reuters was unable to independently confirm her information. read more

In response, a Ukrainian presidential spokesperson said: "Ukraine strictly denies any such allegation." U.S. government spokespeople also strongly denied Zakharova's accusations, saying that Russia may use its claims as a pretext to deploy its own chemical or biological weapons.
The WHO statement made no reference to biowarfare. The agency said it encourages all parties to cooperate in "the safe and secure disposal of any pathogens they come across, and to reach out for technical assistance as needed." It offered to help wherever possible with technical guidance and coordination.
The United Nations Security Council will convene on Friday at Russia's request, diplomats said, to discuss Moscow's claims, presented without evidence, of U.S. biological activities in Ukraine. read more

Estimating excess mortality due to the COVID-19 pandemic: a systematic analysis of COVID-19-related mortality, 2020–21

The Lancet | March 10, 2022
Source: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)02796-3/fulltext

Mortality statistics are fundamental to public health decision making. Mortality varies by time and location, and its measurement is affected by well known biases that have been exacerbated during the COVID-19 pandemic. This paper aims to estimate excess mortality from the COVID-19 pandemic in 191 countries and territories, and 252 subnational units for selected countries, from Jan 1, 2020, to Dec 31, 2021.

Methods

All-cause mortality reports were collected for 74 countries and territories and 266 subnational locations (including 31 locations in low-income and middle-income countries) that had reported either weekly or monthly deaths from all causes during the pandemic in 2020 and 2021, and for up to 11 year previously. In addition, we obtained excess mortality data for 12 states in India. Excess mortality over time was calculated as observed mortality, after excluding data from periods affected by late registration and anomalies such as heat waves, minus expected mortality. Six models were used to estimate expected mortality; final estimates of expected mortality were based on an ensemble of these models. Ensemble weights were based on root mean squared errors derived from an out-of-sample predictive validity test. As mortality records are incomplete worldwide, we built a statistical model that predicted the excess mortality rate for locations and periods where all-cause mortality data were not available. We used least absolute shrinkage and selection operator (LASSO) regression as a variable selection mechanism and selected 15 covariates, including both covariates pertaining to the COVID-19 pandemic, such as seroprevalence, and to background population health metrics, such as the Healthcare Access and Quality Index, with direction of effects on excess mortality concordant with a meta-analysis by the US Centers for Disease Control and Prevention. With the selected best model, we ran a prediction process using 100 draws for each covariate and 100 draws of estimated coefficients and residuals, estimated from the regressions run at the draw level using draw-level input data on both excess mortality and covariates. Mean values and 95% uncertainty intervals were then generated at national, regional, and global levels. Out-of-sample predictive validity testing was done on the basis of our final model specification.

Findings

Although reported COVID-19 deaths between Jan 1, 2020, and Dec 31, 2021, totalled 5·94 million worldwide, we estimate that 18·2 million (95% uncertainty interval 17·1–19·6) people died worldwide because of the COVID-19 pandemic (as measured by excess mortality) over that period. The global all-age rate of excess mortality due to the COVID-19 pandemic was 120·3 deaths (113·1–129·3) per 100 000 of the population, and excess mortality rate exceeded 300 deaths per 100 000 of the population in 21 countries. The number of excess deaths due to COVID-19 was largest in the regions of south Asia, north Africa and the Middle East, and eastern Europe. At the country level, the highest numbers of cumulative excess deaths due to COVID-19 were estimated in India (4·07 million [3·71–4·36]), the USA (1·13 million [1·08–1·18]), Russia (1·07 million [1·06–1·08]), Mexico (798 000 [741 000–867 000]), Brazil (792 000 [730 000–847 000]), Indonesia (736 000 [594 000–955 000]), and Pakistan (664 000 [498 000–847 000]). Among these countries, the excess mortality rate was highest in Russia (374·6 deaths [369·7–378·4] per 100 000) and Mexico (325·1 [301·6–353·3] per 100 000), and was similar in Brazil (186·9 [172·2–199·8] per 100 000) and the USA (179·3 [170·7–187·5] per 100 000).

Interpretation

The full impact of the pandemic has been much greater than what is indicated by reported deaths due to COVID-19 alone. Strengthening death registration systems around the world, long understood to be crucial to global public health strategy, is necessary for improved monitoring of this pandemic and future pandemics. In addition, further research is warranted to help distinguish the proportion of excess mortality that was directly caused by SARS-CoV-2 infection and the changes in causes of death as an indirect consequence of the pandemic.

By tracking excess death data from nearly 200 countries across 2020 and 2021 the study estimates more than 18 million deaths from COVID-19, a number that is three times higher than official estimates.

Biolab opens in Ukraine

Source: https://web.archive.org/web/20110522081423/http://www.bioprepwatch.com/news/213421-biolab-opens-in-ukraine

June 2010 – U.S. Sen. Dick Lugar applauded the opening of the Interim Central Reference Laboratory in Odesa, Ukraine, this week, announcing that it will be instrumental in researching dangerous pathogens used by bioterrorists.
The level-3 bio-safety lab, which is the first built under the expanded authority of the Nunn-Lugar Cooperative Threat Reduction program, will be used to study anthrax, tularemia and Q fever as well as other dangerous pathogens.
"The continuing cooperation of Nunn-Lugar partners has improved safety for all people against weapons of mass destruction and potential terrorist use, in addition to advancements in the prevention of pandemics and public health consequences," Lugar said.

Table 1. BSL-3 facilities in Ukraine[27]

Name and location of the host institution	Name/size of BSL-3 laboratory	Scope and general description of activities
State Institution "Mechikov Ukrainian Scientific and Research Antiplague Institute," 2/4, Tserkovna str, Odesa, 65003	Laboratory of detection of biological pathogenic agents: bacteriology department: 299.97m²; virology department: 119.3m²	a) detection and identification of viruses of pathogenicity group I*: Marburg virus, Ebola virus, Lassa virus, Junin virus, Machupo virus, Simian virus B virus, Crimean-Congo hemorrhagic fever virus; and viruses of pathogenicity group II* by using of virology, molecular, serological and express methods. Detection and identification of bacteria of pathogenicity groups I and II*: *Yersinia pestis*, *Bacillus anthracis*, *Brucella spp*, *Francisella tularensis* etc by use of bacteriological, molecular and serological methods; b) identification of unclassified agents; c) storage and maintenance of museum strains of microorganisms of pathogenicity groups I-II;* d) study of molecular and genetic characteristics of agents in pathogenicity groups I-II;* e) special training for specialists on biosafety and biosecurity issues during handling of dangerous biological pathogenic agents

Lugar said plans for the facility began in 2005 when he and then Senator Barack Obama entered a partnership with Ukrainian officials. Lugar and Obama also helped coordinate efforts between the U.S and Ukrainian researchers that year in an effort to study and help prevent avian flu.

The Nunn-Lugar Act, which established the Cooperative Threat Reduction Program, was established in 1991. Since that time it has provided funding and assistance to help the former Soviet Union dismantle and safeguard large stockpiles of nuclear, chemical and biological weapons. The program has also been responsible for destroying chemical weapons in Albania, Lugar said.

High-containment laboratories in Ukraine – Local resources and regulations

By Olena Kysil[1,2], and Serhiy Komisarenko[1]

[1]*Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine and*

[2]*National Taras Shevchenko University of Kyiv, Ukraine*

National Academies of Sciences, Engineering, and Medicine. 2012. Biosecurity Challenges of the Global Expansion of High-Containment Biological Laboratories: Summary of a Workshop. Washington, DC: The National Academies Press. https://doi.org/10.17226/13315.

Source: https://www.nap.edu/read/13315/chapter/25

There are over 4,000 registered microbiological laboratories in Ukraine, but only 2 of them have a permit to work with microorganisms of the first pathogenic group, 402 laboratories have a permit to work with the microorganisms of the second pathogenic group, and all others are allowed to work only with microorganisms of the third and forth pathogenic groups. Here it is necessary to note that the classification of pathogenic organisms and therefore classification of the laboratories in Ukraine differs from the international one. It is inverted (i.e., in Ukraine "one" is the highest risk and "four" is the lowest risk) and also has some additional differences. That is why when speaking about high-containment laboratories according to Ukraine's official classification we need to consider the laboratories that have a permit to work with the microorganisms of the first and the second pathogenic groups. At the same time it is not possible to say that a laboratory that has a permit to work with microorganisms of the first pathogenic group in Ukraine is equivalent to an international BSL-4 lab or that one working with microorganisms of the second pathogenic group is equivalent to a BSL-3 lab.

According to the available data, there are no laboratories in Ukraine that fulfill BSL-4 requirements. One of the laboratories that has a permit to work with the microorganisms of the first pathogenic group did, however, recently undergo an international audit as a BSL-3 laboratory and received a preliminary positive evaluation. This is one of the laboratories of

the SI (State Institution) "Ukrainian I. I. Mechnikov Anti-Plague Research Institute" of the Ministry of Health of Ukraine (Odessa), which is responsible for the identification of especially dangerous biological pathogens. This laboratory was reconstructed and technically updated up to the BSL-3 level through a cooperative agreement between the United States Department of Defense and the Ministry of Health of Ukraine that started in 2005. The collaboration focuses on preventing the spread of technologies, pathogens, and knowledge that can be used in the development of biological weapons. The updated laboratory serves as Interim Central Reference Laboratory with a depozitarium (pathogen collection). According to Ukrainian regulations, it has a permit to work with both bacteria and viruses of the first and second pathogenic groups. A second laboratory of the SI "Ukrainian I. I. Mechnikov Anti-Plague Research Institute" of the Ministry of Health of Ukraine also has a permit to work with microorganisms of the first pathogenic group, but it is not updated to the BSL-3 level. This laboratory works only with the especially dangerous infections of bacterial etiology. The third laboratory upgraded to the BSL-3 level belongs to the Central Sanitary Epidemiological Station of the Ministry of Health of Ukraine. This laboratory was updated within the State program and the above-mentioned cooperative agreement between Ukraine and the United States. It has a permit to work with microorganisms of the second pathogenic group and is intended for work with especially dangerous infections.
According to the information received from the Central Regime Commission, the main authority that is responsible for the registration of microbiological laboratories in Ukraine, among the 402 laboratories that have permits to work with microorganisms of the second pathogenic group, 37 are subordinate to the Ministry of Health of Ukraine. Out of these 37 laboratories, 6 laboratories belong to research institutions, and therefore their main goals are scientific and practical investigations, while 31 laboratories belong to the Sanitary Epidemiological Service of Ukraine. These 31 laboratories are responsible for epidemiological and diagnostic investigations. Three hundred sixty two laboratories that have a permit to work with microorganisms of the second pathogenic group are subordinate to the Ministry of Agrarian Policy and Food of Ukraine. Out of them, 358 laboratories are responsible for diagnostic investigations, while 4 belong to research institutions and perform scientific and practical investigations. The four laboratories of the National Academy of Agrarian Sciences of Ukraine, which have a permit to work with microorganisms of the second pathogenic group, are research-oriented. The one laboratory of the Ministry of Defense of Ukraine that has a permit to work with microorganisms of the second pathogenic group performs diagnostic investigations.

What government organizations are responsible for the safety and security of high BSL laboratories?
According to the existing regulations, the main authority that is responsible for the registration of microbiological laboratories and their biosafety and biosecurity is the Central Regime Commission, which works together with regional Regime Commissions of the State Sanitary Epidemiological Service of Ukraine and regional chief state sanitary doctors of Ukraine (according to the State Sanitary Rules 9.9.5.035-99 and 9.9.5-153-2008).

If there are high BSL laboratories in your country, are there established criteria for deciding:
a. Whether or not to establish such facilities?
b. Where to place such facilities?
c. What research will be done in such facilities?
d. What scientific, technical, and management advice is available to governments when making their decisions?
In the case of state subordination of a new laboratory, the decision to establish it or not needs to be taken by the State based on recommendations of a Ministry or a state institution. Then, for example, the decision to establish a new laboratory needs to be included into a state program. To our knowledge, there are no established criteria for such a decision.

What standards exist for high BSL laboratories for:
a. Engineering and construction?
b. Licensing?
c. Safety and security?
d. Regular oversight and re-certification?

These are the main regulations that set the high BSL laboratory standards:
1. The State Sanitary Rules 9.9.5.035-99 "The safety of work with microorganisms of the pathogenic groups" (1999) I-II
2. The State Sanitary Rules 9.9.5.-080-02 "The rules of the organization and the safety of work at microbiological laboratories (departments, units)" (2002)

3. The State Sanitary Rules 9.9.5-153-2008 "The organization of laboratories' work in the case of investigation of materials containing the biological pathogenic agents by molecular-genetic methods" (2008)
4. The Order of Ministry of Health of Ukraine N183 from 14.12.1992 "On regime of work with pathogenic microorganisms"
5. The Order of Ministry of Health of Ukraine N452 from 06.11.2001 "On the strengthening of anti-epidemical regime of work at microbiological laboratories"

The project of the Regulation of Cabinet of Ministers of Ukraine, proposed by the Ministry of Health of Ukraine "The question of permit issue for work with the microorganisms of the I-IV pathogenic groups for microbiological laboratories and the functioning of regime commissions on biosafety" (2008) is currently undergoing public discussion.

Have there been any accidents at high BSL labs in your country?

According to the information received from the Central Regime Commission during the last twenty years, there were no registered accidents at high-containment laboratories in Ukraine.

Have any steps been taken to minimize high BSL laboratory accidents?

A few virology laboratories of the State Sanitary Epidemiological Service of Ukraine were updated with equipment to fulfill international biosafety requirements for working with poliomyelitis, measles, and influenza as part of a World Health Organization (WHO) Program. The laboratories of the Central Sanitary Suggested Citation: "E7: Ukraine." National Academy of Sciences and National Research Council. 2012. Biosecurity Challenges of the Global Expansion of High-Containment Biological Laboratories: Summary of a Workshop. Washington, DC: The National Academies Press. doi: 10.17226/13315. Epidemiological Station of the Ministry of Health of Ukraine and the SI "Ukrainian I. I. Mechnikov Anti-Plague Research Institute" of the Ministry of Health of Ukraine were also reconstructed and equipped as part of an agreement with the United States. Over the next years, a few of the regional Sanitary Epidemiological Stations of the Ministry of Health of Ukraine and laboratories of the National Academy of Agrarian Sciences of Ukraine are also scheduled to be updated as part of the same agreement with the United States.

It is also important to mention activities connected with the training of laboratory personnel. For example, intensive training programs are running as part of an agreement with the United States. There is also a new Training Centre on Biosafety in Odesa functioning as part of SI "Ukrainian I. I. Mechnikov Anti-Plague Research Institute." Its creation was supported by Canada's Global Partnership Program through the Science and Technology Center in Ukraine (STCU) to ensure modern biosafety and biosecurity training programs.

There are also some projects to increase biosafety and biosecurity, which are being run by individual laboratories. For example, the Central Sanitary Epidemiological Station of the Ministry of Health of Ukraine laboratory that works with especially dangerous infections is implementing the Laboratory Biorisk Management Standard CWA 15793:2008 with support from Canada through STCU. All these steps aim to minimize the risk of accidents and to increase laboratory security.

Have any steps been taken to increase security at high BSL facilities? If so, by whom (i.e., regulation, voluntary measures, individual laboratory practices)?

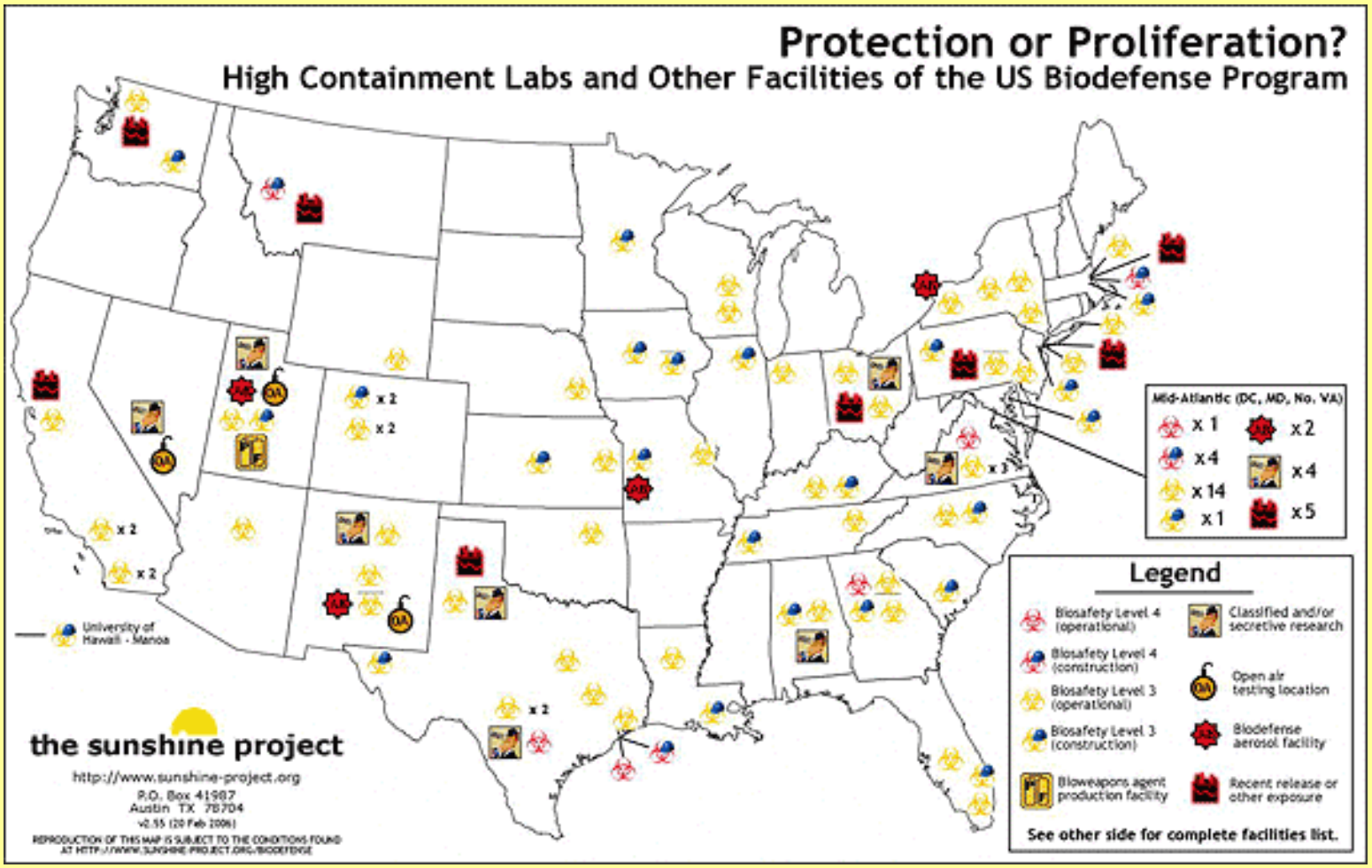
Besides the above-mentioned activities, which are intended to both minimize accidents and increase of security at high BSL facilities, there is also a project to strengthen the education of life scientists on biosafety, biosecurity, and dual-use issues. The project is run by the Palladin Institute of Biochemistry of the National Academy of Sciences of Ukraine in close collaboration with the University of Bradford with support of Canada through STCU. The aim of the project is to strengthen support for the prohibition of the misuse of the modern life sciences by pioneering the formulation and implementation of a national system of biosafety, biosecurity, and dual-use issues education.

Is the U.S. Promoting Worldwide Bioterrorism?

By E. Jeffrey Ludwig

Source: https://www.americanthinker.com/articles/2022/03/is_the_us_promoting_worldwide_bioterrorism.html

On Thursday, March 9, the U.S. undersecretary of state for political affairs stated that there was biological research taking place in Ukraine. Then, in a follow-up question by Sen. Marco Rubio, she stated emphatically that if any biological material from that lab



were used in an act of biological warfare, it would surely come from Russia. While there is a distinction between biological research and biological warfare research, the very fact that the answer and follow-up question alluded to using material from that lab in a biological attack shows that the pathogens in that lab can be weaponized.

Further, we know that biological weapons of mass destruction were proposed to the U.N. way back in 2002 by then-Secretary of State Colin Powell as an excuse for invading Iraq. So, the admission that there is a biological research lab that has material that could be used as bioweapons could easily be used as an excuse by Russia for invading Ukraine. However, it cannot be used as justification for the war crime of Russia's bombing a maternity hospital or other atrocities that are already taking place. Nevertheless, despite disclaimers that might come -- that the facility is not a bio-weapons developmental facility -- we can say if it looks like bio-weapons, sounds like bio-weapons, and kills like bio-weapons, it is a bio-weapons facility (despite disclaimers).

In an article going back to June 2010 entitled "Biolab Opens In Ukraine," the author, Tina Redlup, wrote, "The level-3 bio-safety lab, which is the first built under the expanded authority of the Nunn-Lugar Cooperative Threat Reduction program, will be used to study anthrax, tularemia and Q fever as well as other dangerous pathogens." Additionally, Sen. Richard Lugar stated that "the facility began in 2005 [during the Bush administration] when he and then-Senator Barack Obama entered a partnership with Ukrainian officials." How and why U.S. senators are involved in setting up a biological lab in Odessa rather than health or defense officials of the executive branch of government is still a mystery to this writer.

For many people going about their lives, it may seem that having such a lab supported by the U.S. from its inception is not troubling. To those people, the world is a dangerous place, and we owe it to the American citizenry to stop biowarfare if it originates with the bad guys, but if the "good guys" are doing it, it's O.K. In that case, it may be perceived as purely defensive measure to alert the bad guys that what's good for the goose is good for a

the gander. It's a species of the idea that the best offense is a good defense. So, if there are bad actors in the world they have to know that whatever cruel measures they dish out will be dished out doubly or triply to them.

However appealing this might be to masses who tend to think in terms of I'll get him worse than he gets me, it does not conform to international law. Biological warfare is not treated the same as "stand your ground" laws where the threatened or endangered party may use deadly force to defend himself or herself. No. Rather, regarding biological weapons, there is a comprehensive convention against the use of biological weapons that entered into force in 1975. It has the long and weighty title "The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological [Biological] and Toxin Weapons and on their Destruction." This document has been signed and ratified by 183 countries worldwide including Ukraine and the U.S. in 1975. The convention bans "biological agents" that have "no justification for prophylactic, protective or other peaceful purposes."

One could easily see how that strange breed of diplomatic word parsers in the State department or smart, ivy league cookies in high places could weasel around the Convention by stating that there were "protective or peaceful purposes" in the research in the Odessa lab (or Wuhan for that matter) as a way of evading the aggressive and evil implications of the work being done there.

Further, the Convention states that each State "undertakes to destroy, or to divert to peaceful purposes, all agents, toxins, weapons, equipment and means of delivery which are in its possession or under its jurisdiction or control (Art. 11)." This writer can easily see how the U.S. can distort the intent of this restriction by sending research of this kind to territories other than the U.S., like Odesa, Ukraine, or Wuhan, PRC. Thus, we arrange to *fund* (my italics) this kind of devilish research in other venues in order to posture before the world that we have "clean hands" because we do not do this work in the U.S. This would explain why the research being done in Wuhan was stopped on U.S. soil by the National Institutes of Health, yet substantial funding was sent to the lab at Wuhan. The U.S.-based EcoHealth Alliance received $3.7 million from the NIH, $600,000 of which was given to the Wuhan Institute of Virology. And, similarly, Obama and Lugar undoubtedly funded the lab in Odessa, although the actual funding amounts are not known to me as of this writing.

At the same time, we cannot say unequivocally that the U.S. or Ukraine or even China are directly in violation of the Convention on biological weapons by having these labs. As a matter of fact, there are 59 maximum biosafety level-4 facilities planned, under construction or in operation across the world, spanning 23 countries including the U.K., U.S., China, India, Gabon, and Côte d'Ivoire.

Thus, there is a fine line sometimes between intentionally wishing to attack and harm or, conversely, simply playing with fire. Despite the 1975 Convention which clearly forbids bioweapons and was clearly a caution to the entire world, perverse humanity, including many U.S. leaders in the 47 years since the Convention was ratified has continued to expand its involvement in research that can, too easily, be weaponized. To this writer, no matter what the intentions of the participants in these bioweapon researches, the expansion of these programs display devilish intentions that do not bode well for humanity. While some hyped-up "greenies" are worried about global "climate change," we should be a lot more concerned about global suicide-by-germs.

Known Bio-Safety Level 4 Labs Worldwide

Source: https://sites.google.com/site/bioterrorbible/BIO-LABS/Biosafety-Level-4

Africa

Bio-Safety Level 4: **Centre International de Recherches Médicales de Franceville: Gabon, Africa**
Bio-Safety Level 4: **National Institute for Communicable Diseases South Johannesburg, Africa**

Australia

Bio-Safety Level 4: **Australian Animal Health Laboratory: Geelong, Australia**
Bio-Safety Level 4: **National High-Security Laboratory: North Melbourne, Australia**
Bio-Safety Level 4: **University of Queensland: Sir Albert Sakzewski Virus Research Centre (SASVRC): Herston, Australia**
Bio-Safety Level 4: **Virology Laboratory of the Queensland Department of Health: Coopers Plains, Australia**

Canada

Bio-Safety Level 4: **National Microbiology Laboratory: Winnipeg, Canada**

China

Bio-Safety Level 4: **Preventive Medical Institute of ROC Ministry of National Defense: Taiwan, China**

Eastern Europe
Bio-Safety Level 4: **Biological Defense Center Těchonín, Czech Republic**
Bio-Safety Level 4: **Republican Research and Practical Center for Epidemiology and Microbiology: Minsk, Belarus**

England
Bio-Safety Level 4: **Defence Science and Technology Laboratory: Porton Down, England**
Bio-Safety Level 4: **Health Protection Agency's Centre for Infections: Colindale, London, England**
Bio-Safety Level 4: **Health Protection Agency (Botulism): Porton Down, England**
Bio-Safety Level 4: **Health Protection Agency: Special Pathogens Reference Unit: Porton Down, England**
Bio-Safety Level 4: **Institute for Animal Health: Pirbright, England**
Bio-Safety Level 4: **National Institute for Medical Research: London, England**

France
Bio-Safety Level 4: **Laboratoire P4 Jean Mérieux: Lyon, France**

Germany
Bio-Safety Level 4: **Bernhard Nocht Institute for Tropical Medicine: Hamburg, Germany**
Bio-Safety Level 4: **Friedrich Loeffler Institute on the Isle of Riems: Greifswald, Germany**
Bio-Safety Level 4: **Philipps University of Marburg: Marburg, Germany**
Bio-Safety Level 4: **Robert Koch Institute: Berlin, Germany**

Italy
Bio-Safety Level 4: **Azienda Ospedaliera Ospedale Luigi Sacco: Milano, Italy**
Bio-Safety Level 4: **Istituto Nazionale Malattie Infettive: Rome, Italy**

India
Bio-Safety Level 4: **All India Institute of Medical Sciences: New Delhi, India**
Bio-Safety Level 4: **Centre for Cellular and Molecular Biology Hyderabad, India**
Bio-Safety Level 4: **High Security Animal Disease Laboratory (HSADL) Bhopal, India**

Japan
Bio-Safety Level 4: **Institute of Physical and Chemical Research: Kantō, Tsukuba, Japan**
Bio-Safety Level 4: **National Institute for Infectious Diseases: Tokyo, Japan**

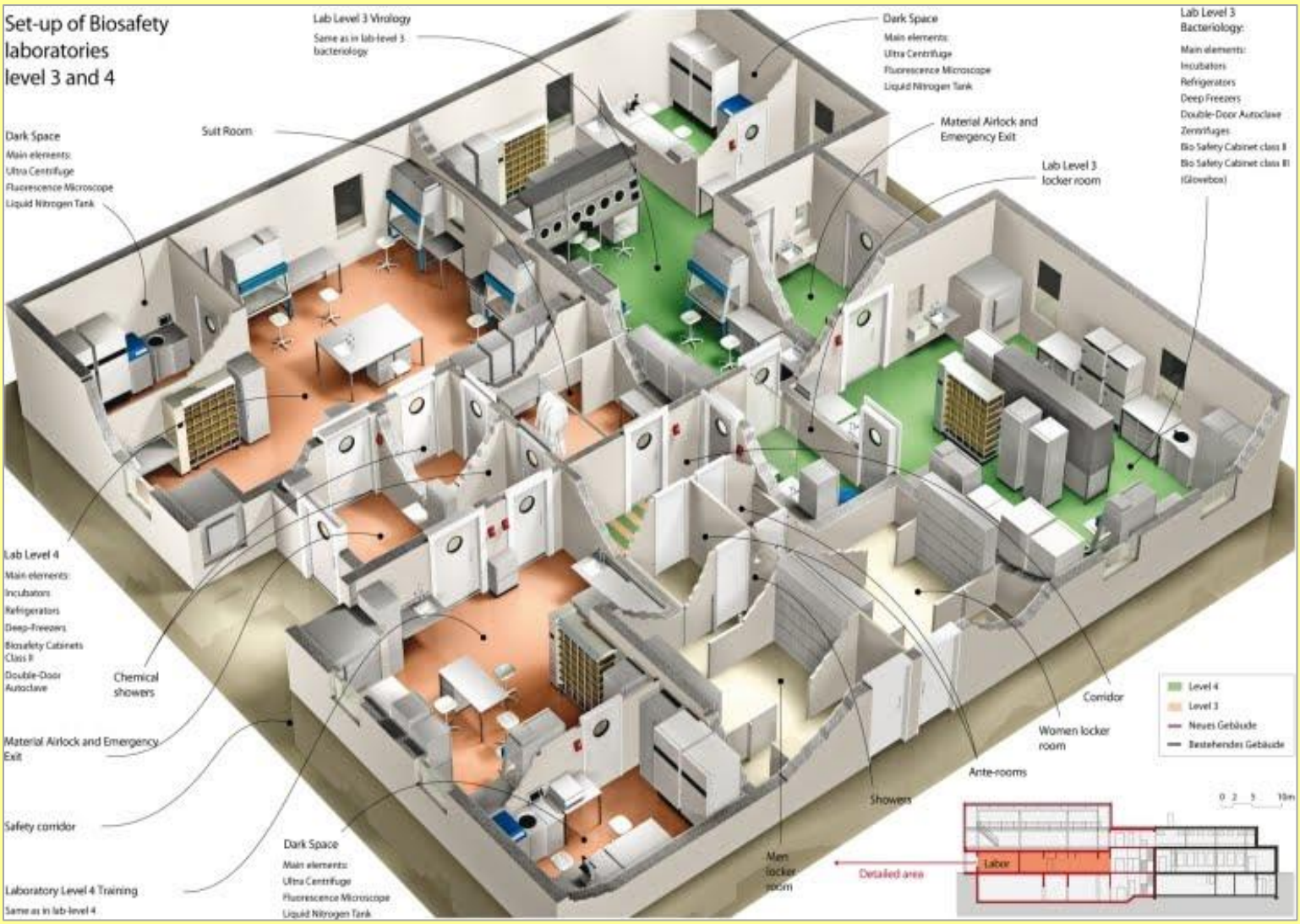
Netherlands
Bio-Safety Level 4: **Netherlands National Institute for Public Health and the Environment (RIVM): Bilthoven, Netherlands**

Russia
Bio-Safety Level 4: **State Research Center of Virology & Biotech VECTOR** (Smallpox)**: Novosibirsk Oblast, Koltsovo, Russia**

Singapore
Bio-Safety Level 4: **Defence Science Organization (DSO): Singapore** (Defence Science Organization goal is to conduct autopsies during a potential deadly epidemic outbreak. Singapore also has a mobile BSL-4 autopsy facility)

Sweden
Bio-Safety Level 4: **Swedish Institute for Communicable Disease Control: Solna, Sweden**

Switzerland
Bio-Safety Level 4: **High Containment Laboratory DDPS (SiLab): Spiez, Switzerland**
Bio-Safety Level 4: **Institute of Virology and Immunoprophylaxis (IVI): Mittelhäusern, Switzerland**



United States

Bio-Safety Level 4: **Centers for Disease Control and Prevention (CDC): Atlanta, Georgia, U.S.** (Smallpox)
Bio-Safety Level 4: **Division of Consolidated Laboratory Services: Richmond, Virginia, U.S.**
Bio-Safety Level 4: **Galveston National Laboratory, National Biocontainment Facility: Galveston, Texas, U.S.**
Bio-Safety Level 4: **Georgia State University: Atlanta, Georgia, U.S.**
Bio-Safety Level 4: **Kent State University, Kent Campus: Kent, Ohio, U.S.** (sister lab for bioterrorism event response)
Bio-Safety Level 4: **National Bio & Agro-Defense Facility (NBAF)** (DHS)**: Kansas State University, Manhattan, Kansas, U.S.**
Bio-Safety Level 4: **National Biodefense Analysis and Countermeasures Center (NBACC)** (DHS) **Fort Detrick, Maryland, U.S.**
Bio-Safety Level 4: **National Emerging Infectious Diseases Laboratory (NEIDL): Boston, Massachusetts, U.S.**
Bio-Safety Level 4: **National Institute of Allergy and Infectious Diseases (NIAID) Fort Detrick, Maryland, U.S.**
Bio-Safety Level 4: **National Institutes of Health (NIH): Bethesda, Maryland, U.S.**
Bio-Safety Level 4: **Rocky Mountain Laboratories: Hamilton, Montana, U.S.**
Bio-Safety Level 4: **Shope Laboratory (Only privately owned BSL 4 in the U.S.): Galveston, Texas, U.S.**
Bio-Safety Level 4: **Tufts Cummings School of Veterinary Medicine United States of America: Grafton, Massachusetts, U.S.**
Bio-Safety Level 4: **US Army Medical Research Institute of Infectious Diseases (USAMRIID): Fort Detrick, Maryland, U.S.**
Bio-Safety Level 4: **US Army Medical Research Institute of Infectious Diseases (USAMRIID): Fort Detrick, Maryland, U.S.**

Biodefense in the Age of Synthetic Biology (2018)

Chapter: Assessment of Concerns Related to Pathogens

National Academies of Sciences, Engineering, and Medicine.

Source: https://www.nap.edu/read/24890/chapter/6

Next generation bioweapons: The technology of genetic engineering applied to biowarfare and bioterrorirsm (2002)

By Michael J. Ainscough, Colonel, USAF

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USAF Counterproliferation Center; Air War College; Air University Maxwell Air Force Base, Alabama

Source: https://irp.fas.org/threat/cbw/nextgen.pdf

Chimera virus: How far science can go?

By Sandra Schmidt

Source: http://outbreaknewstoday.com/chimera-virus-how-far-science-can-go-65815/

"In warfare there are no constant conditions. He, who can modify his tactics in relation to his opponent, will succeed and win. "

Sun Tzu

Dec 2016 – The biological weapons and the whole set of biological agents capable to be abused in some of the future asymmetric or even symmetric conflicts is a nightmare scenario. A long time ago, the idea of using some exotic virus or forgotten bacteria in a terrorist attack has sounded like a science fiction movie. Now it is our potential reality, the dimension of biological security which will never be the same. Bugs will be always around, ready to be militarized from humans and against humans.

When we think about the biological warfare, we must make a distinction between the state program of biological weapons and the non-state attempts to develop the deadly germs. The former Soviet line of biological weapons production has never been ended with the BIOPREPARAT, which was a full capacity industry established in 1973. The main goal of the Soviet regime was to develop efficient agents what could be enough practical to be used in some of the tactical battles. But, the Soviets weren't the only one interested in weaponized biological agents, the British and the U.S. military experts have never given up on researching the killing abilities of the germs. The Middle Eastern countries followed the global powers and it seems that the Biological and Toxin Weapons Convention in 1972 only officially closed the biological weapons development but the real story has continued behind the doors of each country.

On the other side, the growing influence of the non-state actors renewed the idea of biological weapons used against the enemy. Terrorism brought the atmosphere of the fear and the concept of bioterrorism is a threat we are dealing with every day. As one said, it is not the question if, but when that will happen. The old encouraging thoughts about the lack of professionalism among the terrorists and the lack of biotechnological resources to cause the harm became the case study number one for all security experts. The problem is not only limited on the religious fanatics who will spread Ebola in the name of Allah but on every category of lone wolf who find themselves stuck in hate towards the system. Unfortunately, the democracy and the security don't collaborate very well. If you want to have one fully implemented, another is almost impossible to achieve because they deny each others. American system is a typical example how those two do (not) work together on the ground. The security tries to control democracy but at the end of the day, the democracy makes security measures ineffective. The government can't ban the weapons exhibition in Utah and stop Tom to show his own guideline for home production of the bio weapons. Tom is just a scientist and he has a civil right to express himself on that exhibition. The second problem is John or Mohammed who will come on

that manifestation and find a background for their own dirty plans and plots against the target. For democracy to be free, security is always limited.

In the age of genetic engineering and the advanced biotechnological researches, the well known list of potential biological agents is almost like a classic story vs. postmodern. The possibilities are numerous for military industry to play with. In the era of DNA synthesis, the DNA sequencing and the experimenting with the genome of the bugs sound like an ideal precondition for global apocalypse. The scientists and the military professionals are aware of the disadvantages of the tested biological warfare so they are looking for a new one which will face up with all challenges and show the good attribute in the negative environment. The goal is to make a perfect hybrid agent which will combine the best characteristics of all deadly germs and has lasting nature. Dr. Steven Block, the biological weapons expert stated that the main interest for the science is to discover the useful pathogen which will be safer to handle, easier to distribute, with high mortality and which will have the specially made ethical markers so it could be started from the distance and for targeted group when it is needed.

What military science is dreaming about is not so far away from the reality in the biohazard laboratories today. Genetic engineers are trying to increase the efficacy of the microbes in the warfare through some of the techniques. Binary Biological Weapons means inserting plasmids or tiny bacterial fragments into the DNA of other pathogen so the virulence could be empowered. There is also gene synthesis and according to available information, microbiologists had already sequenced the genomes of 3139 viruses, 1016 plasmids, and 2167 bacteria. Then we come to the gene therapy which covers the replacing genes with those what are totally harmful. The famous technique of stealth viruses remains still the mystery for the public but it is definitely something we must count on in the near future. The virus which could be saved in the host and activated when it is necessary as a matter of political or security blackmail sounds like a diamond goal for every advanced military power. Host-swapping diseases are those what come from the zoonotic disease but could be easily abused as a tool against humans. We should not forget the designed disease or the microbes with the ability to cause the cell revolution in the body with the fatal end. The personalized bio weapon is also the highest scientific dream or the mankind's night mare. The biological agent specifically designed to attack one target and to escape another had found place in many novels but luckily it is still not realized.

The concept of Chimera or super bug is a top task for all military laboratories worldwide. The term Chimera came from the Greek and Roman mythology and means combined elements of lion, goat and serpent into one monstrous form. In our biotechnology vocabulary, it defines the monstrosity of the deadliest pathogen ever. The Soviet Union's Chimera Project studies the possibility to make hybrid from Ebola and Smallpox. The two viruses are enough scary by themselves and matching their sequences, would mean open the Pandora's Box for this world. The real problem is to think about the possible existence of parallel laboratories which are not under the state control. We know that money can do everything and even can make scientists willing to work for dark biology and biological warriors. In that case, underground biotechnology production of Chimera weapons would be victory of the evil forces and this option must be prevented and preempted. The state authorities must control the black market of genetic material and the fluctuations of the ideas in this direction. That doesn't mean tyranny and the failure of democratic rights but the security pattern for stable system and society. The Chimera is a monster and it must stay outside.

Sandra Schmidt, MSc special interests include researching and writing about Biological Weapons, Biosecurity and Biodefense. Sandra hails from Serbia.

Science of Biological warfare and Biopreparedness

By Dr Aakansha Bhawsar and Dr Sudeep Shukla

Source: https://indiafoundation.in/articles-and-commentaries/science-of-biological-warfare-and-biopreparedness/

Sept 2020 – Germ warfare refers to activities that intend to induce mortality and morbidity of living beings by the application of bacteria, virus, fungi and their derivatives. Advances in the field of biotechnology have opened new avenues for the development of airborne, highly dispersible lethal biological weapons that may cause the death of millions of people. The SARS-CoV-2 virus which originated in Wuhan, China and caused global pandemic has led to speculation about the origin of the virus and the possibility that the virus has laboratory-based origins. While the use of biological weapons in war is not new, the impact of biological warfare on societies would be devastating. Besides state actors, such weapons falling into the hands of terrorist groups and militant organisations would also pose serious security challenges across the globe, with unimaginable consequences. This article aims to discuss the scientific and biotechnological prospective of biological agents and various microorganisms and the molecular mechanism of their potential candidature as bioweapons.

Biological weapons (BW) are weapons which contain replicating infectious and lethal forms of life including bacteria, viruses, fungi, protozoa, prions, or poisonous chemical toxins produced by living organisms. They have a strategic and technical advantage in wars because of their easy availability, low production costs, easy transportation and dispersal, and non-detection by basic security systems. These biological warfare agents (BWAs) multiply in the host and get transmitted to other individuals leading to a widespread disease with high morbidity and mortality. These disease-causing biological agents have been used to degrade combat capabilities of enemy forces at the war front. In the last few decades, several incidences of bioterrorism and biological warfare research and development have been recorded. As the world witnesses rapidly evolving geopolitical power shifts and competition, some countries, despite being signatory members of the 1972 Biological and Toxin Weapon Convention (BTWC, 1972) have started showing interest in biotechnological, genetic engineering and synthetic biology tools to develop highly potent and deadly chimeric biowarfare agents. Extensive covert research is getting established under vaccine and enzyme development programmes to modernise and weaponise the genetically engineered human pathogens to develop highly contagious strains that would defeat all the barriers of immune systems and current medical treatments. These researches include weaponising highly contagious, antibiotic-resistant recombinant novel strains and synthetic chimeric viruses to aerosolise and develop powder formulations for direct loading into munitions and cluster bombs.

Next Generation Biological Weapons

The technical application synthetic biology and genetic engineering tools can be strategically misused to transform harmless bacteria and viruses into lethal warfare agents with enhanced infectivity, pathogenicity, virulence, survivability and drug resistance. Political and military leaderships need to be made cognizant of the risks, threats and the impact of offensive biotechnological warfare attacks by potential state/non-state bio-terrorists, so that response activities for early prevention, detection, assessment, rapid response and recovery can be implemented.

The biowarfare agents are classified into six major groups[i]:

1. **Binary biological weapons:** This includes a dual component system, consisting of a pathogenic host strain and a plasmid bearing virulence genes. These are first individually propagated at a large scale and then mixed for transformation within the munition, acting as a bioreactor and subsequently deployed as a bioweapon. This technique can be misused to enhance the virulence of human pathogens, causing anthrax, dysentery and plague etc.
2. **Designer genes:** Decoded and available whole-genome sequence data of pathogenic microorganisms, advanced genetic engineering tools and techniques can be misused to design, reconstruct desired virulence genes for creating novel lethal pathogens.
3. **Designer diseases:** Advanced molecular and cellular biology understanding can be misused to create designer pathogens to develop designer diseases with desired symptoms of a novel hypothetical disease. Somatic or germ cells can be targeted through inducing immune suppressive effects or inducing apoptosis, enhanced cell proliferation causing major tissue or organ system destruction.
4. **Gene therapy based bioweapons:** Retroviruses can be misused as vectors to introduce the desired gene in mammalian cells. These viruses integrate into the human genome while overcoming all the barriers of the natural defence system of the human body.
5. **Host swapping diseases:** Zoonotic diseases where a pathogenic virus has a natural animal reservoir can be swapped to humans through codon manipulations. Animal viruses can be humanised by genetically modifying to utilise preferential human codons.
6. **Stealth viruses:** Viral agents bearing human oncogenes can be illicitly transferred to human genomes. Exposing stimulus to initial dormant transduction can activate oncogenic determinants present on the stealth viruses which can destroy the human population.

Construction of synthetic infectious agents:

Living systems can be engineered with novel pathways by redesigning natural biological processes using synthetic biology tools. Whole-genome sequence data can be used to artificially synthesise, design, reconstruct virulent effector elements and genes with requisite pathogenicity to create infectious dwarfed genomes or genomes resembling natural human pathogens (for example synthesis of bacteriophage and mycoplasma genome). The first artificial bacteriophage, φX174 of 5386 bp genome was synthesised and stitched to produce biofuels[ii]. T7 bacteriophage of 39,937 bp genome was redesigned by refactoring to generate chimeric bacteriophages by removing and replacing genetic segments maintaining replicative and functional activities[iii]. Systematic mutagenesis researches helped in understanding the

minimal genome content essential for maintaining cell viability and supporting cell replication for *Mycoplasma genitalium* [iv]. The study led to the synthesis of the first dwarfed 582,970bp genome of *Mycoplasma genitalium* and construction of a slow growing *M. genitalium* to a synthetic, prolific designer strain *M. mycoides*[v].

Synthesis of native or chimeric viruses: Synthetic virology tools assist in the construction of chimeric viral genomes with designer elements, in-vitro phage assembly, and development of efficient delivery systems.

1. **Synthesis of the 1918 Spanish flu virus**: Gene sequencing and RT-PCR technique was applied to reconstruct the first genome of the 1918 Spanish Flu from eight viral RNA segments recovered from lung tissue autopsy samples of pandemic victims[vi]. Later using reverse genetics, the first synthetic virus was constructed. Different variants were reconstructed and studied for factors contributing to the severity of the disease, antigens and glycoproteins for attachments, mutations linked to epidemics in humans and birds, components of viral capsids required for assembly etc.[vii]
2. **Synthesis of poliovirus:** First artificial poliovirus was constructed using cDNA synthesis. Twenty-five different mutations were investigated in cell lines and animal models for infectivity, pathogenicity, virulence and oncological features associated with the viral genome[viii].
3. **Synthesis of human endogenous retrovirus (HER**): HERs includes a class of degenerate human retroviruses that infested human genome million years ago. Using synthetic consensus sequence and site directed mutagenesis, infectious proviral particles of HERV were generated[ix]. Further, using whole-genome synthesis, another proviral clones of HERV were generated and studied for infection on human cell lines[x].
4. **Synthesis of the human immunodeficiency virus (HIVcpz):** Viral nucleic acid strings were isolated from faecal samples of wild chimpanzees, and by deriving consensus viral sequences an artificial simian immunodeficiency virus (SIVcpz) was synthesised. This was further used to produce infectious molecular clones of immunodeficiency virus and investigated for cross-species transmission and host adaptive responses to viral infections[xi]
5. **Synthesis of SARS-like coronavirus:** Severe acute respiratory syndrome virus coronavirus (SARS-CoV) and artificial clones of SARS-CoV were created by exchanging the receptor-binding domain (RBD) with that of human SARS-CoV capable of infecting human cell lines and animal model mice.[xii] The repertoire of acquired research on human adaptation, virulent genetic loci and assembly of the designer pathogen can be misused to design deadlier viruses and pathogens.

In vitro packaging of viral genomes: Arming DNA synthesis, and sequencing technologies in the genetic engineering arsenal have advanced the construction of the whole genome of viruses with desired pathogenic properties. Biological understandings of host-pathogen interactions, mechanism of infection, detailed mechanism of the packaging of viral genomes can be used to synthesise host-specific chimeric constructs with enhanced infectivity. Researches are accessible which are used for in vitro packaging of chimeric viral genomes for the assembly of infectious viruses.

All the researches shared above are published on various web research portals with experimental details and protocols which are accessible internationally. The initial intent of these studies is to use biotechnology for saving lives by understanding the mechanism of host-pathogen interaction for the development of vaccine, antimicrobials, therapeutics, biofuels etc., but the threat & risks associated with dual-use remains. The biodefense, biological security strategy and associated preparedness measures starts when the associated dual risks are understood, and the understanding is advanced and a step ahead to proactively prepare and engage in countering, preventing, mitigating the threats associated.

Biodefense and Bio-preparedness: technologies and strategies for Biowarfare agent detection

Biowarfare is an evolving and emerging national and global security threat with a potentially catastrophic economic, psychological, and social impact. To counter this, several countries have proactively established their comprehensive biodefense institutions and security strategies to strengthen early and efficient detection, protection, and decontamination of biowarfare agents[xiii]. Advanced molecular and microbiological sensing techniques such as antibody-based immunoassays, cellular fatty acid profiling, flow cytometry, nucleic acid-based detection, mass spectrometry, microbiological culturing, and genomic analysis can be used for primary identification of biological agents. Efforts are being made across the globe for the development of highly efficient, reliable, sensitive, and selective technologies and system for detection and identification of BWAs.

Major technologies available for detection include:

1. **Microbiological culturing:** Microbiological culturing is the conventional, highly reliable and specific method for the isolation and identification of biological agents such as bacteria, fungi, and viruses. Microbes are cultured on selective media, and viable microbes can be studied for morphological and biochemical characterisation.
2. **Flow cytometry:** This technique involves the scattering of laser light and emission of fluorescence by excitation of dyes linked with bacterial cells.

Fluorescently labelled monoclonal antibodies are used for detection and identification of various Biowarfare agents such as *anthracis, B. melitensis*, botulinum toxin, *F. tularensis,* and *Y. pestis*.[xiv] [xv]

3. **Cellular fatty acid-based profiling:** Bacterial strains can be identified based on the variability of their fatty acids structures and profiles. Cellular fatty acids are converted to fatty acid methyl esters which are analysed by gas-liquid chromatography. GC chromatograms generate fatty acid fingerprints that are specific and employed for the identification and characterisation of various biological agents such as *anthracis, B. mallei, Brucella, B. pseudomallei, F. tularensis,* and *Y. pestis*.[xvi]
4. **PCR based detection:** This molecular biology technique is sensitive and rapid for identification of biowarfare as compared to conventional microbiological techniques. Polymerase chain reaction (PCR) is used to identify an organism based on the presence of specific DNA sequence(s) in the organism. PCR-based identification has been reported in the case of various biowarfare agents such as *anthracis, C. burnetii, filoviruses, F. tularensis, Y. pestis*, and chimeric viruses such as Zika virus, yellow fever virus, Ebola virus, and Mengla virus.[xvii]
5. **Immunological methods:** This technique is based on antigen-antibody interactions for identification of BWAs. The cell surfaces posses specific antigens to which antibodies bind and form a detectable coloured complex. Enzyme linked immunosorbant assay (ELISA) for example, is used for the presence or quantitative detection of antigens present on the agent. It is efficient, economical and readily employed for the detection of biowarfare agents such as *anthracis, B. pseudomallei, B. mallei, Brucella abortus*, Ebola virus, *F. tularensis*, Marburg virus, toxins, and *Y. pestis.*[xviii] Fluorescent microscopy can be used, where a fluorescent labeled antibody is attached to bioantigen present on the surface of the agent. Immuno-histochemical based methods have been used to detect CHKVs[xix]. Other, hand-held immuno-chromatographic assays (HHIAs) performed on nitrocellulose or nylon membranes, based on lateral flow immunoassays can be used to detect *B. anthracis, B. abortus, B. pseudomallei, botulinum, F. tularensis*, smallpox virus, Ricin toxin, variola virus, and *Y. pestis*[xx].
6. **Next-generation sequencing (NGS):** NGS techniques are highly specific and rapid can be used to sequence multiple DNA fragments of bacterial and viral BWAs from clinical or environmental samples simultaneously. This technology has been tremendously used in diagnostics development, for identification and differentiation of novel infectious agents. NGS has been used for *anthracis* and *Y. pestis. F. tularensis* detection in human clinical samples of unknown etiology.[xxi]
7. **Bio-sensors:** These are analytical devices that generate an electrical signal when interacting with analyte present in BWAs. The biological response produced is converted to a detectable form by the transducer, which marks the presence of any biowarfare agent in the sample. Biosensors are highly specific, selective, efficient in electrochemical detection of biowarfare agents. Immuno-biosensor consisting of bismuth nanoparticles (BiNPs) has been developed for anthrax PA toxin detection in a particular sample.[xxii] Other electrochemical immunosensor includes gold and palladium bimetallic nanoparticles, genosensor loaded with gold nanoparticles, and gold nanoparticles and graphene transducer etc.[xxiii]

Surface plasmon resonance (SPR) is another rapid and specific technique that has been reported for detection of BWAs like *B. anthracis*, botulinum neurotoxin, *Brucella, Staphylococcus enterotoxin,* and *Y. pestis*.
Piezoelectric biosensors have been developed for detection of *F. tularensis,* and *staphylococcal enterotoxin A* in milk samples.[xxiv]

Bio-preparedness against next-generation biological agents

Bio-preparedness against BWAs includes the development of effective and safe preventive and treatment measures against infectious diseases. Biotherapeutics includes vaccines, chimeric proteinacous toxins, specific proteins, oligonucleotides, ribozymes, peptide based drugs and RNAi based antivirals which by blocking viral entry, inhibiting viral replication, cleaving target RNAs and inhibiting mRNA translation selectively killing the infected cell.

Chimeric or designer viruses as candidates to develop a vaccine

Chimeric viruses are efficient, affordable candidates for the development of vaccines against contagious viruses. The dual potential of the chimeric virus as a biotherapeutic or biological warfare agent is a covert and overt challenge. Few examples of chimeric viruses to develop vaccine:

- **Chimeric Zika virus (ZIKV):** Zika virus is a single-stranded RNA virus transmitted by *Aedes* mosquitoes which causes congenital neurological complications. Recently, a chimeric virus was constructed by swapping antigenic surface glycoproteins, and capsid anchor of yellow fever virus with the corresponding sequence of pre epidemic ZIKV isolate[xxv]. Various tissue culture adaptive mutants were made and tested in mice model. In the same year, another group constructed chimeric Zika virus strain which was integrated into

yellow fever virus attenuated backbone. The chimeric strains were investigated for Neuro-invasiveness in cell line and animal model.[xxvi]

- **Chimeric West Nile virus (WNV):** West Nile virus causes infection in blood samples of vertebrates. A chimeric virus was prepared by coexpessing Dengue serotype and West Nile[xxvii]. This vaccine construct was investigated for mutations to improve immunogenicity and viability.
- **Chimeric Chikungunya Virus (CHIKV): A** chimeric CHIKV vaccine was constructed by using three recombinant viruses as the backbone, i.e., sindbis virus, vaccine strain of Venezuelan equine encephalitis virus, and eastern equine encephalitis strain expressing CHIKV structural protein genes.[xxviii] This chimaera developed immunogenicity and robust neutralising antibody response in both immunocompetent and immunocompromised mice model. More chimeric vaccine candidates were prepared using structural genes of CHIKV and nonstructural protein genes of Venezuelan equine encephalitis virus. The chimeric constructs were less infectious in CHIKV vector *Aedes aegypti* with lower dissemination as compared to the wild strains.[xxix]

Decontamination technologies

Traditional decontamination systems to minimise adverse effects caused by hazardous biological agents include bleach and decontamination solutions. Localised small-scale remediation can be done using decontaminant solutions such as hydrogen peroxide, chlorine dioxide gas dissolved in water, phenolics, sodium hypochlorite, and quaternary ammonium compounds, or decontamination foams. Large-scale remediation can be done by fumigating with chlorine dioxide gas. Other tested and reported decontamination agents include ethylene oxide, glutaraldehyde, hydrogen peroxide vapour, peracetic acid, ortho-phthalaldehyde, ozone, and para formaldehyde. The alcohol solution is useful for hard nonporous and 70% alcohol solution decontaminates almost biological contaminates.[xxx]

Autoclaving, dry heat, thermal washer disinfection, ultrasonication and sterilisation are other commonly used decontamination procedures. Ionising and non-ionising radiations, thermal energy, and reactive gases produced by plasmas can also be used for the decontamination of biological agents.[xxxi] A portable arc-seeded microwave plasma torch for decontamination of BWAs is available.[xxxii] Highly reactive plasma in a highly energised state effectively oxidised and destroyed all the biological agents. Vacuum cleaning with HEPA filtration is also an effective decontamination method which reduces the particulate load to allow effective remediation.[xxxiii]

Development of novel decontamination systems against biowarfare agents with a key focus on practical, economical, fast, nontoxic, and specific decontamination should be prioritised. Ideal and eco-friendly decontamination technologies that focus on selective and effective disinfection of biowarfare agents are still in the infancy stage.

Conclusion

The strategic use of technology like bioweapons can be camouflaged as a natural outbreak of diseases with the capability to destroy human population, livestock and crops and cause other economic damages. The dual potential of advancing genetic engineering and synthetic biology can be exploited for the synthesis of next-generation bioweapons, eventually increasing the risk of biological warfare. All critical biological data such as decoded genome sequences of pathogenic bacteria and viruses are accessible through various national and international depositories. Researches on essential genes, virulence factors, or synthetic constructs with humanised infectious elements are accessible, which can be misused to develop designer genes, designer disease and next-generation bioweapons for bio-terror attacks. At present, global biodefense technologies for detection, protection, and decontamination are limited. There is a massive gap in knowledge, technology and strategy for preparedness which needs attention.

The scientific community must proactively engage for competent and dedicated scientific collaboration required for the rapid development of biodefense solutions to counter any probable biological attack. Sharing of scientific knowledge within the scientific communities is the critical pillar of safe scientific development. Reported incidences and evidence indicate an asymmetric correlation between offensive and defensive biowarfare strategies. Domestic laws against the use of bioweapons need to be enacted. The Biological and Toxin Weapon Convention (BTWC) needs to be strengthened through a legally binding instrument. Strict vigilance, enforcement and compliance of the provisions of the BTWC, the dedicated national portal for bio-surveillance and extended bio-intelligence network for information exchange between the countries is needed. It is essential to develop a national decision theatre and a dedicated wing in civil and military administration for biodefense and health security network. Developing specialised biodefense laboratories, promoting community immunisation program and awareness campaigns are the key initiatives for effective management against and

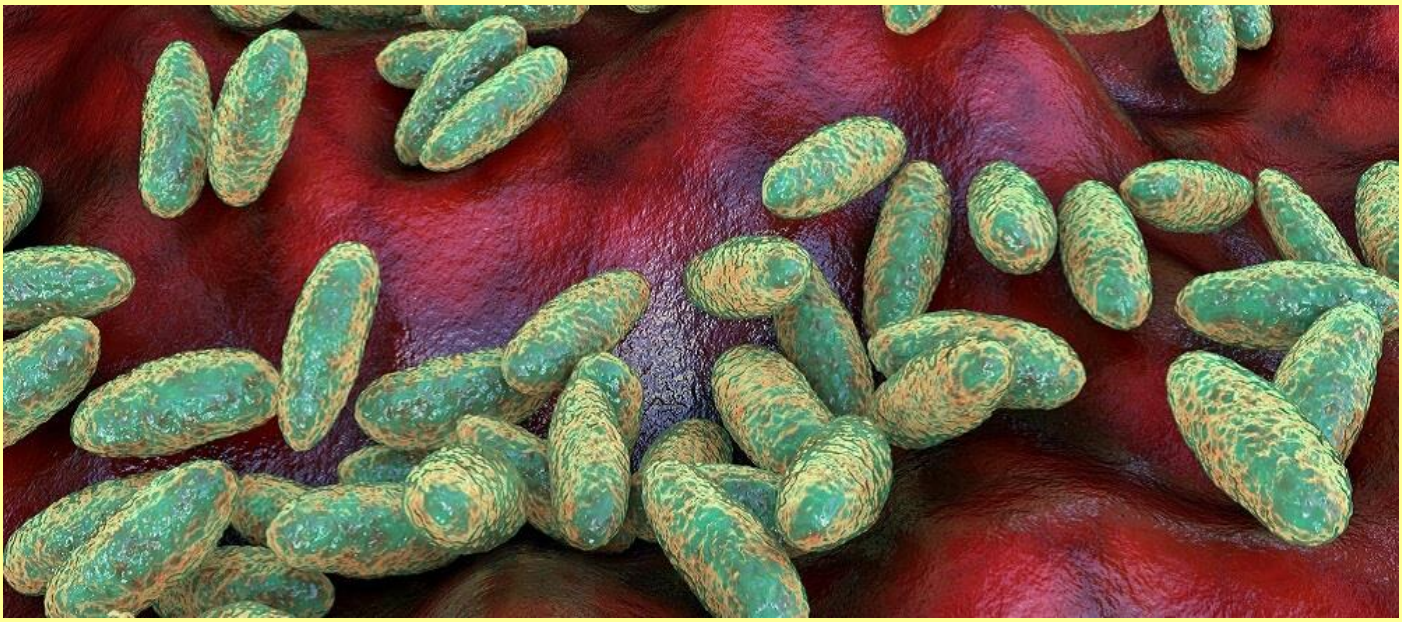
biological incidents and catastrophes. A comprehensive national biodefense strategy needs to be developed and operationalised to support the nation's ability to proactively prepare and develop essential defensive tools such as diagnostics, vaccines, antibiotics and other therapeutics.

●▶ References are available at the source's URL

Dr Aakansha Bhawsar is Research Scholar at Jawaharlal Nehru University, New Delhi.
Dr Sudeep Shukla is Principal Scientist, Environment Pollution Analysis Lab, Bhiwadi, Rajasthan.

Russian and American use of Yersinia pestis as a Biological Weapon

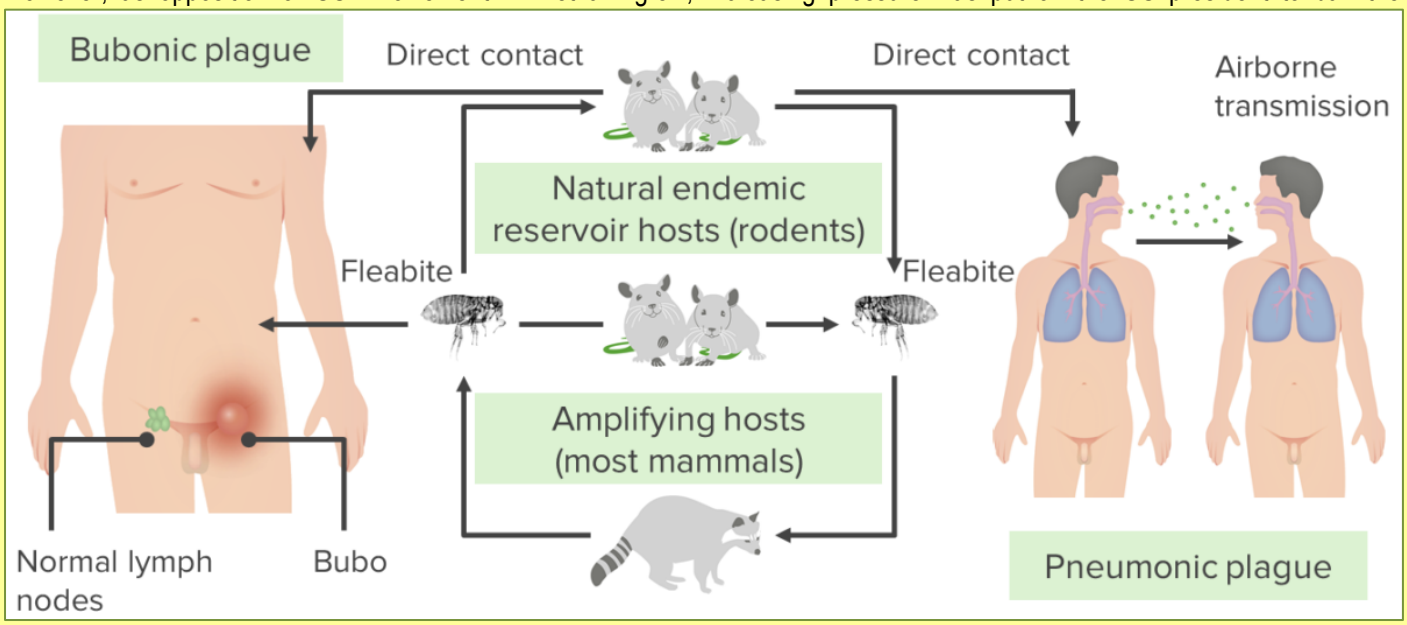
Montana State University
Source: https://www.montana.edu/historybug/yersiniaessays/hale.html



"In the city of Kirov, we maintained a quota of twenty tons of plague in our arsenals every year." Kanatjan Alibekov, 1992.
"It is apparent that there has been a kind of ignoring of potentials for harm," Orrin G. Hatch of Utah, chairman of Senate Judiciary Committee, March 6, 1996.
By the mid 1990's, it became obvious to the United States government that the threat of biological warfare was more than just hypothetical. Even though the United States and Russia, among other countries, signed a ban on the development of biological weapons during the Biological and Toxin Weapons Convention of 1972, doubts lingered around the intentions embedded in the signatures. For the United States, these doubts were solidified when, in 1992, Ken Alibek defected to America. Formerly known as Kanatjan Alibekov in his mother country, Russia, Alibek enabled US intelligence to locate and identify major sites located within Russia which were dedicated to mass production of biological agents designed specifically for offensive purposes (Alibek 1999). Among the list of more than 50 microorganisms and toxins designed and manipulated for warfare are smallpox, anthrax, cholera and plague. Biological warfare agents exist. Among them is one of the most transmissible and deadliest microorganisms: *Yersinia pestis* .
The earliest recorded use of *Y. pestis* as a biological weapon occurred in the 14thcentury when a Tartar army, in an attempt to conquer conquered Kaffa (in current day Crimea), reportedly catapulted victims of plague over gated walls (Cartwright 1972). Centuries later, the world would witness attempts of Japan's Unit 731 to harbor plague as a biological weapon as well. In 1940, Japanese General Ishii Shiro led the campaign to drop porcelain bombs filled with plague infected fleas over central China's Hunan province. The Chinese government reports 7,643 people died as a result (Harbin and Kattoulas 2002). Other modes of possible transmission of plague included flea-ridden feathers as well as briefcases and pens which would aerosolize *Y. pestis* . When brought to trial for war crimes, senior officials of Unit 731 were

released by the US in exchange for information. The US capitalized on this information and gave birth to the US Biological Weapons Program at Ft. Detrick, MD.

However, as opposition of US involvement in Vietnam grew, increasing pressure was put on the US president to ban the



development and use of biological/chemical weapons. As a sign of good faith, President Nixon along with Russia's leader and other world leaders attended the Biological and Toxin Weapons Convention in 1972 and agreed to end biological warfare as a military offensive tactic. Unfortunately, there was no compliance assurance or enforcement associated with this treaty. While the US simply renamed its research program to reflect defensive purposes rather than offensive purposes, Russia founded Biopreparat. With an annual budget of up to $1 billion, Russian scientists soon realized the promise of genetic engineering (Alibek 1999).

During the mid to late 1980's, Russian scientists at Biopreparat made a major breakthrough. They had begun to upgrade their arsenal of biological weapons via genetic modification. One of the first steps of such modifications included making a primitive sort of chimera. A chimera is a biological organism which has been altered so that the 'new version' also has characteristics of another biological organism. Russian scientists were experimenting with the idea of taking *Y. pestis* and inserting various other known toxins into the cells. One day, the announcement was made at Biopreparat that such a design had been successfully made. They inserted a plasmid containing the gene for myelin toxin into *Y. pestis* . The design was simple and disturbing. If a patient were diagnosed with pneumonic plague in time to be treated, the antibiotics would attack and lyse the plague cells, thereby releasing the plasmid coding for myelin toxin which would cause paralysis, high blood pressure, irregular heartbeat, and changes in behavior. Heralded as a major triumph for Mother Russia, Alibek explained, "A toxin-plague weapon was never produced before the Soviet Union collapsed, but the success of this experiment set the stage for further research on bacteria-toxin combinations." (Alibek 1999).

The next step was initiated by Deputy Director Sergei Netesov who suggested putting Venezuelan Equine Ecephalitis (VEE) into *Y. pestis* . The was based on the same idea of treating plague with antibiotics, thereby releasing something else. This time, however, the result would have more dramatic consequences. By the time VEE would have lysed from the bacterium, it would have bypassed most of the body's defenses, allowing it to travel directly to the brain. The patient, being treated for plague, would be dead from encephalitis within 7 to 10 days. US intelligence combined with information gleaned from Russian defectors made the picture very clear for the US: Russia was creating superbugs for the purpose of biological warfare and among them were superversions of *Y. pestis* .

After decades of researching and modifying *Y. pestis* for biological warfare, why have we not seen more of its use in war? One contributing factor is lack of control. The four corners of the earth are not as far away as they used to be. We live in an age of international connectedness. Infected raspberries from Guatemala resulted in a 1996 outbreak of *Streptococcus* in the US. Numerous reports have been cited of infected migrant workers from Mexico transferring intestinal parasites to cows and sheep while working on American ranches. Attempts to keep mad cow disease

outside of the US have failed. The high mobility of people and products of today's world ensures what goes around comes around. Even during times when ships were the main mode of international travel, the world witnessed the rapid dissemination of *Y. pestis* , which ultimately led up to at least three world pandemics. Towns closed themselves off entirely as word of the plague approached town limits. Yet, even with the strictest of precautions and attempts of isolation, plague inevitably found its way into the heart of even the remotest of towns. "But we did not want to use contagious agents anyway, because of the risk that they'd go where you didn't want them to," said William Patrick II, a former bioweapons scientist at Ft. Detrick.

As a result of the imposing threat of biological attack, training and surveillance programs were designed and implemented for the front line should an attack occur: the hospitals. In May 2000, these programs were hypothetically tested in Denver where a simulated pneumonic plague attack was to occur (Miller et al. 2001). The attack simulation was supposed to last 10 days. It lasted four. By the fourth day, it became clear to everyone involved that there was no way for them to 'catch up' with the pestilence which had already spread throughout the US and as far away as Japan and England despite intensive efforts by officials to contain the disease. Advising scientists knew a key factor to controlling plague was to contain it. Wendy Orent writes in her book, *Plague* , "In the time of a new plague, people would need to remember, despite their terror, that *no epidemic disease is more susceptible to quarantine* ."(Orent 2004) However, attempts to isolate the "infected" failed. Analysts reported the failure to quarantine the sick to be contributed to a bad link between health officials, hospital staff and the Federal Bureau of Investigation. The FBI and health officials simply weren't communicating with each other. Hospital staff would explain the need to block flow into and out of city limits while government officials would deny the plausibility of doing so. At one point, government officials even opted to commandeer Coors trucks to pick up dead bodies and keep them refrigerated. "Our public healthcare infrastructure was in some ways better prepared in the thirties to handle an epidemic like this than they are today," said Tara O'Toole, a public health expert who evaluated the exercise. This exercise demonstrated the reason why the US chose not to use plague as a biological weapon: *Y. pestis* was too transmissible.

For Russia and Japan, on the other hand, it was the inability to control *Y. pestis* combined with the ability of *Y. pestis* to rapidly spread that was appealing. While new weapons were being designed by the US military to incapacitate the enemy, Russia was designing new weapons to decimate the enemy. By incapacitating, or wounding, soldiers of the other army rather than killing its soldiers straight away, you ensure a greater depletion of resources. It takes more money and personnel to care for a wounded soldier than to bury a dead one. Whether Russia believed they had appropriate treatment and prevention for its citizens or whether they just didn't care, high levels of infectivity and transmissibility made plague the perfect weapon.

Instead, the main deterrent from using biological weapons is the same as it is for using nuclear weapons: retaliation in kind. Although the United States signed the ban on biological and toxic warfare in 1972, Ft. Detrick has been home to research on biological warfare since the 1940's. Before 1942, the research was centered on the design and modification of microorganisms and toxins for the purpose of offensive warfare tactics. After 1972, this research was reorganized to include defensive warfare tactics. A line exists between offensive- and defensive-based research in biological warfare, but the line is thin. Other countries also have biological weapons. The gap of information lies not in the probability of another country including biological weapons in their arsenal, but rather in *what* biological weapons they possess and in what quantities?

A probable scenario of an attack with *Y. pestis* would include *Y. pestis* infection in the form of primary pneumonic plague. Expect the bacterium to be modified into a more virulent form than is found in nature via genetic modification or via infection of bacteria with a virus which would be lysed upon treatment of plague with antibiotics. There is also high probability that *Y. pestis* will be released along with a number of other modified organisms. Because of the high transmissibility of *Y. pestis* , expect the attack to be initiated by either a terrorist group or by a larger government institution which has no other option. For instance, should a major war break out between the United States and another country, the purposeful release of *Y. pestis* by the other country upon the US will occur when they have no hope left of victory.

Expect the attack to occur in a number of crowded places in colder climates such as New York City or Denver at a bus station, airport and/or stadium. In an Intelligence Briefing from March 12-18, 2005, a document known as the National Planning Scenarios outlined a probable attack of pneumonic plague being disseminated in the bathrooms at an airport, sports arena, and train station (Lipton 2005). This simulated attack had the capacity to kill 2500 and sicken 8000 worldwide. Also, expect a simultaneous attack to occur in the hospitals of the corresponding cities. This will deplete human and fiscal resources, create panic and instill a low level of morale amongst the population. Recently, there have been reports of suspicious persons posing as Joint Commission on Accreditation of Healthcare Organizations (JCAHO) surveyors. These persons have entered hospitals with the apparent intent of surveying capabilities of the hospitals. During one incident, a JCAHO imposter asked a duty nurse questions regarding the hospital's bed capacity and how care was administered to patients. The New Jersey Office of Counter-Terrorism Bulletin in March 2005 states, "Furthermore, counter-terrorism analysts remain

concerned that terrorist organizations may attempt to target US medical infrastructure in order to cause immediate casualties and disrupt health care and emergency medical services." (Terrorism Bulletin 183, 2005).
Most of our knowledge of research in which *Yersinia pestis* is utilized as a biological warfare agent is outdated. Defectors from Russia debriefed the US in the mid 1990's. Public knowledge of plague research supported by the US is largely based on activities prior to 1972. The potential of a "super" plague attack is high. Should an attack occur, the US government has ample room for improvement in its ability to respond. In the meantime, it is essential that the people of the US become informed about the possibility of an attack, how to recognize signs that such an attack has occurred, and about what to do if one should occur.

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Defence against toxin weapons (1997)

By Col David Franz, DVM, PhD (US Army Veterinary Corps)
U.S. Army Medical Research and Materiel Command
Source: https://www.usamriid.army.mil/education/defensetox/toxdefbook.pdf

How the COVID Virus Usurps Host Protein Production

Mar 13 – **NSP1**, the first SARS-CoV-2 protein synthesized in an infected cell, suppresses protein production in the cell without impairing the synthesis of viral proteins. Until now, the mechanism by which this is accomplished was unclear. A new study shows all viral mRNA include specific structural elements in the leader sequence that interact with NSP1 that blocks entry to the ribosomal tunnel to gain right of passage through it, whereas cellular mRNA that lack these structures are not translated. **+ MORE**

The origins of SARS-CoV-2: still to be determined

By Laura H. Kahn
Source: https://thebulletin.org/2022/03/the-origins-of-sars-cov-2-still-to-be-determined/

Mar 10 – SARS in 2003 and MERS in 2012 resulted from natural spillover events in which animals infected humans with coronaviruses. In both cases, two convincing lines of evidence were obtained: (1) the viruses-and/or antibodies to the viruses were identified both in humans and in animals, and (2) humans with occupational exposures to animals exhibited higher rates of seropositivity to the viruses than the general human population. So far, studies attesting to natural spillover of COVID-19—including some recently highlighted in the press—fail to meet these criteria.

SARS

In the case of SARS (severe acute respiratory syndrome), the evidence was clear that the virus came from animals. One study sampled animals being sold at a live animal market in Guangdong, China and found viruses in palm civets that had genome sequences 99.8 percent identical to the human SARS virus. These viruses were closely related to SARS-CoV. Another study found that 80 percent of the palm civets from the animal market in Guangzhou tested positive for SARS-CoV antibodies. The earliest SARS patients butchered or cooked wild animals and thus had occupational exposures to SARS-CoV.
An epidemiologic study in the Guangdong Province tested almost 800 people for Immunoglobulin G (IgG) antibodies to SARS-CoV. Individuals who traded primarily masked palm civets had the highest positivity rates, almost 73 percent. The Chinese SARS

Molecular Epidemiology Consortium used whole-genome sequencing to track early cases and the molecular evolution of the SARS virus. They determined that two major viral genotypes predominated during the initial phase of the epidemic. One genotype was virtually identical to samples collected for sale and from humans working in a live animal market in Shenzhen. The other genotype was identical to samples collected from farmed civets and in the earliest human cases in Zhongshan. The conclusion: compelling evidence for an animal origin of SARS-CoV.

MERS

After the emergence of MERS (Middle East respiratory syndrome) in humans, researchers found that dromedary camels throughout the Middle East, North and East Africa, and parts of Asia tested positive for MERS-CoV antibodies. Archived dromedary camel blood specimens dating back decades tested positive for MERS-CoV antibodies, indicating that cross-reacting viruses had been circulating in camels for decades.

A serological survey of over 10,000 healthy human adults from all 13 provinces of Saudi Arabia from 2012 to 2013 found MERS-CoV antibodies in 0.15 percent of samples. For camel shepherds, MERS-CoV antibody seropositivity rates were 15 times higher and for slaughterhouse workers, they were 23 times higher than the general population, respectively. The conclusion: compelling evidence for an animal origin of MERS-CoV.

COVID-19

In contrast to SARS and MERS, there is no direct evidence for a natural spillover of COVID-19. Neither the virus nor antibodies to the virus have been identified in animals sampled in Wuhan in 2019 or early 2020. In an article currently undergoing peer review, Gao et al. found that *zero* out of 457 samples taken from 18 species of animals sampled in Wuhan in early 2020 tested positive for SARS-CoV-2. In addition, no correlation has been observed between human occupational exposures to animals and higher rates of infection or seropositivity to the virus.

By early 2020, Chinese physicians had conducted many serological surveys of thousands of people to assess prevalence rates of SARS-CoV-2 antibodies, but none included data on occupation. Had occupations been included, these might have revealed whether animal workers in the Huanan market had higher rates of SARS-CoV-2 antibodies than in the general population, thereby supporting the natural spillover hypothesis.

Two recent papers, Worobey et al. and Pekar et al., present geospacial analysis of animal stalls in the Huanan market and viral phylogenetic analysis but do not provide convincing evidence of natural spillover. The data and analyses discussed by Worobey are *equally* consistent with both hypotheses: (1) that SARS-CoV-2 first entered humans at the Huanan Seafood Market in Wuhan, and (2) that SARS-CoV-2 first entered humans at another location and was subsequently brought to the market and then amplified in the market by humans. The authors' assertion that the data and analyses support only the natural spillover hypothesis is false.

Gao et al. reached a conclusion opposite to the claims of Worobey et al. and Peckar et al. Gao et al. reported that there were no positive animal samples at the Huanan market. They further reported that there was no correlation between the locations of the animal sellers in the market or the locations with the highest densities of humans and the locations of the positive environmental samples in the market. Based on these findings, Gao et al suggested that the market "acted as an amplifier," with infections being brought into the market by humans infected elsewhere.

The hypothesis that SARS-CoV-2 originated from a laboratory-related spillover—for example, from a laboratory-acquired infection—remains a viable possibility. Laboratory accidents, including laboratory-acquired infections, occur frequently. In the most recent year for which data are available, the CDC/USDA Select Agent Program received 205 select agent theft/loss/release reports, which equates to an average of four select-agent incidents per week. Of the 205 select-agent theft/loss/release reports, fully 196 were reports of releases and 177 were "determined to represent potential occupational exposure to laboratory workers."

In determining the origin of SARS-CoV-2, what is needed, at a minimum, is: (1) data from serological sampling in 2019 and early 2020 that includes information on occupation and location and that encompasses both Wuhan animal market employees and Wuhan laboratory research employees, and (2) information—including samples, sequences, records, and results—on the research on SARS-related coronaviruses conducted by Wuhan researchers and their collaborators in 2015-2019.

Science is the objective pursuit of truth. Preventing future COVID-19 pandemics requires finding the truth. Premature, false declarations of "dispositive evidence" or "proof" does not generate public trust in science and does not protect public health.

Laura H. Kahn is a physician and policy researcher and is the author of *Who's in Charge? Leadership during Epidemics, Bioterror Attacks, and Other Public Health Crises*.

Who wants and can use biological weapons in Ukraine

By Valerii Riabykh

Source: https://www.ukrinform.net/rubric-ato/3429190-who-wants-and-can-use-biological-weapons-in-ukraine.html

Mar 14 – The aggressor country's ministry of defense last week published documents allegedly containing evidence of biological weapons production laboratories existing in Ukraine.

At a UN Security Council meeting immediately after this publication, UN Under-Secretary-General and High Representative for Disarmament Affairs, Ms Izumi Nakamitsu said the UN was "unaware" of any biological weapons programs being pursued by Ukraine. There is no evidence whatsoever of this, and so the UN would consider Russia's claim without merit. The UN has not guessed to dig deeper to find out who, behind the smokescreen of the Kremlin's claims that Ukraine has been developing biological weapons agents, wants and has the ability to actually use such weapons. One won't have to go too far to answer this question: The only plausible candidate is the aggressor country and international terrorist - Putin's racist federation ...

Experts familiar with the development of biological weapons say that there is currently enough evidence indicating that Russia itself is preparing for the use of biological weapons. The evidence is numerous and varied enough; it is interrelated as the whole thing is done as part of a single common plan, and taken together can be hard to see for a non-specialist.

Information as a means of concealing plans

Among the many pieces of evidence of preparation for the use of any weapon of mass destruction is informative preparation. This usually starts early and lasts from several months to several years. It does not necessarily result in the use of mass destruction weapons (since it is a whole set of preparatory measures). Informative preparation often doesn't have the purpose to actually use these weapons. One such purpose would be, for example, an attempt to conceal certain preparatory work for the development or production of mass destruction weapons by means of deflecting attention. An example of this was the wave of hysteria about "American" biological weapons laboratories in the former Soviet republics, which, incidentally, did not begin now, but coincided in time with the adoption of Russia's new "National Security Strategy" (enacted on December 31, 2015).

Russia has been conducting active informative preparation related to biological weapons since 2008 Georgia war. This preparation had periods of "hysteria" and periods of relative "calm" but never stopped. In this context, two "campaigns" are particularly noteworthy. One was relatively recent and aimed to prove the "American origin" of the COVID-19 epidemic in China. The other one has been going on for more than a year, and again boils down to accusations that the United States has been developing biological weapons and conducting tests on humans in the former Soviet countries (a kind of analogue of the sinister Japanese Detachment 731). Here it has been emphasized that governments in those countries are aware of and covertly nodded this kind of "research". However, nowhere in Russia has it been reported that the United States, with rare exceptions, did not build these laboratories from scratch, but they had been created back in the Soviet era. As a matter of fact, the US has only modernized the equipment at the laboratories to enable faster and more reliable detection of dangerous pathogens.

It should be noted that technical modernization of these laboratories in all of the former Soviet republics had been funded by the United States (of course, in pursuance of its own goals, such as preventing the countries from unlocking their biological weapons development programs, control over biological weapons specialists in those countries to prevent their recruitment by various terrorist organizations, quick access to new biological materials for early detection of new pathogens of particularly dangerous diseases, etc.). The only exception was the Russian Federation, who has been reluctant to allow both American experts and UN inspectors to visit some of its facilities involved in projects undertaken by [the R&D and Production Complex] "Biopreparat".

At the same time, it is easy to see that the flow of accusations from Russia regarding "cooperation with the United States" in the development of biological weapons is not

uniform. Most of these accusations are against Georgia and Ukraine, and very few are against their allies.

What is behind the "smokescreen" about bioweapons development in Ukraine

Intelligence services dealing with bioweapons development programs in Russia -- a successor to the world's largest developer of biological weapons, the USSR – are aware that Vladimir Putin held a meeting at the Kremlin in 2012 regarding plans to develop new genetic weapons, which Russia classifies as weapons that can harm human genetic apparatus or hereditary ability at the chromosome level. These genetic transformations are supposed to be instigated by specialist viruses created as a result of biogenetic changes in their RNA or DNA sequence, as well as by chemical synthetic agents. This work began in Soviet times, but wasn't completed due to the lack of appropriate modern equipment.

There are currently enough indirect indications that Russia has since 2012 been pursuing the development of the third generation of biological weapons, under programs unofficially authorized by the Russian government. The aggressor country and a violator of all applicable international agreements, in addition to its impudence and insidious plans, has all needed to do this: specialists, equipment, libraries and testing outcomes of pathogens, as well as knowhow and an experience in development, testing and production of weaponized pathogens. And most importantly, that country can conduct genetic research using the already available bioweapons agents it had created earlier, which has significantly accelerated the pace of this work.

There is currently no evidence that Russia is going to shut down or reshape its research and development facilities established during the Cold War, to provide an access to these facilities for international experts in pursuance of the Biological Weapons Convention, or to destroy strains of bioweapons agents. This might indicate that Russia has probably completed the development of a new type of biological weapons. It is precisely the potential use of these weapons by the Russian Federation against the World that is behind the "tit-for-tat" accusations being made by Russia against Ukraine, who, even as a Soviet republic, has never had on its territory biosafety Level 4 laboratories necessary to develop bioweapons.

In Europe, only Russia possesses all the components necessary for the use of biological weapons

Russia, as the successor of the USSR, possesses a variety of biological weapon delivery systems and the equipment for the development and production of warheads with biological agents. However, this is not the major component of its biological weapon capability. In a country that is planning for the use of biological weapons, there must be not only research and development institutions for these weapons, but also appropriate production and storage capacities, and the capabilities for fitting and using biological weapon delivery systems. Another key necessity here is to have in place a powerful think tank center to support decision-making on the use of these weapons.

t is realistic to assume that such a center has been in place in Russia. Particularly in 2016, a research and development center (an expert for chemical and biological threats) was established within the RF Armed Forces. Located in Moscow, this center is officially registered as a branch of the Microbiology Research Institute at the Ministry of Defense. Officially, the mission of the Center is " to timely counteract to biological and chemical threats to military personnel, people, biosphere and technosphere objects, as well as management of cooperation with federal executive bodies and sub-federal authorities of the Russian Federation." It was also announced that the center would follow on the tradition of the 42nd Biosafety Research Center at the RF Ministry of Defense, which was dismantled in 2009 (it included a department dealing with research on future priorities for the development of biological protection systems and prediction for biological hazards).

The aggressor country's potential strategies for bioweapons use

The best known are four strategies for using biological weapons: massive use, covert use, local use, and hybrid use. Each of the strategies contains a multiplicity of tactics by which it can be achieved. Each of the tactics actually supports one or another scenario involving the use of mass destruction weapons, including biological weapons.

The strategy for massive use of biological weapons is the last resort measure a state can undertake in the event of a hazard threatening the State's existence. In the case of massive use of these weapons, the enemy will not have sufficient resources, means or time to put up adequate defenses. Biological war agents are required to be highly virulent, contagious and deadly, have a short incubation period, and be resistant to known vaccines and antibiotics. These weapons can be delivered from many different platforms ranging from missiles and artillery to aircraft, including kamikaze drones.

The covert use of biological weapons is aimed not so much to destroy the enemy; rather it is directed to inflict maximum financial damage on the adversary in order to impose further certain conditions on it. In this case, the use of biological weapons would be disguised to be a regular epidemic occurring in one or more locations within the adversary country. The key objective of this strategy is to sow panic and disorganize the life of the country. A

necessary condition for this strategy to be a success is the availability of sufficient stockpiles of vaccines in the country that is planning for the use of biological weapons, or massive vaccination against the disease caused by the biological agent used. In this case, the weapons can be delivered via intelligence and security services.

The local use of biological weapons is often aimed to verify the effectiveness of a certain type of biological weapons in real-world conditions. The necessary conditions for this strategy to be a success are control of the spread of the area being infected, the availability of relevant vaccines or antibiotics, and pre-vaccination of the personnel involved in the operation. The toxic effect of the munitions used must not necessarily be lethal. The objective may be to disable the enemy for a certain period of time. The weapons can be delivered via subversive attacks. An example of this strategy is the USSR's use of bioweapons (toxins, including ricin) in Afghanistan.

Hybrid strategy for the use of biological weapons aims to "warn" the enemy, reduce its activity, and achieve certain tactical successes on the battlefield. The necessary conditions for this strategy to be a success are limited space and time and the ability to control the spread of infection. The fact of the use of biological weapons is not announced and invariably denied. It is assumed that the weapons will be used by third parties ("insurgents", terrorists, "guerrillas", etc.), who may not be made aware of the nature of these weapons. Accordingly, the personnel, except for a narrow circle of leaders and executives, may not receive the required level of protection. A very important aspect of this strategy is to hide the fact of the use of biological weapons from the global community and thus avoid the punishment.

What strategy for the use of biological weapons Russia can choose

The potentiality of Russia's use of biological weapons in Ukraine has always been there, but it has increased dramatically after the Russian leadership had launched an all-out war against our country. In particular, Yuri Bobilov, an expert at the RF Council on Foreign Affairs noted earlier that Russia's new National Security Strategy, enacted in 2015, confirms Russia is ready to use currently stored or new biological weapons for attacks against covert US-funded laboratories in the former Soviet countries, Baltic countries and other neighboring states. According to Mr Bobilov, this may be justified by risk of the spread of epidemics from within these laboratories, or the emergence of previously unknown viruses (paragraph 23 of the Strategy).

Based on an analysis of Russia's ongoing military campaign in Ukraine, if the Russian leadership decides to use biological weapons in Ukraine, the scenarios of covert, local, hybrid or simulated (fake) use of biological weapons seem highly likely.

Particularly likely seem the secretive scenarios for using bioweapons under the guise of natural infections, which are typical for this region. Scenarios for the local use of biological weapons for testing purposes cannot be ruled out either. This assumption could be confirmed by reports that Russian occupiers are willing to take control of modern certified microbiological laboratories in Ukraine, which had been established with a mission to prevent the possible covert spread of bioinfections.

A hybrid-use strategy may be selected as one of the most likely scenarios for the use of bioweapons by the aggressor country. This could include a simulated use of biological weapons with the purpose of accusing Ukrainian forces of doing what precisely they themselves are doing. Such a scenario is likely not aimed at the Ukrainian army personnel as much as it is aimed to incite panic and confusion among the population and to spread distrust in the Ukrainian military. This scenario may also be aimed at preparing public opinion in Ukraine and the world overall for the planned future use of any of the scenarios (excepting massive use) for Russia's use of biological weapons in our country.

Who can be drawn by Russia into implementation of its strategy for the use of biological weapons?

There is one sure answer to this question – those will likely be selected members of the population in the currently occupied Donetsk and Luhansk regions, who have been intoxicated by the Russian propaganda since 2014, and have taken up arms to aim them at Ukraine. Of course, they will act under the immediate control of Russian specialists, who will be the only ones to have information about what is happening.

The creation of NBC units within military forces of the self-proclaimed "people's republics" was officially announced in 2019. The analysis of the available information shows that the NBC protection system on the currently occupied territory of Ukraine in Donbas is organized on the Russian model: There are NBC companies within tactical groups, chiefs of NBC services, and computational & analytical systems to support operational and tactical commands, with the only difference in armaments.

NBC units operating in the two separatist regions of Ukraine's Donbas territory currently occupied by Russia are using obsolete, Soviet-built armaments and protective NBC equipment (while the situation is diametrically opposite for Crimea). By this way Russia seeks to disguise its support for the "people's republics", arguing that all the weapons and protective NBC equipment in their possession had been taken as "trophy". However, since 2020, there have been announcements about future reweaponing and technical modernization of these units with "new, effective means of

NBC protection, analysis, and decontamination". There were no reports then of where those means could come from, given that the region does not have industries for development and manufacture of NBC equipment.
At the same time, chemical enterprises, radioactive waste sources, and graves of anthrax stricken animals are concentrated in significant numbers in the area of hostilities in Donetsk and Luhansk regions. In this area, there have recently emerged natural foci of infections such as hemorrhagic fever, Krim-Congo fever, tularemia, cholera, and Lyme disease. With the rapid climate change, more of natural foci of infections never seen before in the area have emerged. This factor must not be discarded in any analysis of Russian strategies for biological weapons use – covert, massive, local, hybrid, or simulated.

Epilogue
Everything described above could look like fiction, if not confirmed by the proven facts of actions by the aggressor country. Putin's regime has embarked on the path of terrorist intimidation of not only Ukraine but the whole world. In the mad actions by the Russian leadership, who are moving to nuclear, chemical, and now even biological blackmail, there can be seen only one strategy - the strategy of madness that can result in the destruction of humanity. This must be ended! But it seems like this is best understood only by Ukraine.

Frozen vials marked "Smallpox" found in lab freezer in Pennsylvania, CDC says

Source: https://www.cbsnews.com/news/smallpox-vials-lab-freezer-pennsylvania-cdc/

Nov 2021 – Federal health authorities on Wednesday confirmed the discovery of some frozen vials labeled "Smallpox" in a freezer at a facility in Pennsylvania that conducts vaccine research.
The Centers for Disease Control and Prevention said the vials "were incidentally discovered by a laboratory worker" who was cleaning out the freezer.
"CDC, its administration partners, and law enforcement are investigating the matter and the vials' contents appear intact," CDC spokesperson Belsie González said in an email.

"The laboratory worker who discovered the vials was wearing gloves and a face mask," González wrote. "There is no indication that anyone has been exposed to the small number of frozen vials."
Rutgers University chemistry and chemical biology professor Richard Ebright told The Philadelphia Inquirer, "For the general public there is no basis for being worried, even a small amount."
The discovery raised concerns over inadequate security, not public safety, he added.
The CDC would not confirm where in Pennsylvania the vials were found.
Smallpox is a deadly, infectious disease caused by the variola virus that plagued the world for centuries and killed nearly a third of the people it infected. Victims suffered scorching fever and body aches, and then spots and blisters that would leave survivors with pitted scars.
The United States was able to end routine childhood vaccination against the disease by the early 1970s and said the last natural outbreak in the country occurred in 1949. In 1980, the World Health Assembly declared smallpox eradicated.
There are two sites designated by the World Health Organization where stocks of variola virus are stored and used for research: the CDC facility in Atlanta and a center in Russia.
Smallpox research in the United States focuses on the development of vaccines, drugs and diagnostic tests to protect people against smallpox in the event that it is used as an agent of bioterrorism, according to the CDC.
In July 2014, officials said a government scientist cleaning out an old storage room at a Bethesda, Maryland, research center found six decades-old glass vials containing freeze-dried smallpox samples packed away and forgotten in a cardboard box. Officials called it the first discovery of unaccounted-for smallpox in the country.

What happened after an explosion at a Russian disease research lab called VECTOR?

By Filippa Lentzos
Source: https://thebulletin.org/2019/11/what-happened-after-an-explosion-at-a-russian-disease-research-lab-called-vector/

Nov 2019 – At a huge Soviet-era virology campus in Siberia called VECTOR, a sudden, unexpected explosion in September blew out the windows and set parts of a building ablaze. Around the world, people sat up and took notice. Global public health and security officials were concerned the explosion might have affected labs holding dangerous viruses. Biosecurity experts questioned whether it was a deliberate attack, and international security analysts and biodefense experts deliberated how to read the situation—acutely aware that biosafety breaches in a similar facility 40 years ago had caused a large and deadly anthrax outbreak that eventually exposed the Soviet Union's prohibited biowarfare activities.
From media reports on the explosion, it was unclear exactly which parts of VECTOR, and which labs, had been affected by the explosion and fire. Of particular concern was the facility housing the unique smallpox-causing variola virus, one of just two such repositories in the world, both routinely monitored by the World Health Organization. Following the media reports, VECTOR management responded to queries from the World Health Organization with reassurance that the smallpox repository had not been affected, according to an organization spokesperson. From the organization's perspective, there was no need to follow up with a visit or ad hoc inspection.

The Russian VECTOR research center maintains one of just two repositories of smallpox-causing virus in the world. Credit: US Government Accountability Office.

The World Health Organization-led international inspection team last visited VECTOR in February 2019, and while the report from the inspection is still in review, previous inspection reports have found that VECTOR meets international standards of biosafety and biosecurity for smallpox research. The unit visits VECTOR and its

US counterpart, the smallpox repository at the Centers for Disease Control and Prevention, every other year.
Yet while the World Health Organization was reassured by the response from VECTOR officials, others still harbored concerns.
A little more than a month earlier, an explosion at a Russian military test site led US intelligence officials to suspect Russia had been experimenting with a nuclear-powered cruise missile. The explanations from governmental authorities about what happened and whether there was or wasn't any increased level of radiation changed rapidly in the aftermath of the so-called Nenoksa incident. Given that the World Health Organization ended up concluding the smallpox repository was intact, and VECTOR did publish a brief report on its website on the day of the incident, officials at VECTOR might have benefited by taking pains to be as transparent as possible. Telling the health body about the explosion directly instead of letting it learn about the accident through media reports might have been a start. Given VECTOR's past, it should have been.

An offensive history

VECTOR was once the center of the Soviet biological warfare effort's virology work, and home to many of the world's leading experts in weaponizing viruses. It didn't advertise this fact, though. The Soviet Union had signed on to the international treaty prohibiting biological weapons, the Biological Weapons Convention, which entered into force in 1975. VECTOR's public cover story was that it was developing biological pesticides for use in agriculture. In fact, only a very small core of people knew that VECTOR's classified mission was to research, develop, and lab-test viruses to arm biological weapons. In their seminal book *The Soviet Biological Weapons Program*, Milton Leitenberg and Ray Zilinskas estimated that by the time the Soviet Union collapsed in 1990, VECTOR had the capacity to produce two tons of weaponized variola virus a year.

A pre-1991 photo of a scientist working in a lab at VECTOR. Credit: Unknown Soviet photographer. Photo courtesy of Raymond A. Zilinskas.

In the 1990s, there were significant efforts by the international community, spearheaded by the United States, to decommission the infrastructure of the Soviet biological warfare program, and to redirect former weapons scientists into research for peaceful purposes. VECTOR became one of the first institutes to receive foreign grant money.
Jens Kuhn, a German virologist who was part of a Pentagon-sponsored program that sent young scientists to work in former bioweapons labs, was the first Western scientist through the door at VECTOR in July 2001. Getting in was anything but easy, but once inside he found that contrary to fears he had heard expressed in the West, the high-containment units operated both safely and securely. "The Russians don't want to kill themselves any more than Western scientists," Kuhn is quoted as saying in a *Nature* news story. Safety problems resulted primarily from limited resources, and not from lack of experience in safely and securely handling pathogens. In recounting his time at VECTOR, Kuhn spoke of stumbling blindly in the darkroom while holding biological samples because the red light was missing. Colleagues would remove his discarded rubber gloves and pipette tips from the bin to reuse them. It was not, therefore, that VECTOR scientists were at greater risk of becoming infected with pathogens, but rather that they were at greater risk of suffering from common accidents.
Things had clearly changed by the time of the 2009 World Health Organization smallpox inspection report, at least in the parts of VECTOR benefiting from investments in biological threat reduction. The 2009 report notes freshly painted walls and ceilings, and commends the state of the floors in the maximum containment lab. The 2012 report goes on to observe a high standard of surface finishes in the effluent treatment room and improvements to the vivarium since the last inspection visit. The 2016 report notes that "since the last inspection, several pieces of repair and replacement work had taken place," there is "continual modernization," and "the comprehensive maintenance program and the condition of the facility of VECTOR are commendable." A newly renovated isolation hospital is also mentioned, to accommodate any VECTOR personnel conducting work with high-threat pathogens needing quarantine and treatment.

This pattern of upgrades, repairs and renovations at VECTOR lends some credibility to the claim in the present-day explosion story that the room where the explosion occurred was undergoing renovation. Those more skeptical would point out that, while that may be true, Russian officials began rejecting financial assistance through biological threat reduction programs in 2012, and Russia formally withdrew participation altogether in 2015. The renovations, particularly the extent of the more recent ones, might therefore be signaling new sources of funding flowing into VECTOR, and this at a time when military interest and investment in biology is increasing. While it is important to retain a critical stance, it is equally important not to jump to conclusions. The Biological Weapons Convention prohibits the development of biological weapons, but it permits activities for peaceful and defensive purposes.

To reassure others of the legitimacy of these activities, the countries that make up the bioweapons convention regularly exchange information about them. Russia participates in these confidence-building measures and declares biodefense activities at the Sergiev Posad, Kirov, and Ekaterinburg facilities, just as the United States does for its biodefense activities at Fort Detrick, Dugway, Plum Island, Edgewood, Livermore, Los Alamos, and so on. In addition to its biodefense activities, Russia also declares activities at facilities that have high-containment labs or that specialize in permitted activities directly related to the bioweapons treaty. VECTOR is the only listed facility with maximum containment labs, or biosafety-level-4 labs. Yet, while VECTOR's 15,500 square feet of such specialized lab space is significantly greater than what most countries declare, it pales in comparison to the 80,072 square feet declared by the United States. Facilities, whether in poor condition or newly renovated, do not in and of themselves indicate anything suspicious.

Were reactions to the VECTOR explosion overblown?

Today, research at VECTOR is focused on studying the properties of highly contagious pathogens like HIV, Marburg, Ebola, influenza, and measles, and on developing vaccines and antiviral treatments against infections, including those resulting from genetically engineered viruses. There is also research to detect and diagnose pathogens. After the explosion, there were concerns that even if the smallpox repository building had not been impacted, labs working on any of these other agents could have been affected. Could any highly contagious pathogens have been accidentally released into the environment by the explosion, potentially setting off an infectious disease epidemic?

The global system for outbreak alerts is managed through an intricate web of national focal points, regional offices and the 24/7/365 surveillance center at the World Health Organization in Geneva. An international legal framework (the International Health Regulations) obligates countries to notify the World Health Organization of events constituting a public health risk. In the case of the VECTOR explosion, where, as far as we know, no staff were infected and there were no signs of a disease outbreak to suggest there might be a public health risk, the incident would not require formal notification. Informal communications are always encouraged, however, and, according to another source, once prompted, Russian officials did also communicate through more formal channels following the incident at VECTOR to reassure the international public health community.

The explosion had occurred in a decontamination room where staff change into and out of the personal protective gear worn in high containment labs. The area was being renovated at the time of the incident and there were no biohazardous substances in the room. While the windows had been blown out, there was no structural damage to the building itself. One contractor had been taken to hospital with severe burns and was in intensive care, but there were no public health risks stemming from the explosion.

But an editorial article in *Global Biosecurity* published within four days of the incident raised the alarm over what could have happened at VECTOR. The article is speculative and draws on worst-case assumptions, but still provides what appears to be precise and scientific data to back up its claim that the explosion could have resulted in the propagation of viral aerosols leading to a global epidemic. The article's publication, occurring as it did so shortly after the incident itself, and without the authors first having ascertained the facts on the ground or sought the usual peer review, suggests some degree of opportunism. A researcher or journal's credentials can obscure hotly contested science in the eyes of the public—and the article in *Biosecurity* and recent pieces in other publications serve to dangerously, some might say recklessly, erode trust in the international institutions and mechanisms in place to safeguard global health and security.

Follow-up

A month after the VECTOR incident, on Oct. 16, 2019, the Russian media returned to the story. A lawsuit had been brought against the contractor who was renovating the decontamination room. The worker who had been taken to hospital turned out to have burns to 45 percent of his body surface and he had suffered serious harm to health. The contractor was being sued for negligence and breach of health-and-safety-at-work rules.

A formal investigation into the incident is ongoing.

While solid international reporting mechanisms are in place to deal with international health and security concerns arising from such incidents as the VECTOR explosion, clearly, there are aspects that can be improved. The World Health Organization should learn about such incidences first-hand from the institution involved, rather than through the media, for example.
And the international community could make changes in how the World Health Organization monitors labs like VECTOR. The regular meetings of the World Health Organization Advisory Committee on Variola Virus Research, for example, can be used as a forum for presenting near-misses or tangentially relevant incidents to the 18-member smallpox expert committee, rather than waiting for follow-ups during the organization's biennial inspections. Additionally, Russia could report more details about its activities in the confidence-building measures of the Biological Weapons Convention; and the measures could be revised to provide better insight into the intentions behind the activities. Members of the convention could, in general, make better use of the informal consultation procedures built into the convention to initiate conversations about 'gray zone' biodefense projects. And the International Health Regulations could introduce regular reviews to ensure they adapt to shifts in science, technology, and politics.
The international community does not yet know with any certainty what really happened at VECTOR that day. If it really was an accidental gas explosion with no resulting health or security risks, the situation seems to have been handled appropriately. But given Russia's history of covering up biological warfare research and secrecy around major accidents, national and local officials needed to show even more transparency than they did.
And who knows, in 20 years' time, we might even find out what happened at VECTOR from an HBO series, as one local resident near the VECTOR site tweeted, referring to the popular show about the Chernobyl disaster.

Filippa Lentzos is a Senior Lecturer in Science & International Security at the Department of War Studies and Co-Director of the Centre for Science and Security Studies (CSSS) at King's College London. She is also an Associate Senior Researcher at the Stockholm International Peace Research Institute (SIPRI) and a Non-Resident Scholar at the James Martin Center for Nonproliferation Studies (CNS). Her research focuses on biological threats and on the security and governance of emerging technologies in the life sciences. A biologist and social scientist by training, Dr Lentzos has researched and been actively involved in biological disarmament and non-proliferation for nearly 20 years.

Persistent mental health issues 16 months post severe COVID-19 illness

Source: https://newatlas.com/health-wellbeing/persistent-mental-health-issues-coronavirus-long-term-study/

Mar 15 – A large new study offers the first investigation into persistent mental health issues in non-hospitalized COVID-19 patients up to 16 months after an initial infection. The findings reveal COVID-19 led to a higher risk of depression and anxiety following acute disease if the illness was severe enough to keep patients in bed for over seven days.
"Our research is among the first to explore mental health symptoms after a serious COVID-19 illness in the general population up to 16 months after diagnosis," explained Unnur Anna Valdimarsdóttir, an author on the new study. "It suggests that mental health effects aren't equal for all COVID-19 patients and that time spent bedridden is a key factor in determining the severity of the impacts on mental health."
The study looked at data from nearly 250,000 people spanning Sweden, Iceland, Denmark, Estonia, Norway and the U.K. Just under 10,000 of those received a positive COVID-19 diagnosis and the researchers were most interested in tracking persistent symptoms of depression, anxiety, COVID-19-related distress, and poor sleep quality.
In general, the study found COVID-19 led to an 18 percent increase in the prevalence of depression and a 13 percent increase in poor sleep quality compared to a cohort of people without a history of SARS-CoV-2 infection. Rates of anxiety or COVID-related distress were generally similar between infected and non-infected cohorts.
The study also found the severity of the initial disease significantly correlated with the persistence of mental health problems. Around a quarter of those with COVID-19 experienced disease severe enough to keep them in bed for seven days or more. Anxiety and depression was up to 60 percent more prevalent in those bedridden for a week from COVID-19 compared to the uninfected control group.
Those with mild or asymptomatic COVID-19 were seen to recover swiftly from any signs of mental health distress within one or two months of their acute illness. Interestingly, the long-term follow-up found those mild or asymptomatic cases ultimately showed a lower prevalence of mental health symptoms compared to the uninfected cohort. Co-senior author Fang Fang, from the Karolinska Institutet, hypothesizes this finding could be underpinned by a sense of relief in those only experiencing a mild infection.

"It is possible that the completion of low- or asymptomatic COVID-19 infection results in a certain relief among these individuals who can now return to their normal lives," said Fang. "This could be one of the reasons for the lower prevalence of mental health symptoms observed in this group relative to those in the population who are still worried about being infected and therefore avoiding social interactions."

The researchers do indicate it is also possible pre-existing psychological and physiological vulnerabilities contribute to both the severity of acute COVID-19 and the persistence of mental health problems. As co-author Aniko Lovik pointed out, the findings in the study are likely due to some kind of combination of inflammation triggered by the coronavirus infection and psychological worries or anxieties.

"While we cannot fully explain these associations, some contributing factors may be a combination of worrying about long-term health effects as well as persistence of physical symptoms that limit social contact and fuel a sense of helplessness," said Lovik. "It is also possible that severe COVID-19 triggers inflammatory processes that have previously been linked to increased risk of mental ill-health."

The new findings follow another recent study that looked at persistent mental health issues in 150,000 American COVID-19 patients up to one year after initial infection. That study similarly found COVID-19 patients were 50 percent more likely to experience mental health problems compared to those without COVID.

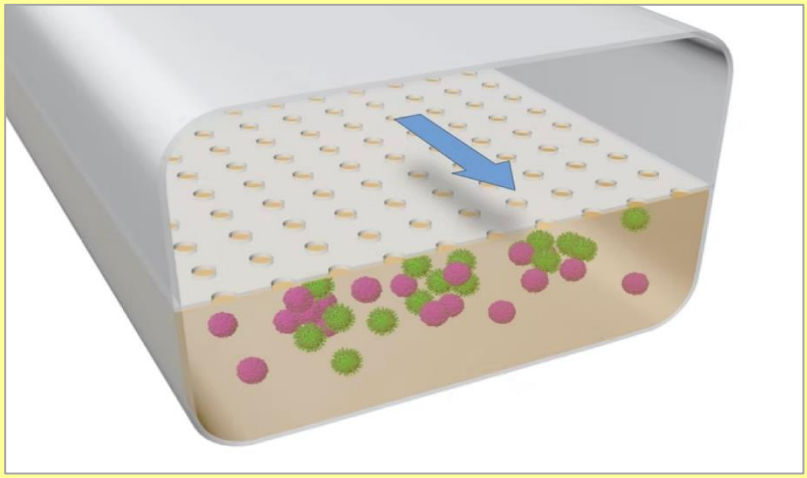
Co-author on the new study Unnur Anna Valdimarsdóttir said although these findings indicate mild COVID-19 cases may be unlikely to experience persistent, long-term mental health issues, doctors and patients should remain vigilant as researchers continue to understand the chronic effects of this new disease.

"As we enter the third year of the pandemic, increased clinical vigilance of adverse mental health among the proportion of patients with a severe acute disease of COVID-19 and follow-up studies beyond the first year after infections are critical to ensure timely access to care," added Valdimarsdóttir.

●▶ **The new study was published in the journal** *The Lancet Public Health*.

Immune-system-on-a-chip could speed up future vaccine development

Source: https://newatlas.com/medical/immune-system-on-chip-vaccine-development/



An illustration of the microfluidic channels, containing human B and T cells (pink and green) in the bottom section (Wyss Institute at Harvard University)

Mar 15 – The immune system is incredibly complex, but a new breakthrough could help scientists unravel more of its secrets. Researchers at Harvard's Wyss Institute have created a more accurate model of the human immune system in a microfluidic chip, providing a better platform to study how immune cells respond to vaccines and pathogens.

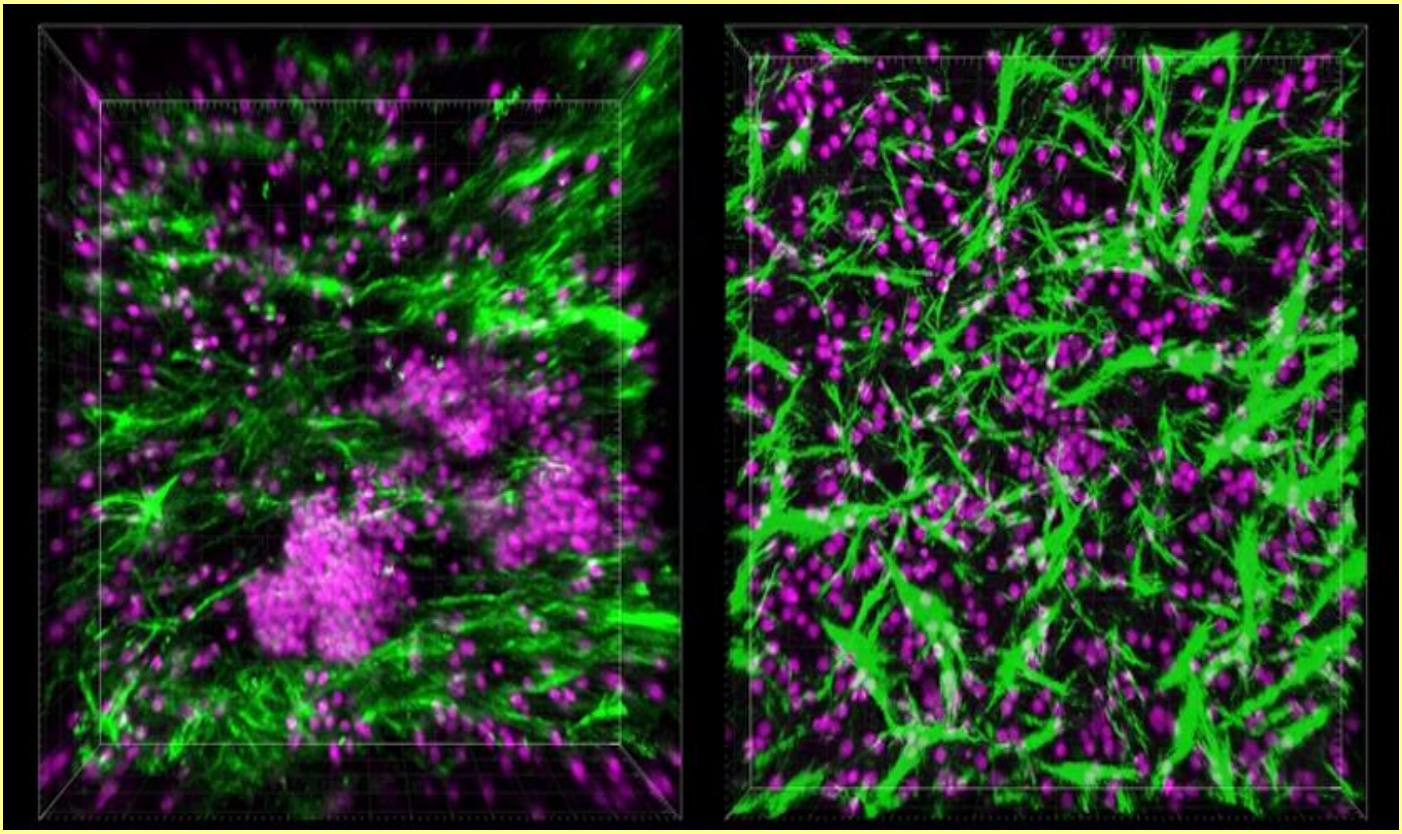
Most medical and biological studies begin in cells in lab dishes or in animals, but these environments aren't always the best analogs to how things work in live humans. As such, many drugs or treatments that seem promising in mice end up falling short of hopes when they reach human trials.

In recent years, scientists have developed a way to model organs and other body tissues in microfluidic chips, which provide a much closer comparison. These "organs-on-chips" have so far included hearts, lungs, intestines, kidneys, spleens, corneas, teeth and placentas, and now the Wyss researchers have added the immune system to the list.

The researchers cultured human B and T cells inside a microfluidic device, which is designed to mimic the physical conditions these immune cells would encounter when they reach an organ. Originally, the team was investigating what happens to those cells when they enter other tissues, but when the researchers fed a flow of nutrients in, they discovered something unexpected.

The B and T cells began to organize themselves into three-dimensional structures that resembled lymphoid follicles (LFs), masses of tissue found in lymph nodes and other

tissues that mediate immune responses. Specifically, they seemed to form germinal centers, which perform complex immune reactions.



The B and T cells formed clumps that resembled lymphoid follicles when nutrients flowed through the circuit (left), but not under static conditions (right) (Wyss Institute at Harvard University)

On closer examination, the team detected several biomarkers that indicated these lymphoid follicles were doing their job. The structures were secreting a chemical called CXCL13, which is produced by lymphoid follicles in response to chronic inflammation. The B cells inside the structures expressed an enzyme called activation-induced cytidine deaminase (AID), which activates B cells against certain antigens. They also found plasma cells, which mature B cells differentiate into in order to secrete antibodies.

"These findings were especially exciting because they confirmed that we had a functional model that could be used to unravel some of the complexities of the human immune system, including its responses to multiple types of pathogens," said Pranav Prabhala, second author of the study.

Next, the researchers investigated how this immune-system-on-a-chip would respond to vaccination, to check if it was a close approximation of what happens in living humans. The team added dendritic cells, which help produce antigens by presenting fragments of pathogens to the lymph nodes.

The team vaccinated these microfluidic systems against the H5N1 flu strain, and sure enough the vaccinated LF chips produced far more plasma cells and flu antibodies than those grown in the usual flat cell cultures. Similar results were seen when the team repeated the experiment with commercially available flu vaccines. The levels of several cytokines were found to be similar to those in humans who received the vaccine.

This indicates that these microfluidic LF chips are a close match to the real thing, meaning they could be a much better analog for future research into the immune system and drug development.

"Animals have been the gold-standard research models for developing and testing new vaccines, but their immune systems differ significantly from our own and do not accurately predict how humans will respond to them," said Girija Goyal, first author of the study. "Our LF Chip offers a way to model the complex choreography of human immune responses to infection and vaccination, and could significantly speed up the pace and quality of vaccine creation in the future."

●▶ **The research was published in the journal** *Advanced Science*.

Uncomfortably Numb: From COVID to Ukraine, Dealing With Crisis Fatigue

By Kathleen Doheny

Source: https://www.medscape.com/viewarticle/970321

Mar 15 – In casual conversation these days, you're likely to hear: "I'm just done with COVID."

The problem is the virus isn't done with us, yet. Nor is Ukraine, inflation, or nuclear threats, to name a few.

The statistics 2 years into the pandemic are sobering, or should be. Deaths from COVID-19 in the United States are approaching 1 million. Globally, more than 6 million have died from it. In 2020, COVID-19 was the third-leading cause of death in the US, topped only by heart disease and cancer.

Still, in many areas, there's an eagerness to put the whole thing behind us and get back to normal, dropping mask mandates and vaccine verification requirements along the way.

Therapists contacted by *Medscape Medical News* say some have become so "done" with COVID that they're "emotionally numb" to it, refusing to discuss or think about it anymore and not reacting anymore to the millions felled by the virus.

Yet, those directly affected by COVID — including those pushing for more help for those with "long COVID" — point out that ignoring COVID is a privilege denied to them.

Can Emotional Numbing Be Protective?

"When there is lots and lots of stress, it is sort of self-protective to try to not emotionally feel a response to *everything,*" said Lynn Bufka, PhD, a psychologist and spokesperson for the American Psychological Association (APA).

But that's hard to do, she says. And lately, as we all know, there has been ongoing stress from many sources — COVID, Ukraine, inflation, gas prices, just to name a few. We're all facing crisis fatigue.

In a Harris Poll conducted on behalf of the APA, rising prices, supply chain issues, the Russian invasion of Ukraine, and the potential of nuclear threats were often cited by respondents as top stressors — along with COVID — as the pandemic passes the 2-year mark.

In that survey, conducted in early February, more than half of the 3012 adults who responded said they could have used more emotional support than they received since the pandemic began.

"It's hard not to feel the stress about the war in Ukraine," Bufka said. "It's hard to see women with small children fleeing with nothing." Likewise it's difficult for many, especially healthcare professionals, who have spent the last 2 years watching COVID patients die, often alone.

"There is a self-protection to try to distance ourselves emotionally from things. So I think it's important for people to understand *why* we do that, but [also understand] that it becomes problematic when it becomes pervasive." When people become so emotionally numb that they stop engaging in life and interacting with loved ones, it's harmful, she said.

But emotional numbness is a different reaction than feeling "down" or blue, Bufka said. "Numbing is more about not feeling," and not having the usual reactions to experiences that are generally pleasurable, such as seeing a loved one or doing some activity we like.

"If it becomes so overwhelming we can't respond, we can't do what is necessary to contribute in a regular way, [then] that has a negative effect on us," she said.

Psychic Numbing

Robert Jay Lifton, MD, emeritus professor of psychiatry and psychology at City University of New York (CUNY), prefers the term "psychic numbing" to "emotional numbing." He is credited with coining the term years ago while interviewing survivors of Hiroshima and wrote "Death and Life: Survivors of Hiroshima," among his many books.

Within minutes of the bomb going off, survivors told him, "My emotions went dead." Some could be involved in handling dead bodies, Lifton recalled, and told him they felt nothing.

Experiencing such disasters, including COVID, makes us all vulnerable to death anxiety, he said, and numbing is a way to tamp that down. In some ways, psychic numbing overlaps with other defense mechanisms, he said, such as denial.

Numbing affects people differently. "You and I may undergo a significant amount of numbing by something we feel threatened by, but go about our everyday life. Others reject the full impact of the pandemic, really sometimes reject at times its existence, and their numbing is more demanding and more extreme," Lifton said.

He said the degree of numbing someone is experiencing explains "why for some the very presence of a mask or the practice of distancing can be a sort of great agitation because these precautions are a suggestion [or reminder] of the death anxiety associated with the pandemic. That is a dangerous form of psychic numbing because there can no longer be a complete denial of the pandemic [due to evidence and numbers]."

A "Stepping Stone" to Healing

"Emotional numbing has a negative connotation, like we have failed," said Emma Kavanagh, PhD, a psychologist and author in Wales. She has a different view. "I think the brain is adapting. I think we need to focus on the possibility that it is healing.
It allows us to take care of survival mechanisms."
In the early phases of the pandemic, nothing in our environment made sense, and there was no mental model in how to react, she said. Fear took over, with adrenaline pumped up.
"There is a reduction of circulation in the prefrontal cortex, so the decision-making was affected; people were not as good at making decisions." In those early stages, emotional numbing helped people cope, Kavanagh said.
Now, 2 years in, some have entered a phase where they say "I am going to pretend that this isn't happening. I think at this point, a lot of people have processed a lot of stress, survival-level stress. We are not built to do that over a long period of time."
When the stress is too overwhelming to handle, people "tend to withdraw into themselves," she said.
That's often called burnout, but Kavanagh said it is more accurate to say it's just the brain's way of dialing down the outside world. "A period of internal focus or withdrawal can allow time to heal." During this time, to expect people to maintain their usual level of activity and interaction is not reasonable.
While many focus on posttraumatic stress disorder as an aftereffect of dealing with nonstop trauma, she said people are more likely to experience posttraumatic growth —moving on in their lives successfully — than posttraumatic stress.
"Yet PTSD is all we talk about," she said. In her book, "How To Be Broken: The Advantages of Falling Apart," Kavanagh explains how numbing or burnout can be a transient psychological adaptation and help people eventually become a stronger version of themselves.
At some point, research suggests, the concern about the pandemic and its many victims is bound to decrease. Researchers call the inability of some individuals to respond to the overwhelming number of people affected by a serious emergency such as COVID "compassion fade," with some research showing one person in danger may evoke concern, but two in danger won't necessarily double that concern.

Recognizing Emotional Numbness

Often, people around those who have gone emotionally numb are the ones who recognize it, Bufka said, and point it out, observing that "You don't seem like yourself" or similar statements.
"Once you recognize that this is happening, rather than jumping back in [totally]," she recommends focusing on relationships you want to tend to first. Give yourself permission not to follow the topics stressing you the most. "We don't have to be up to our eyeballs in it all day long," she said.
Slow down to savor small experiences. "The dogs are bugging you because they want to play ball. Go play ball. Focus on the fact that the dog is super excited to play ball."
Always look to your support system. "I think we've all realized how valuable support systems are" during the pandemic, Bufka said.
Get good rest, regular activity and spend time outdoors to "reset." "Actively seek out what's enjoyable to you," she recommended.

For Some, Numbness Is a Privilege Denied

Kristin Urquiza is one of many, though, who hasn't had a chance to reset. After her father Mark, 65, died of COVID, she co-founded Marked by COVID, a national, grassroots nonprofit organization that advocates for a national memorial day for COVID each year, and other actions. "Emotional numbness to the pandemic is a privilege and another manifestation of the two radically different Americas in which we live," she said in a statement to *Medscape Medical News*.
So far, Urquiza calls the response to the request to set up a national COVID Memorial Day "tepid," although she sees the request as "a free, simple, no-strings-attached way to acknowledge the pain and suffering of millions."
About 152 mayors have taken action to proclaim the first Monday in March COVID Memorial Day, according to the group. US Rep. Greg Stanton (D-AZ) introduced a resolution in 2021 in the House of Representatives expressing support for the annual memorial day. Marked by COVID also advocates for a coordinated, national, data-driven COVID response plan and recognition that many are still dealing with COVID and its

aftereffects. Like Urquiza, many people build on their pain and embark on what Lifton calls a "survivor mission," in which they build public awareness, raise funds, or contribute to research.
"Survivors in general are much more important to society than we have previously recognized," he said.

Hemorrhagic Fever Viruses: Pathogenesis and Countermeasures

Microorganisms 2022, *10*(3), 591 | March 09
By Chad E. Mire[1] and Andrea Marzi[2]
[1]Galveston National Laboratory, Department of Microbiology and Immunology, University of Texas Medical Branch, Galveston, TX 77555, USA
[2]Laboratory of Virology, Division of Intramural Research, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Hamilton, MT 59840, USA
Source: https://www.mdpi.com/2076-2607/10/3/591/htm

Before December 2019 and the COVID-19 pandemic, the general public was to some extent aware that zoonotic viruses can spill over into the human population and cause a disease outbreak. This is due, in part, to the unprecedented Ebola virus (EBOV) epidemic from 2013–2016 in West Africa receiving heavy global media attention. Hemorrhagic fever viruses (HFVs) have had sporadic documented outbreaks over the past five decades with an increase in these events over the last twenty years. Perhaps the increase in documented HFV outbreaks is due to lessons learned over the past five decades along with advanced diagnostic tools and coordinated international responses that helped build “in-country” capacity to increase surveillance for the known hemorrhagic fevers where these viruses are endemic. This leads to the question as to whether we are experiencing more viral hemorrhagic fever outbreaks or if we have improved at identifying them. Regardless of the answer(s) to this question, research on HFVs is an important endeavor to understand their impact on humans in regard to disease, transmission, epidemiology, ecology, diagnostics, therapeutics, and vaccines. This Special Issue “Hemorrhagic Fever Viruses: Pathogenesis and Countermeasures” includes 19 manuscripts on tick-borne viruses, arenaviruses, and filoviruses covering the following topics: epidemiology, assay development, molecular virology, animal models, vaccines, and treatment strategies. The range and reach of viruses will most certainly shift as climate and land use change with a potential large impact on the range of tick-borne hemorrhagic fever viruses. In this special issue, novel insights into tick-borne hemorrhagic fever viruses are discussed in order to understand what is currently occurring in endemic areas for these viruses. Crimean-Congo Hemorrhagic Fever virus (CCHFV) already has a large distribution for a tick-borne virus which spans across Africa, Europe, and Asia. Wampande et al. present data on the CCHFV phylogenetics of isolates from African blue ticks found on cattle in Uganda [1]. These data led to the discovery of a new CCHFV strain within the African genotype II clade which will aid in understanding circulation of the virus in ticks and within Africa to inform medical counter measures (MCMs) and diagnostics. Beyond CCHFV in Africa, Portillo et al. present insights into the epidemiology of a relatively new area for CCHFV in Western Europe in particular the ticks and animals where the virus, through different means, has been detected in Spain [2]. To further understand the important genes for CCHFV to replicate in mammals, Welch et al. provide data for CCHFV infection of mice with a recombinant virus lacking the complete NSm gene demonstrating that this protein is dispensable for growth in mice [3]. Working with CCHFV requires biosafety level 4 (BSL4) laboratories whereas closely related BSL2 viruses such as Hazara orthonairovirus (HAZV) offer an alternative model to study CCHFV. Hartlaub et al. attempted to establish infections in sheep and cattle to compare HAZV to CCHFV infection in these animals and found that infection and serology were distinct from CCHFV [4]. The final manuscript covering tick-borne viruses in this special issue is a comprehensive review of two flaviviruses found in India (Kyanasur Forest disease virus (KFDV)) and Saudi Arabia along with Egypt (Alkurma hemorrhagic fever virus (AHFV)) highlighting the expansion of the endemic areas of these viruses [5]. These flaviviruses are BSL4 pathogens with case fatality rates (CFRs), warranting attention as public health concerns. Covered in this special issue is Lassa fever virus (LASV), an arenavirus with CFRs of public health concern that is associated with hemorrhagic fever outbreaks in Africa such as the one currently ongoing in Nigeria [6]. Shaffer et al. present data assessing the serology of patients presenting with hemorrhagic fever symptoms in Sierra Leone from 2012–2019 to understand the incidences and locations of Lassa fever (LF) during that seven-year span [7]. Treatment of LF is an important way to manage outbreaks of LASV and Hansen et al. provide a comprehensive review of the current treatment strategies and therapeutics that have shown promise in preclinical animal models and discuss their potential to move into clinical trials with the possibility of approval for human use [8]. Beyond what is known for the LF treatment pipeline, Sahin et al. present novel data on the use of the Janus kinase inhibitor Ruxolitinib in an arenavirus mouse model using lymphocytic choriomeningitis virus (LCMV) as a surrogate to understand the

treatment benefit of IFNγ host-directed treatment which showed promise as an Arenavirus disease treatment [9]. As highlighted here and in several contributions to this special issue, animal models are key to our initial evaluation of antivirals and Condrey et al. report on key validations of clotting factors in LASV infection in Strain 13/N guinea pigs [10]. These data are not only important for LASV disease models but can also inform preclinical models of other HFVs such as filoviruses, which are also covered in this special issue. Filoviruses are HFVs of public health concern associated with deadly outbreaks originating in Africa, such as EBOV, with the exception of Lloviu virus (LLOV), Reston virus (RESTV), and Taï Forest virus (TAFV) which have not been associated with high CFRs (TAFV) or have so for not been causing hemorrhagic disease in humans (LLOV, RESTV). While not associated with deadly outbreaks, these three filoviruses are still important to study and expand upon our knowledge why they are less pathogenic and/or their potential to cause a deadly outbreak. This special issue features manuscripts describing the entry receptor usage of LLOV [11], a manuscript investigating the potential reasons for RESTV attenuation [12], and a manuscript reporting on the lack of lethality of TAFV infection in ferrets [13] which differs from the lethal EBOV disease ferret model [14]. The high CFRs documented with EBOV infection attracts the attention of investigators; this virus is therefore heavily studied, a fact reflected in the number of EBOV manuscripts in this special issue. Detection of EBOV during outbreaks is an important part of outbreak response and Furuyama and Marzi describe an ELISA to detect EBOV soluble glycoprotein (sGP) as a diagnostic tool for early detection of EBOV infection [15]. Understanding virus load is an important tool used to assess vaccines and treatments though laboratories from different institutions use either focus forming unit assay, plaque assay, or 50% tissue culture infectious dose ($TCID_{50}$) assays and Keiser et al. compare and contrast these different assays [16]. These assays can be useful when comparing treatments in animal models of EBOV disease such as the "gold standard" nonhuman primate (NHP) models. Alfson et al. discuss data to characterize the rhesus macaque NHP model to support MCMs for EBOV disease [17]. The EBOV NHP model is further highlighted in this special issue through cynomolgus macaque transcriptomics and host miRNAs data that are associated with fatal disease outcome [18]. In depth understanding of pathogenesis through these models can often lead to information that can be used to approach how to treat these diseases using previously approved drugs [19], how to deploy vaccines that are efficacious [20], and how routine care in EBOV intensive care units can present risks to health care workers from patients [21]. **In summary**, this special issue "Hemorrhagic Fever Viruses: Pathogenesis and Countermeasures" covers epidemiology, assay development, molecular virology, animal models, vaccines, and treatments for HFV including tick-borne viruses, arenaviruses, and filoviruses. Each manuscript in the issue adds an important aspect to the HFV field which will aid future research and outbreak response.

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

The development of broad-spectrum antiviral medical countermeasures to treat viral hemorrhagic fevers caused by natural or weaponized virus infections

By Mark R. Hickman, David L. Saunders, Catherine A. Bigger, Christopher D. Kane, and Patrick L. Iversen

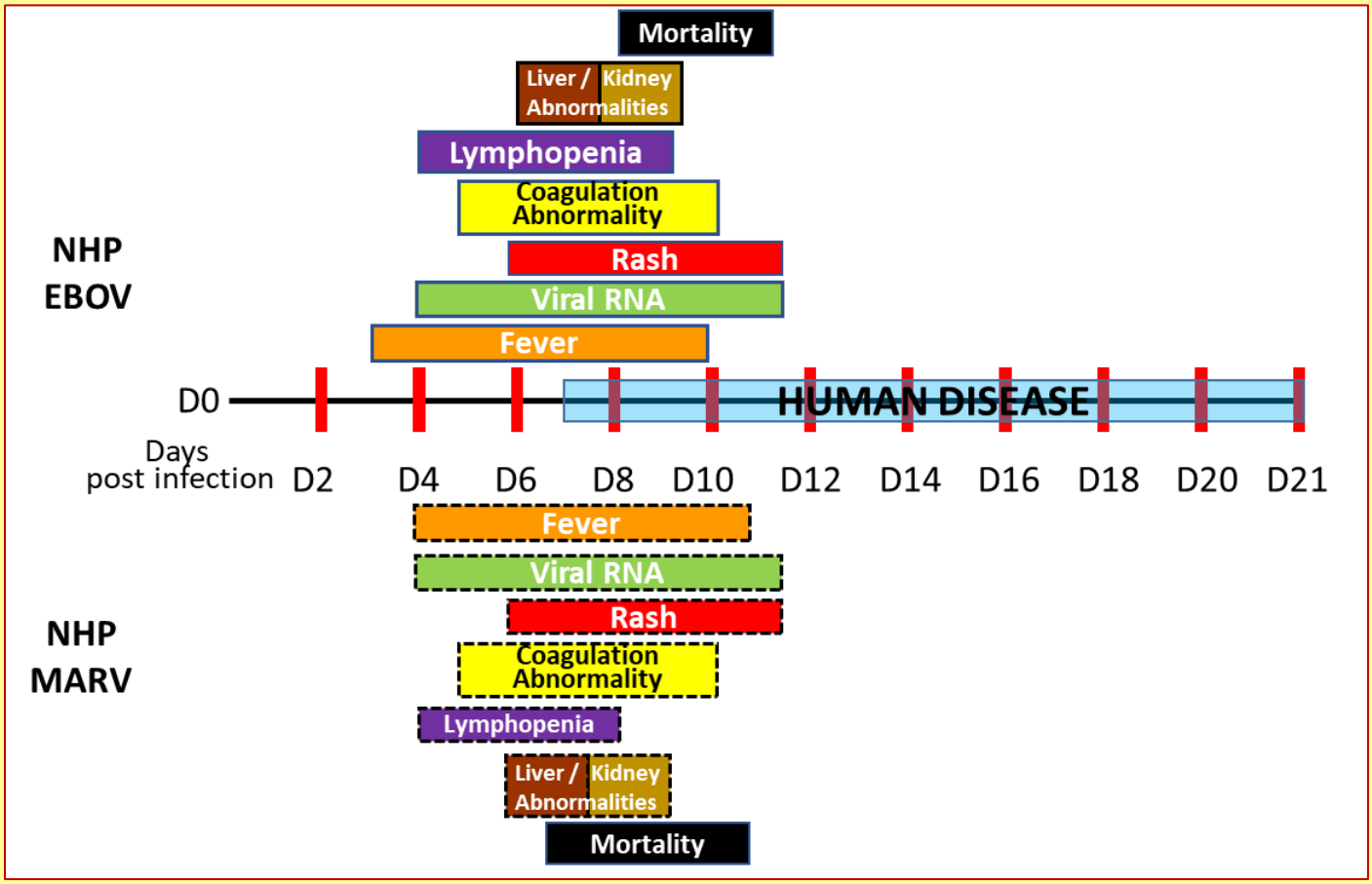
PLOS | March 8, 2022

Source (**full text**): https://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0010220

Abstract

The Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense (JPEO-CBRND) began development of a broad-spectrum antiviral countermeasure against deliberate use of high-consequence viral hemorrhagic fevers (VHFs) in 2016. The effort featured comprehensive preclinical research, including laboratory testing and rapid advancement of lead molecules into nonhuman primate (NHP) models of Ebola virus disease (EVD). Remdesivir (GS-5734, Veklury, Gilead Sciences) was the first small molecule therapeutic to successfully emerge from this effort. Remdesivir is an inhibitor of RNA-dependent RNA polymerase, a viral enzyme that is essential for viral replication. Its robust potency and broad-spectrum antiviral activity against certain RNA viruses including Ebola virus and Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) led to its clinical evaluation in randomized, controlled trials (RCTs) in human patients during the 2018 EVD outbreak in the Democratic Republic of the Congo (DRC) and the ongoing Coronavirus Disease 2019 (COVID-19) pandemic today. Remdesivir was recently approved by the US Food and Drug Administration (FDA) for the treatment of COVID-19 requiring hospitalization. Substantial gaps remain in improving the outcomes of acute viral infections for patients afflicted with both EVD and COVID-19, including how to increase therapeutic breadth and strategies for the prevention and treatment of severe disease. Combination therapy that joins therapeutics with complimentary mechanisms of action appear promising, both preclinically and in RCTs. Importantly, significant programmatic challenges endure pertaining to a clear drug and

biological product development pathway for therapeutics targeting biodefense and emerging pathogens when human efficacy studies are not ethical or feasible. For example, remdesivir's clinical development was facilitated by outbreaks of Ebola and SARS-CoV-2; as such, the development pathway employed for remdesivir is likely to be the exception rather than the rule.



Comparison of EBOV and MARV pathophysiology over time – EBOV, Ebola virus; MARV, Marburg virus; NHP, nonhuman primate.

The current regulatory licensure pathway for therapeutics targeting rare, weaponizable VHF agents is likely to require use of FDA's established Animal Rule (21 CFR 314.600–650 for drugs; 21 CFR 601.90–95 for biologics). The FDA may grant marketing approval based on adequate and well-controlled animal efficacy studies when the results of those studies establish that the drug is safe and likely to produce clinical benefit in humans. In practical terms, this is anticipated to include a series of rigorous, well-documented, animal challenge studies, to include aerosol challenge, combined with human safety data. While small clinical studies against naturally occurring, high-consequence pathogens are typically performed where possible, approval for the therapeutics currently under development against biodefense pathogens will likely require the Animal Rule pathway utilizing studies in NHPs. We review the development of remdesivir as illustrative of the effort that will be needed to field future therapeutics against highly lethal, infectious agents.

Author summary

Development of medical countermeasures (MCMs) to treat and prevent viral infections with highly lethal filoviruses, such as Ebola virus (EBOV) and Marburg virus (MARV) is very difficult. Recently, US Food and Drug Administration (FDA)-approved vaccines and therapeutics for disease caused by EBOV and Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infections were obtained using the standard regulatory framework to address the new products' safety and efficacy profile with randomized clinical trials. Clinical trials were feasible as sufficient numbers of patients were available due to the large scale outbreaks with both Ebola and SARS-CoV-2. However, the opportunity to

conduct human studies against emerging viral pathogens is relatively rare, and effectively impossible for high-consequence pathogens likely to be used in biowarfare and bioterrorism, such as the filoviruses. The alternative regulatory pathway for development of new drugs targeting biodefense pathogens that cannot be conducted when human efficacy studies are not ethical and field trials are not feasible is through the FDA's Animal Rule. In this review, we highlight how remdesivir's preclinical development path, based upon the Animal Rule for an EVD indication, was leveraged to support its ultimate regulatory approval as an antiviral agent for the treatment of Coronavirus Disease 2019 (COVID-19). The preclinical and clinical development of remdesivir for both SARS-CoV-2 and filovirus treatment including evidence from Animal Rule and clinical studies is also reviewed. The challenges associated with employing the Animal Rule for development of multiple biodefense therapeutics against numerous and distinct viral biothreats within Biosafety Level 4 are discussed. The issues of developing pharmaceuticals for weaponized viruses are also examined, along with a proposed pathway for drug study and approval to meet FDA requirements.

Evusheld approved to prevent COVID-19 in people whose immune response is poor

Source: https://www.gov.uk/government/news/evusheld-approved-to-prevent-covid-19-in-people-whose-immune-response-is-poor

Mar 17 – A new medicine, **Evusheld** (tixagevimab/cilgavimab), has today been authorised for COVID-19 prevention by the Medicines and Healthcare products Regulatory Agency (MHRA) after meeting the UK regulatory standards of safety, quality and effectiveness.

The decision to grant approval for this treatment was endorsed by the government's independent expert scientific advisory body, the Commission on Human Medicines, after carefully reviewing the evidence.

Developed by AstraZeneca, Evusheld is a combination of two long-acting antibodies that work by binding to the spike protein on the outside of the SARS-CoV-2 virus, the virus that causes COVID-19. This in turn prevents the virus from attaching to and entering human cells. Evusheld is authorised to be used before being exposed to the risk of COVID-19 infection in order to prevent disease (known as 'pre-exposure prophylaxis').

For most people, the best way to prevent infection is vaccination. Evusheld has been approved for use in adults who are unlikely to mount an immune response from COVID-19 vaccination or for whom vaccination is not recommended.

Recipients should not be currently infected with or had recent known exposure to a person infected with the COVID-19 virus.

A single dose of the two medicines, tixagevimab and cilgavimab, should be given as two injections into a muscle by a healthcare professional.

In a clinical trial in adults, Evusheld was found to reduce the risk of developing symptomatic COVID-19 by 77%, with protection from the virus continuing for at least 6 months following a single dose.

There is not yet enough data to know how effective Evusheld is against Omicron or the duration of its effect against this variant, and the MHRA will work with the company to establish this.

Dr June Raine, MHRA Chief Executive said:

"After a careful review of the data, I am pleased to confirm that we have authorised another medicine to help protect against the effects of COVID-19.

"Evusheld is a "pre-exposure prophylaxis" treatment, meaning it is taken to prevent COVID-19 before the risk of acquiring infection. One dose has been found to provide long-lasting protection against this disease for up to 6 months.
"While the COVID-19 vaccines continue to be the first-line defence against COVID-19, we know that some people may not respond adequately to these vaccines and for a small number of individuals COVID-19 vaccines may not be recommended for other reasons, such as a previous allergic reaction to one of the vaccine ingredients.
"For these people, Evusheld could provide effective protection against COVID-19."

Professor Sir Munir Pirmohamed, Chair of the Commission on Human Medicines, said:

"The Commission on Human Medicines and its COVID-19 Therapeutics Expert Working Group has independently reviewed the data and endorses the MHRA's regulatory approval of Evusheld.
"We have carefully reviewed data on the medicine's safety, quality and effectiveness and are satisfied it meets the expected standards.
"The recommended dosage is 300 mg of Evusheld but a higher dose of 600 mg may be more appropriate for some COVID-19 variants. All this is outlined in the Summary of Product Characteristics.
"Pre-exposure prophylaxis with Evusheld is not a substitute for vaccination in individuals for whom COVID-19 vaccination is recommended."

Notes to Editors

1. The Medicines and Healthcare products Regulatory Agency is responsible for regulating all medicines and medical devices in the UK, by ensuring they work and are acceptably safe. All our work is underpinned by robust and fact-based judgements to ensure that the benefits justify any risks.
2. The MHRA is an executive agency of the Department of Health and Social Care.
3. The Commission on Human Medicines (CHM) advises ministers and the MHRA on the safety, efficacy and quality of medicinal products. The CHM is an advisory non-departmental public body, sponsored by the Department of Health and Social Care.

Demographics Alone Do Not Explain COVID-19 Mortality Rates -- Place Matters, Too

Source: https://www.homelandsecuritynewswire.com/dr20220317-demographics-alone-do-not-explain-covid19-mortality-rates-place-matters-too

Mar 17 – Many Americans became amateur data scientists during the pandemic, tracking local rates of infection or vaccination to help them decide what activities may or may not be safe. UChicago researchers saw an opportunity to dig deeper: By using county-level data, they found that different demographic groups are vulnerable in different ways—often depending on their geographic location.
What they discovered was that not all of a particular race or ethnic population in the U.S. is impacted by the same factors, or face the same COVID-19 outcomes. By identifying associations between COVID mortality and social determinants of health, the research team uncovered the specific ways that place has shaped how people experience the pandemic.
"We know it's not just different demographics alone," said Susan Paykin, a senior research manager at UChicago's Center for Spatial Data Science. "It's the structural, economic and social factors that define those places that are influencing higher death rates and case rates."
The findings, published in *JAMA Network Open*, came from a cross-sectional study of 3,142 counties in 50 U.S. states and the District of Columbia—focusing on Black or African American, Hispanic or Latinx, and non-Hispanic White populations. The team looked at those different groups and their various social factors and whether they differed or were similar across urban, rural and suburban counties.
According to the study, Black or African American groups with high mortality rates—particularly in the Southeast—were more vulnerable due to low socioeconomic status, high income inequality, limited access to quality health care, and severe housing problems. White populations who experienced high mortality rates—most often in the rural Midwest—are located mostly in counties with a high percentage of older populations, and who have limited access to quality health care.
The team was made up of spatial data scientists and public health researchers who are part of the Healthy Regions and Policies Lab at UChicago's Center for Spatial Data Science. This team works on the U.S. COVID Atlas, a free and open-source data visualization tool that connects COVID data and community indicators.

The team observed that different minority groups were experiencing disproportionately high mortality rates during the pandemic—but the available data from the CDC doesn't show much granularity below the state level as it relates to race and ethnicity.
"Different groups are vulnerable in different ways," said Qinyun Lin, a postdoctoral scholar at the center and the first author of the study. "In Hispanic groups, we found that many have high mortality rates in urban areas. We found those who are most vulnerable are in areas associated with a high percentage of working-age people and low insurance rates and severe housing problems."
"Our research looks at COVID mortality rates, specifically the highest mortality rates in the first year of the pandemic," said Paykin. "Then we look at how that matches with where different race and ethnicity groups live and we try to get at where high mortality rates disproportionately impacted different groups. And what social structural factors are associated with those outcomes?"
The researchers relied on two data inputs in particular. One was county-level COVID mortality data from the CDC, focused on the first year of the pandemic. They used county-level data from the U.S. Census Bureau's American Community Survey and County Health Rankings & Roadmaps, which included demographics and community contextual factors. They looked at community-level variables such as income inequality, the ratio of population to primary care physicians, rates of preventable hospital stays, percentage of severe housing problems, percentage of internet access, and age distribution.
This data was then compared to previous literature on variables that have been shown to be associated with COVID-19 mortality. The team also spoke with their colleagues working on County Health Rankings for further insight.
The researchers are hoping their paper encourages information to be collected at a more granular level and shared freely—not only in the context of the COVID-19 pandemic, but also to have in place for future pandemics or other natural disasters.
"We hope to show how place impacts COVID-19 outcomes," Paykin said. "These outcomes are not driven by the people themselves, but rather the conditions that define the places in which they live. And that has really important implications for policy and structural changes and how we formulate and begin to prepare for the future and build a culture of health equity in general, for different populations across different communities in the U.S."
As a next step, the researchers are looking to expand their datasets to include different ethnicities. The only reason they weren't included in this study was because the level of available data was not large enough for statistically significant summaries. The current study is mainly exploratory and looks at associations. The researchers are also interested in digging deeper into different urban, rural and suburban settings to better understand the structural factors and drivers related to higher COVID mortality and death rates.
The team also hopes to take a closer look at the structural and social factors that describe very low COVID-19 mortality rates, to paint a better picture of what makes a community resilient—at least in the context of COVID impacts.

Tracing the Path of Pathogens after Large-Scale Contamination with Biological Agents

Source: https://www.homelandsecuritynewswire.com/dr20220317-tracing-the-path-of-pathogens-after-largescale-contamination-with-biological-agents

Mar 17 – If a large-scale contamination with a biological agent took place near a major coastal city, it would impact how the U.S. Coast Guard (USCG) carries out its lifesaving, environmental and interdiction missions—not to mention the toll on surrounding communities. To help the agency better prepare, respond, and recover, the Science and Technology Directorate (S&T) and the U.S. Environmental Protection Agency's (EPA) Homeland Security Research Program joined forces for a Stormwater Tracer Study at Coast Guard Base Elizabeth City in North Carolina. The study tracks movement of pathogen' spores, which may be carried downstream by runoff after rainstorms, thereby complicating mitigation and decontamination measures. Through sampling and modeling, spores transported by stormwater runoff can be predicted and verified to assist in the effective cleanup of a site.
"The Stormwater Tracer Study helps us have a better understanding of how rain transports spores and enhances emergency response by increasing the effectiveness and timeliness of sampling and decontamination activities for the impacted stormwater," said Dana Tulis, director of Emergency Management at USCG headquarters.
The study is part of a multi-year project called Analysis for Coastal Operational Resiliency (AnCOR), which kicked off in 2018 and included several joint field tests. Together, S&T, EPA and USCG have been working to identify the best and safest methods to decontaminate bases, stations and vessels, should they be affected by a large-scale contamination from a pathogen like the anthrax-causing bacterium.
The first major AnCOR field test took place in early 2020 at the University of Florida, during which the agencies decontaminated a Coast Guard boat 'contaminated' with non-pathogenic spores. In 2021, the team initiated the new Stormwater Tracer Study, which

allowed them to gauge how rain transports the benign spores meant to simulate what would occur in the environment. Knowing in advance how pathogens may make their way towards USCG installations and surrounding communities allows responders to trace the spores more quickly after rainstorms and develop decontamination strategies.

"S&T funded the tracer studies to support EPA in building a general hydrodynamic model for USCG. The model will help select outdoor areas to sample for biological agents like Bacillus anthracis following rainfall events," said Dr. Don Bansleben, S&T program manager for Chemical and Biological Detection. "Such information maximizes the probability of finding spores that may be transported or concentrated during a rainfall to determine if concrete, asphalt, and grassy areas continue to represent a threat to health."

Solutions to Allow a Quick Return to Normal after Pathogenic Contamination

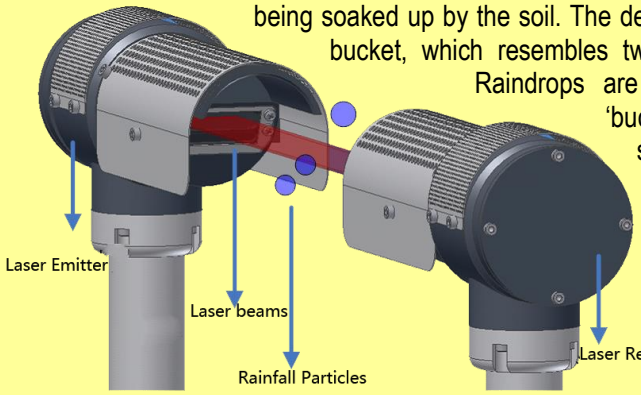
When a surface is contaminated with anthrax-causing spores, rain can wash them off the initial site of contamination and transport them to stormwater systems through high-traffic urban areas, such as roadways and parks. This complicates cleanup and the return to normal operations.

"Capabilities and optimal methods for cleaning up the outdoor environment after a bioagent incident still require further research to fully assess their effectiveness, and human and environmental safety," said Dr. Anne Mikelonis, an environmental engineer in EPA's Homeland Security Research Program, who led the Stormwater Tracer Study.

The goal was to develop and assess hydrodynamic modeling tools to predict the movement of the bio-contaminant (spores) by rain in a wide-area environment in order to enhance response operations. For this purpose, EPA researched USCG stormwater systems to identify and summarize differences in meteorological and terrain features and operations. The research findings will help refine the parameters used in the hydrodynamic models to make more precise predictions. Additionally, researchers developed automated water samplers to remotely activate collection of stormwater runoff samples at different points throughout a rainstorm and analyze them for spore concentrations.

For the first phase of the study, the researchers visited Coast Guard Base Elizabeth City, North Carolina, in June 2021. There, they installed watershed monitoring sensors and stormwater runoff collection systems in four areas—concrete, asphalt, grass, as well as a control area collecting runoff from a parking lot not inoculated with spores.

In the photo above, Mikelonis arranged 1-liter bottles inside the autosampler, which collected runoff rainwater as instructed remotely via text messages (e.g., "take samples every 15 minutes"). One type of sensor used in this study was the soil moisture probes, which measured stormwater infiltration, a parameter useful for modeling how much rainfall turns into runoff versus being soaked up by the soil. The deployed rain gauges measured rain quantity via a mechanism called a tipping bucket, which resembles two small teaspoons joined at their bases. Raindrops are funneled and gradually fill one of the 'buckets' until it tips and touches a counting sensor that transmits the information to the researchers. Meanwhile, the other bucket is filling, and so on. The quantity of rain is calculated from the number of tips. A second type of rainfall sensor deployed in Elizabeth City is called a **laser disdrometer**. It measures raindrop size and velocity when rain droplets pass through the laser's path. This allows researchers to characterize the kinetic energy of each rainfall.



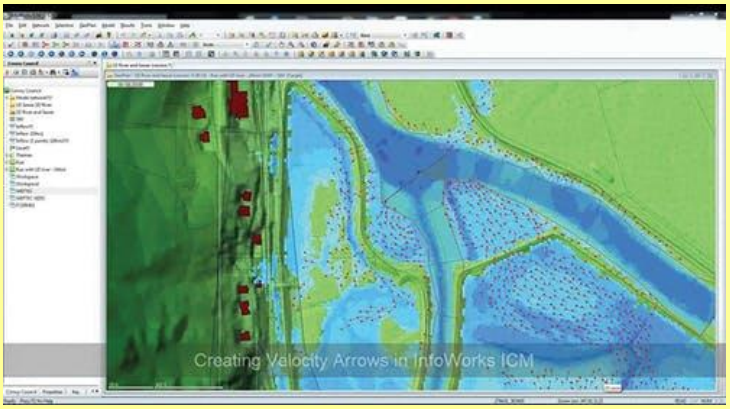
The second phase of the study took place in late December 2021 and early January 2022. In a scenario where spores are released via aerosol across the entire base, researchers wanted to understand what the movement of those spores during a rainfall would look like after they have fallen to the ground over parking lots and other surfaces. To simulate this scenario, researchers used a rolling sprayer to spread the non-pathogenic spores in three areas—an asphalt parking lot, a concrete runway and a grassy area. Then they waited for rain to come.

It rained four times over the course of the study, and the researchers collected and analyzed samples from each rain event. According to preliminary results, spores could be traced at the asphalt and concrete areas after the first two periods of rain. After the third rain, the spores significantly decreased. The fourth rain was very large and washed off some additional spores, but measurable spores in the stormwater runoff were not

detectable in most samples. The grassy area produced runoff samples only after the fourth rain, as soil tends to soak up the water when dry. No spores were detected in the control area.
After pausing the study during January and early February due to freezing temperatures, the team returned in mid-February 2022 to apply spores again to the same areas. Stormwater runoff samples were collected and analyzed from the first three rainfalls to expand the December 2021 spore washoff dataset.

Tracer Studies Will Help Develop Prediction Maps of Spore Spread

"If we understand how the rain washes the spores off asphalt, concrete and lawns, we can know what coefficients to use in this type of hydrodynamic model for other locations that have those surfaces too," said Mikelonis. "And then when it rains after a contamination event, we can build a site-specific model and maps beforehand or shortly after an incident. Through the hydrodynamic model, we'll be able to monitor and predict where the hot spots will be after rain."



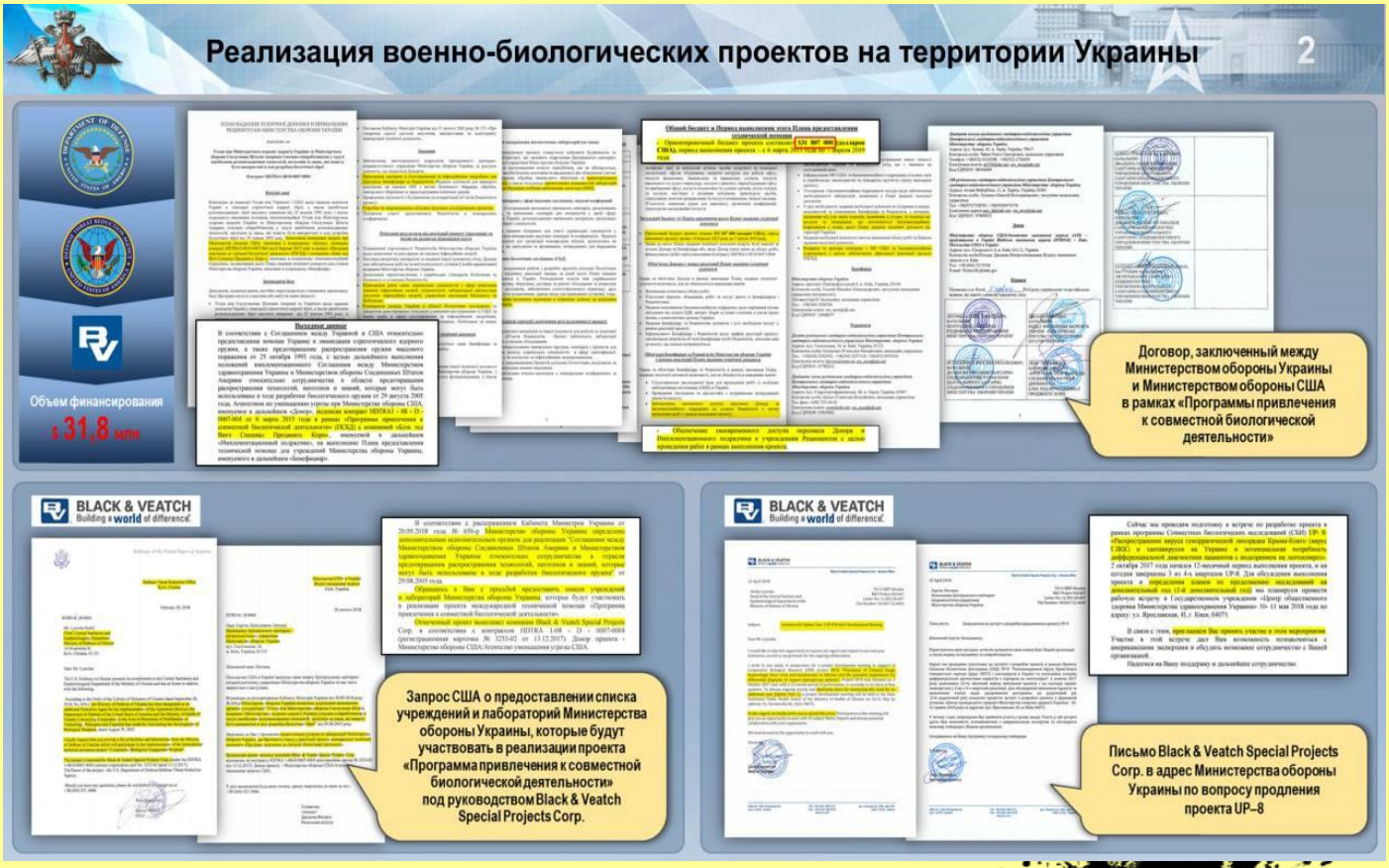
Such maps will guide responders who need to know where to take samples and decontaminate.
"The stormwater hydrodynamic modeling software tool (left) we funded can support actions or natural processes that can lead to faster recovery of outdoor areas contaminated by a biological agent," said Bansleben.
After the Stormwater Tracer Study, two additional AnCOR field events are planned for this year. The first, a demo in Georgia evaluating commercial and municipal equipment for their potential use following a biological contamination incident, took place in March. The second, a wide-scale demo in Virginia involving decontamination of various surfaces and boats, is planned for May. The full scope of this work will result in guidance for first responders on decontamination and recovery after biological events.

Russian Ministry of Defense presented "facts" about US development of biological weapons in Ukraine

Source: https://twitter.com/nexta_tv/status/1504440443085410306/photo/3

March 2022 – Major General Igor Kirillov, Commander of the Russian NBC Protection Troops stated that "*in our view, the interest of US military biologists is due to the fact that these pathogens (i.e., plague; brucellosis, leptospirosis) have natural outbreaks in both Ukraine and Russia and their use may be disguised as 'natural outbreaks'.*"


Реализация военно-биологических проектов на территории Украины
3
Проект P-781 по изучению инфекций, передающихся человеку от летучих мышей в Украине и Грузии
Ветеринарное разрешение, выданное Управлением по вопросам здравоохранения и защиты прав потребителей г. Гамбурга, на ввоз и транспортировку биологического материала для исследовательских целей «со всех третьих стран и стран-членов ЕС в неограниченных количествах за исключением патогенов животных» в Институт Фридриха Леффлера
Передача 773 проб на COVID-19 из Центра общественного здоровья Министерства здравоохранения Украины в референс-лабораторию в Великобритании
Передача 5000 флаконов с образцами сыворотки из Украины в Центр Лугара в Грузии


Реализация военно-биологических проектов на территории Украины
2
Объем финансирования
$ 31,8 млн
Договор, заключенный между Министерством обороны Украины и Министерством обороны США в рамках «Программы привлечения к совместной биологической деятельности»
BLACK & VEATCH
Building a world of difference.
Запрос США о предоставлении списка учреждений и лабораторий Министерства обороны Украины, которые будут участвовать в реализации проекта «Программа привлечения к совместной биологической деятельности» под руководством Black & Veatch Special Projects Corp.
Письмо Black & Veatch Special Projects Corp. в адрес Министерства обороны Украины по вопросу продления проекта UP–8

Ebola Virus Antibodies Offer Protection from Infection in Nonhuman Primates

Two human antibodies have been identified that target the two ebolavirus species-Ebola virus and Sudan virus-responsible for the biggest outbreaks. Researchers sorted memory B cells from Ebola virus infection survivors to isolate the two broadly reactive anti-GP monoclonal antibodies-1C3 and 1C11. A cocktail of both antibodies protected nonhuman primates from Ebola virus and Sudan virus infections, indicating their potential clinical value. + MORE

Putin could use women refugees from Ukraine to launch terror attack on UK, Priti Patel warns

Source: https://www.independent.co.uk/news/uk/politics/priti-patel-russia-ukraine-refugees-b2039561.html

Mar 19 – Russia could smuggle female agents into the UK among Ukrainian refugees to carry out biological or chemical terror attacks, home secretary Priti Patel has claimed.

EDITOR'S COMMENT: It is amazing how great nations choose to have high-rank officials that could have made a career as film producers in critical posts! It is very difficult to restore the brain-tongue connection if lost.

Italia, ricordi?

2020 Russian assistance to Italy: 8 medical teams and more than 100 military virologists and epidemiologists …

Masitinib is a broad coronavirus 3CL inhibitor that blocks replication of SARS-CoV-2

By Nir Drayman, Jennifer K. DeMarco, Krysten A. Jones, et al

Science • 19 Aug 2021 • Vol 373, Issue 6557 • pp. 931-936
Source [full text]: https://www.science.org/doi/10.1126/science.abg5827

Abstract

There is an urgent need for antiviral agents that treat severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. We screened a library of 1900 clinically safe drugs against OC43, a human beta coronavirus that causes the common cold, and evaluated the top hits against SARS-CoV-2. Twenty drugs significantly inhibited replication of both viruses in cultured human cells. Eight of these drugs inhibited the activity of the SARS-CoV-2 main protease, 3CLpro, with the most potent being masitinib, an orally bioavailable tyrosine kinase inhibitor. X-ray crystallography and biochemistry show that masitinib acts as a competitive inhibitor of 3CLpro. Mice infected with SARS-CoV-2 and then treated with masitinib showed >200-fold reduction in viral titers in the lungs and nose, as well as reduced lung inflammation. **Masitinib was also effective in vitro against all tested variants of concern** (B.1.1.7, B.1.351, and P.1).

Long COVID study indicates "something concerning is happening"

Source: https://newatlas.com/health-wellbeing/cognitive-memory-long-covid-study-cambridge/

Mar 20 – Two new studies are reporting on an ongoing long COVID research project investigating the persistent effects of COVID-19 on cognition in the months after acute disease. The University of Cambridge-led research found many long COVID patients are experiencing significant and measurable memory or concentration impairments even after a mild illness.

"Long COVID has received very little attention politically or medically," said Lucy Cheke, senior author on the new studies. "It urgently needs to be taken more seriously, and cognitive issues are an important part of this. When politicians talk about 'Living with COVID' – that is, unmitigated infection, this is something they ignore."

The new findings come from an ongoing project called The COVID and Cognition Study (COVCOG). The study recruited nearly 200 COVID-19 patients across late 2020/early 2021 and around the same amount of demographically matched uninfected controls. The goal was to "map the terrain" of cognition in post-acute COVID-19.

Around two-thirds of the COVID-19 cohort experienced symptoms of long COVID, defined as a symptom lasting longer than 12 weeks beyond initial date of diagnosis. Among those experiencing long COVID the new research found 78 percent had difficulty concentrating, 69 percent suffered brain fog, 68 percent reported forgetfulness and around 40 percent displayed a condition known as semantic disfluency (saying or typing the wrong word).

The study also found those subjects with long COVID experienced significant disruptions to their daily lives. More than half the long COVID cohort were unable to work for extended periods of time and one-third lost their job due to their illness.

When politicians talk about 'Living with COVID' – that is, unmitigated infection, this is something they ignore.

Perhaps most strikingly, the research found half the long COVID cohort reported problems getting doctors to take their persistent symptoms seriously. Muzaffer Kaser, a researcher working on the COVCOG project, says these findings affirm something real and measurable is happening to these patients.

"This is important evidence that when people say they're having cognitive difficulties post-COVID, these are not necessarily the result of anxiety or depression," said Kaser. "The effects are measurable – something concerning is happening. Memory difficulties can significantly affect people's daily lives, including the ability to do their jobs properly."
As with prior long COVID studies, the new findings indicate the severity of a patient's initial infection can help predict the likelihood of long COVID symptoms. Few subjects in the study were so acutely ill they needed to be hospitalized, however, those reporting more severe acute disease were more likely to report persistent cognitive problems.
Plus, those with the broadest symptoms during their acute disease were most likely to experience lingering cognitive problems. In other words, those experiencing combinations of neurological, gastrointestinal and cardiopulmonary symptoms early on were at greater risk of cognitive problems several months down the line.
The new research concludes there are "objective cognitive differences" between those who have and haven't been infected with COVID-19. But it is still unclear exactly what is specifically causing these persistent cognitive symptoms. The researchers hypothesize lingering systemic inflammation as a plausible causal mechanism but suggest more targeted research will need to investigate this proposal.
"Infection with the virus that causes COVID-19 can lead to inflammation in the body, and this inflammation can affect behavior and cognitive performance in ways we still don't fully understand, but we think are related to an early excessive immune response," added Kaser.
The COVCOG study is ongoing, but Kaser said these new findings should help both patients and doctors better understand and identify cases of long COVID. He also pointed to a number of long COVID clinics now opening up across the UK to help patients manage this new chronic condition. "It's important that people seek help if they're concerned about any persistent symptoms after COVID infection," said Kaser. "COVID can affect multiple systems and further assessment is available in long COVID clinics across the UK, following a GP referral."

●▶ **The two new studies were published in the journal *Frontiers in Aging Neuroscience*** (1, 2).

COVID-19 Drug Targets Immune Aging, Enters Phase II

A Phase II clinical trial is testing a new drug's (BGE-175) ability to reduce mortality in older people hospitalized with COVID-19. Daily doses of BGE-175 protected aged mice from a lethal dose of SARS-CoV-2. Ninety percent of mice that received the drug survived, whereas all untreated control mice died. By directly targeting immune aging, BGE-175 could effectively treat emerging COVID variants that evade vaccine-based immunity. **+ MORE**

Statement by Permanent Representative Vassily Nebenzia at UNSC briefing on biological laboratories in Ukraine

March 18, 2022
Source: https://russiaun.ru/en/news/180322n_u
Source (in Greek): https://www.pronews.gr/wp-content/uploads/2022/03/21/ce9dceb5cebccf80ceadcebdceb6ceb9ceb1-ceb4ceaecebbcf89cf83ceb7-cebaceb1ceb9-ceb4ceb5cf85cf84ceb5cf81cebfcebbcebfceb3ceafceb1-cf83cf87ceb5cf84ceb9cebaceac-cebcceb5-cf84ceb1-ceb2ceb9cebfceb.pdf

PERMANENT MISSION OF THE RUSSIAN FEDERATION TO THE UNITED NATIONS

Mr.President,
At the outset, let me express our heartfelt deep condolences to the Permanent Representative of Ireland, Ambassador Byrne Nason, and the entire Mission of Ireland, on the sudden demise of Deputy Permanent Representative J.Kelly. This is a huge loss for the Mission of Ireland and all of us. Please accept our condolences.

Mr.President,
Colleagues,
As we said earlier, during the special military operation in Ukraine we discovered facts that Ukrainian authorities, supported and directly sponsored by the US Department of Defense, were implementing dangerous projects in the framework of a military biological program.

This activity was carried out on the Ukrainian territory, in the middle of Eastern Europe and close to Russia's western borders, which posed a real threat to biological security of our country and the region.

A week ago upon our request UNSC held its first meeting on this issue, where we asked some questions to our Western colleagues, but did not receive any answers.

US officials claim that there are no US-controlled biolabs in Ukraine, however the Permanent Representative of the United States could not explain how these statements reconcile with the fact that there are documents proving this sort of "cooperation" between Kiev and Washington. I am referring to 2005 Agreement between the US Department of Defense and Ukrainian Health Ministry which stipulates Pentagon's support for "cooperative biological research" with regard to "dangerous pathogens located at the facilities in Ukraine".

Though the American delegation is not able or willing to answer our questions, the answers come to light as our Defense Ministry studies the materials received from personnel of Ukrainian biolabs that address US and NATO military biological programs in Ukraine. Over the past week, we have discovered new details indicating that components of biological weapons were being developed in Ukraine.

The 2005 US-Ukraine Agreement that I mentioned and that we still expect the US representative to comment on was up and running all those years. As we take it from the documents, American colleagues were not assisting the Ministry of Health as they claimed, but rather the Ministry of Defense of Ukraine. This morning we circulated as UNSC document a set of materials, where you can find "Plan of technical assistance to certain recipients of the Ministry of Defense of Ukraine". I suggest that you should study it carefully. It confirms that Pentagon's Defense Threat Reduction Agency (DTRA) directly funded and supervised military biological projects in Ukraine. **The total funding amounted to 32 million USD, and the recipients of those funds were the following labs of the Defense Ministry of Ukraine:**

- In Kiev – 10th regional sanitation and epidemiological branch of the Central Sanitation and Epidemiological Department of the Ministry of Defense of Ukraine.
- in Odessa – 27th regional sanitation and epidemiological branch of the Central Sanitation and Epidemiological Department of the Ministry of Defense of Ukraine.
- in Lvov – 28th regional sanitation and epidemiological branch of the Central Sanitation and Epidemiological Department of the Ministry of Defense of Ukraine.
- in Kharkov – 108th regional sanitation and epidemiological branch of the Central Sanitation and Epidemiological Department of the Ministry of Defense of Ukraine.

Let me flag another critical aspect. Representatives of the US Department of State still get confused when asked about it and assure that the United States allegedly takes no part in running any biolabs in Ukraine. Facts, however, speak of the opposite.

Under the technical assistance plan that I mentioned, the "donor" (US Department of Defense) set out goals, determined the scope of Ukraine-based projects, endorsed lists of equipment required, and delegated broad authorities to its affiliated **contractor "Black & Veatch"** in cooperation with Ukrainian state authorities. The recipient of American assistance (Defense Ministry of Ukraine) had to grant "timely access of personnel" of the Pentagon and its contractor to the labs on the territory of Ukraine "for the purpose of conducting works" as part of the projects. Apart from the Pentagon personnel, they also had to grant access to the facilities to some "foreign researchers". The projects were not supposed to be implemented by, but rather "with participation of" Ukrainian researchers.

Simply speaking, Ukrainian authorities gave Pentagon a carte blanche and let them carry out dangerous biological experiments on the territory of Ukraine. Thereby, the American contractor was exempt from any taxes under Ukrainian legislation.

What did Ukrainian scientists and people of the country get in return? Free travel to international conferences "based on the tariffs for meals and lodging endorsed for official travel of US governmental officials". A nice "compensation" for having most hazardous research conducted right on their doorstep.

This is not the "noble" assistance to Ukraine that American representatives are ranting about. This is cynical use of Ukraine's territory and population for dangerous research that Washington does not want to have at home so that to not put its own population at risk.

We would not be surprised should similar facts come to light regarding the activity of US-sponsored labs in other parts of the globe. We call on states who provide their areas to Pentagon for such experiments to read carefully contract documents regarding their cooperation with the United States in the biological area. We fully support China's demand to the United States to disclose information about activities of 360 US-controlled labs in the world.

Back to Ukraine. It is no coincidence that the US Defense Threat Reduction Agency chose the biolabs in Kiev, Odessa, Lvov, and Kharkov. They were the executors of the UP-8

project aimed at **studying the pathogens of the Congo-Crimean hemorrhagic fever, leptospirosis and hantaviruses**. From our point of view, the interest of US military biologists in these pathogens is related to the fact that they have natural foci both on the territory of Ukraine and in Russia, and their use can be disguised as natural outbreaks of diseases.

The Kharkov laboratory was also home to project P-781 on the study of ways of transmitting diseases to humans through bats. **This work was done jointly with the infamous R. Lugar Center in Tbilisi.**

In this context, we should make a special mention of the company "Black & Veatch" that the Pentagon chose as a contractor for Ukraine. This is not an ordinary business. For over 100 years, it has been working for the US armed forces, building military bases and facilities, including the labs in Los Alamos, where nuclear weapons were developed.

Research in the area of transmitting diseases to humans through bats is systematic and has been conducted in Ukrainian labs since at least 2009 under the direct supervision of specialists from the United States. **During the implementation of these projects, six families of viruses (including coronaviruses) and three types of pathogenic bacteria (pathogens of plague, brucellosis and leptospirosis) were identified.** Those pathogens are most favorable for the purposes of infection, as they are characterized by resistance to drugs and rapid speed of spread from animals to humans.

Within the framework of the FLU-FLYWAY project, the Kharkov Institute of Veterinary Medicine studied wild birds as vectors for the spread of avian influenza. At the same time, the conditions under which spread processes can become unmanageable, cause economic damage and pose risks to food security were assessed. Documents were discovered that confirm the involvement of the Kharkov Institute in the collection of avian influenza virus strains with high epidemic potential and capable of overcoming the interspecific barrier.

Defense Ministry of Russia keeps receiving more documents that prove the fact of transfer of blood serum samples of Ukrainian citizens to third countries, including Great Britain, Georgia, Germany. Having analyzed that data, we can say that Ukrainian experts were not aware of potential risks of transferring biological samples. They had to act blindly and did not realize the real goals of research conducted. This does not seem surprising if we recall that under the contract documents that I mentioned, they had a secondary role to play.

Information continues to be received about attempts to destroy biomaterials and documentation in laboratories in Ukraine in order to "cover up the tracks" of a military biological program.

We know that during the liquidation measures in the laboratory of veterinary medicine in Khlebodarskoye, the employees (citizens of Ukraine) were not even allowed into the building. This laboratory cooperates with Anti-Plague Research Institute named after Mechnikov in Odessa, which conducts research with pathogens of plague, anthrax, cholera, tularemia.

In an attempt to cover the tracks, biological waste from the laboratory in Khlebodarskoye was taken 120 km away towards the western border of Ukraine to the area of Tarutino and Berezino settlements. Defense Ministry of Russia keeps record of all these facts in order to have them legally assessed at a later stage.

We also must mention the emergency destruction of documents in Kherson biological laboratory. One of the reasons for such a rush may be the need to conceal from Russian experts the information about an outbreak of dirofilariasis, a disease transmitted by mosquitoes, that occurred in Kherson in 2019. Four cases of infection were detected in February, which is unusual for the life cycle of these insects, even taking into account the incubation period of the disease. We are also aware that in April 2018, representatives of the Pentagon visited local healthcare institutions, where they got acquainted with the results of the epidemiological investigation and copied medical documentation.

Western media, who readily perceive any fakes presented by Ukrainian authorities with the support of their Western sponsors, doubt authenticity of the materials published by our Ministry of Defense. In this regard, let me draw your attention to the following fact. All documents we published had been signed by real US officials. **Many of them were signed by head of the DTRA office at the US Embassy in Kiev Joanna Wintrall.** This representative of the Pentagon is well known in the non-proliferation circles. Prior to Ukraine, she addressed elimination of chemical weapons in Libya. If journalists have doubts as to the authenticity of documents that we shared, I suggest they ask her directly whether this is really her signature on them.

I repeat that it is not just about Ukraine and the United States violating the BTWC. It is about evidence of high-risk military biological activity that has been underway in the middle of Eastern Europe until recently. Its implications could have "spilled" beyond the borders of Ukraine and even the entire region at any point. It is hard to imagine what toll it would have taken, i.a. on the European states. Perhaps it would have outmatched even the COVID-19 pandemic.

We already see alarming signs of such threat. **For example, a sharp increase in cases of tuberculosis caused by new multi-resistant strains was detected among citizens living in Lugansk and Donetsk People's Republics in 2018**. **During a mass outbreak recorded in the area of Peski settlement, more than 70 cases of the disease were detected, which ended in a rapid fatal outcome.** This does not look like a coincidence.

In conclusion, let me comment on the words of UN Secretariat representatives who claim to have no proof of military-purpose biological programs being carried out in Ukraine. Under the BTWC, member states submit to the United Nations data regarding biological facilities and related activity. I mean confidence-building measures that are published to monitor the implementation of the Convention. Since 2016, the moment Ukraine embarked on the mentioned projects, including UP-4, UP-8, and P-781, both the United States and Ukraine have knowingly omitted those projects from their reviews, even despite their clear military biological orientation. That is why Russia for many years has been calling to strengthen the BTWC regime, adopt a legally binding protocol to the Convention that would allow creating an effective verification mechanism, and bind member states to report on their military biological activity abroad. The United States has been opposed to this work for almost 20 years now and refused to provide such data. By the way, this is yet another question that US representatives evade answering. The facts that we shared today and on 11 March are only the tip of the iceberg. Our Defense Ministry continues to receive and analyze new materials. We will keep the global community updated on the issue of the Pentagon's illegal activity in Ukraine.

Thank you.

Right of reply:
Mr.President,
Propaganda, disinformation, amateurism, baseless allegations, false flag operation – that's what we heard today. Some statements repeated what was said on 11 March almost word-by-word. If you found nothing new in our today's statement, you either were not listening or did not hear what we were saying. What we presented were not the conspiracy theories that we pried out of the deep abyss of the Internet. Those were new materials and documents that we had circulated among UNSC members. These documents elaborate on biological cooperation between Ukraine and the United States. I ask you to read those materials. If you can refute them, please do it. But do it by answering our questions rather than by spouting baseless allegations about Russian propaganda. You refuse to do this because you have nothing to say. Instead, you try accusing us of plans to use biological and chemical weapons in Ukraine. This is the height of cynicism. We already warned you that we had information that Ukrainian nationalists had delivered toxic chemical agents to some areas of Ukraine to carry out a provocation and blame Russia. This is what you call a false flag operation. As I said, you, in particular the United States, did not listen carefully to us. We did not say (as the US representative would interpret it) that Ukraine had a military biological program of its own. We said the United States had such a program, where Ukraine was used blindly. We cited facts about the growing incidence of dangerous diseases in Ukraine that could not be explained by simpler factors but could be related to this sort of activity. We heard again that the best argument you have to prove that no military biological activity was carried out in Ukraine is the opinion of the UN Secretariat. But as mentioned already, the United Nations cannot be aware of secret military biological programs. Those who implement them do not report it to the UN or whoever.
We do not lift this issue from the agenda. More facts will surely arrive soon, and we will keep the Security Council and the global community posted.

Thank you.

AI, dual-use medicine, and bioweapons

Source: https://luxcapital.com/news/ai-dual-use-medicine-and-bioweapons/

Mar 20 – There was a hot zone of debate in scientific circles this week triggered by an article in Nature Machine Intelligence by Collaborations Pharmaceuticals, Inc.'s Fabio Urbina and three co-authors that explored what would happen if artificial intelligence tools for drug discovery were repurposed to find the most lethal toxins to the human body. Unsurprisingly, results were immediate and grim: *In less than 6 hours after starting on our in-house server, our model generated 40,000 molecules that scored within our desired threshold. In the process, the AI designed not only [the nerve agent] VX, but also many other known chemical warfare agents that we identified through visual confirmation with structures in public chemistry databases. Many new molecules were also designed that looked equally plausible. These new molecules were predicted to be more toxic … than publicly known chemical warfare agents.*
Given our deep interest of the intersection of bio and machine learning, the article made a splash over here. Josh Wolfe shared the article internally at Lux, and it quickly reverberated online among scientists and national security officials as well. The publication's timing couldn't be worse: just as fears of chemical warfare have intensified with Russia's invasion of Ukraine, the thought that there might be thousands of toxins worse than VX and novichok just waiting to be discovered with off-the-shelf generative AI models is terrifying. As Urbina, et al. wrote: *The reality is that this is not science fiction. We are but one very small company in a universe of many hundreds of companies using AI software for drug discovery and de novo design. How many of them have even considered repurposing, or misuse, possibilities? Most will work on small*

molecules, and many of the companies are very well funded and likely using the global chemistry network to make their AI-designed molecules. How many people have the know-how to find the pockets of chemical space that can be filled with molecules predicted to be orders of magnitude more toxic than VX? We do not currently have answers to these questions.

While the implications of the article are indeed terrifying, they are hardly surprising. In fact, bioweapons (and to a much lesser extent, chemical warfare) have been considered the top U.S. national security threat for more than two decades now. It's considered far more of a threat than even nuclear proliferation, which generally captures the public's imagination.

The materials and tools needed to produce bioweapons are more accessible and cheaper than the unique equipment required for nuclear weapons. Due to that latter bottleneck, a multitude of institutions like the Nuclear Suppliers Group ensure that there is an all-but-closed system for monitoring the movement of this critical equipment, giving global intelligence agencies rapid access to information on potential proliferation risks. No such regime is possible for biological research labs, where reagents and wetlab equipment are widely manufactured and broadly available.

There have been intense concerns that synthetic biology and particularly the development of DNA editing tools like CRISPR could lead to an exponential increase in bioweapon threats. It makes sense, after all. Their precision coupled with greater democratization portended a rapid rise in the capability for bad actors to invent horrific new pathogens to inflict on the world.

Yet, if we take a step back, we realize that such potential is more imaginative than substantive. In their Nature article, Urbina et al. note that they discovered many compounds more toxic than VX. But how toxic is VX in the first place? They write that "a few salt-sized grains of VX (6–10 mg) is sufficient to kill a person." In other words, it's essentially as deadly as a substance can possibly be. Going from a few grains of toxin to reach lethality to a single grain of toxin is hardly a major qualitative advance.

That's indeed a recurring pattern in this field. While there are widespread fears of mad scientists inventing deadly contagions in hidden wetlabs in the caves of Waziristan, the reality is that the world is already familiar with incredibly viral and deadly pathogens. Ebola, as just one choice example, kills roughly half of anyone infected with a relatively high virality rate. As one former presidential advisor on bioweapons explained to me years ago, Mother Nature is quite efficient at producing terrifying bioweapons all on her own, no mad scientists required (just take a look at the Covid-19 pandemic the past two years). In the end, our public health response to a naturally-occurring pandemic and one that is man-made would be exactly the same.

Urbina et al. emphasize that scientists need to be alert to the dual-use implications of their discoveries. "There has not previously been significant discussion in the scientific community about this dual-use concern around the application of AI for de novo molecule design, at least not publicly," they write.

That might be literally true in regards to this one niche of science, but it's wholly inaccurate more broadly. Dual-use concerns in biology have been a perennial subject of concern going back decades, and such concerns aren't limited to biologists. Many nuclear physicists were just as deeply worried about the prospects of their work accelerating the development of the atomic bomb and its successors. Given my teenage interest in bioweapons, pandemics and biodefense (we all have our youthful phases), my first series of papers at Stanford as an undergraduate analyzed this issue (a paper I continue to have on my personal website for those insanely curious).

Frankly, these dual-use concerns have become trite. Dual-use is an unsolvable problem in the biological sciences and medicine. A surgeon's scalpel is a tool for healing as well as murder. Research on pandemics delivers vaccines, while also allowing a malefactor to design a barbarous global plague. All the tools of biology — every wetlab in existence — can be used for good and evil, and sometimes you don't even need to be evil to cause great harm. As we have seen from discussions of lab leaks the past year, unintentional releases of pathogens are a regular occurrence at biolabs, even at the most secure BSL4 facilities.

So while Urbina et al.'s argument is terrifying, I find it frankly banal and essentially the same story we've heard on this subject for decades now.

All that critique aside, there was one element of their tale where I got a bit more edgy. Writing on the potential for using artificial intelligence to find new manufacturing pathways for chemicals, the authors write: *We did not assess the virtual molecules for synthesizability or explore how to make them with retrosynthesis software. For both of these processes, commercial and open-source software is readily available that can be easily plugged into the de novo design process of new molecules. … With current breakthroughs and research into autonomous synthesis, a complete design–make–test cycle applicable to making not only drugs, but toxins, is within reach. Our proof of concept thus highlights how a nonhuman autonomous creator of a deadly chemical weapon is entirely feasible.*

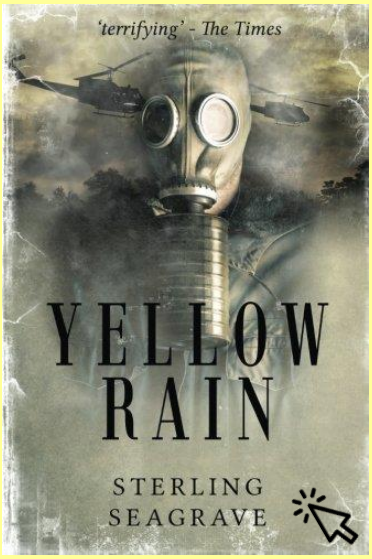
One of the only checks on chemical weapons production is that large-scale manufacturing is typically recognizable from satellite imaging as well as from the purchase of manufacturing equipment and chemical precursors. Since we know how these weapons are made, we can search for the right clues to indicate their manufacture (which unfortunately is less

relevant to bioweapons since they are viral and self-propagating and thus don't give off the same scale-related signals).
With new AI tools, it's not just that alternative pathways could make it simpler to produce these weapons, but that a covert program could hide its tracks by simultaneously using different pathways to obfuscate its true intentions. If there are one hundred unique ways to produce VX, it gets progressively harder to track.
Nonetheless, we return to the same overarching problem: exploring alternative pathways to chemical synthesis can make it easier to produce nerve agents, but also dramatically lower the cost and increase the availability of life-saving treatments. That's the dual-use dilemma, and it's never, ever going away. We have to continue pushing forward on science while improving our human institutions to ensure that they mitigate the downsides of these advancements.

Was COVID-19 intelligence 'Yellow Rain' all over again?

Source: https://www.aei.org/op-eds/was-covid-intelligence-yellow-rain-all-over-again/

Mar 22 – In the late 1970s and early 1980s, reports persisted that the Soviet Union was using chemical and biological weaponry in Laos, Cambodia, and Afghanistan in violation of the 1972 Biological and Toxin Weapons Convention.
Lao tribesmen described bombs unleashing clouds of colored gas and oily liquid. Some Dutch journalists covering the Soviet invasion of Afghanistan even filmed a Soviet helicopter dropping canisters emitting a yellow cloud on a village near Jalalabad, and the CIA sent in operatives into Southeast Asia to collect plant and tissue samples from areas where the attacks occurred.



The evidence was damning. An Armed Forces Medical Intelligence Center toxicologist found that the symptoms of those exposed were consistent with **thichothecene mycotoxins**, a poison produced by certain types of mold. A Special National Intelligence Estimate concluded that the Soviets were mass-producing the substance as a chemical weapon. Even President Jimmy Carter acknowledged the Soviets were likely violating the treaty, though he pushed ahead nonetheless with efforts for a Strategic Arms Limitations Talks Treaty.
President Ronald Reagan's election upset many in the nonproliferation, diplomatic, and intelligence communities. They feared not only that he might use definitive proof of Soviet cheating to torpedo arms control talks, but also that Reagan could use proof of Soviet chemical weapons use to justify renewed U.S. chemical weapons research and production.
Soon, government scientists wary of Reagan began leaking an alternate theory: the "Yellow Rain" hypothesis. The yellow clouds, they posited, might be a naturally occurring mixture of pollen and bee feces. The planes that dropped the bombs? A coincidence. Ditto the fact that the yellow clouds only appeared over war zones. The State Department reassessed Hmong refugee interviews and dismissed them. Extensive Soviet literature on mycotoxins? Not relevant when bees were the culprit.

Even though Reagan returned to diplomacy, the Washington elite never fully trusted him. George H.W. Bush, the blue blood scion of a prominent family who had spent his career in government service, was a different story. Only when Reagan left the White House did the intelligence community revert to its initial finding that the yellow rain represented a Soviet Union biological and chemical attack. They had little choice. President Boris Yeltsin ultimately acknowledged as much. The decadelong battle over the origins of "Yellow Rain" became, for more than 40 years, Exhibit A in how Washington professionals politicized intelligence to constrain a president's ability to hold culprits to account.
It now seems that the debates over COVID-19's origins are the 21st-century equivalent of the "Yellow Rain" episode. During the Trump administration, bureaucrats feared Trump's volatility, especially after he ordered a drone strike on Iranian general and master terrorist Qassem Soleimani. Others were hostile to Secretary of State Mike Pompeo's depiction of communist China as an adversary more than a competitor, let alone a

partner. Under such circumstances, attributing COVID-19 to Chinese incompetence or malfeasance might give Trump fodder upon which to make decisions that many civil servants opposed. To promote the idea that COVID-19 spontaneously and naturally erupted in Wuhan, China, was to absolve China of responsibility and eliminate any possibility that Trump might antagonize a country that many American diplomats and intelligence professionals hoped to accommodate.

With Trump gone and Joe Biden president, intelligence assessments are changing. Director of National Intelligence Avril Haines now reports, "The [intelligence community] assesses that the virus probably emerged and infected humans through an initial small-scale exposure that occurred no later than November 2019." While U.S. intelligence agencies continue to not point their finger unequivocally at China, Haines shared her frustration with Beijing's obfuscation.

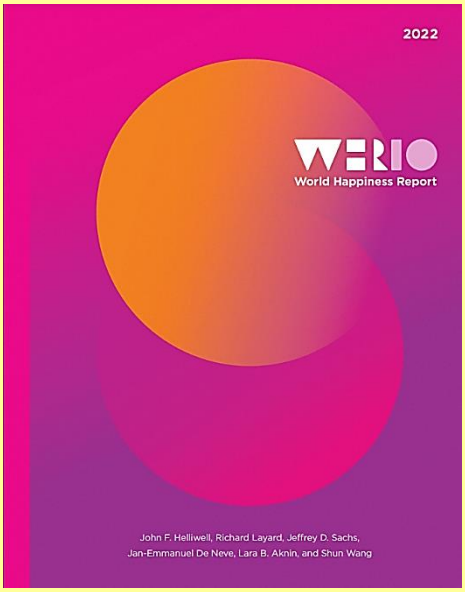
The idea that COVID-19 erupted naturally just miles from China's premier biological research facility was always far-fetched. Sen. Tom Cotton was correct two years ago to suggest a lab leak was more likely. His critics cited science, but their own political bias and arrogant disdain for elected officials blinded them. Haines rightly blamed Beijing for its foot-dragging, but it is a sad fact that political hatred led civil servants and journalists to subordinate the search for truth and instead carry water for the world's largest dictatorship.

World Happiness Report Reveals an Inspiring Benefit That Came Out of The Pandemic

Source: https://www.sciencealert.com/world-happiness-report-shows-some-benefits-have-come-out-of-the-pandemic

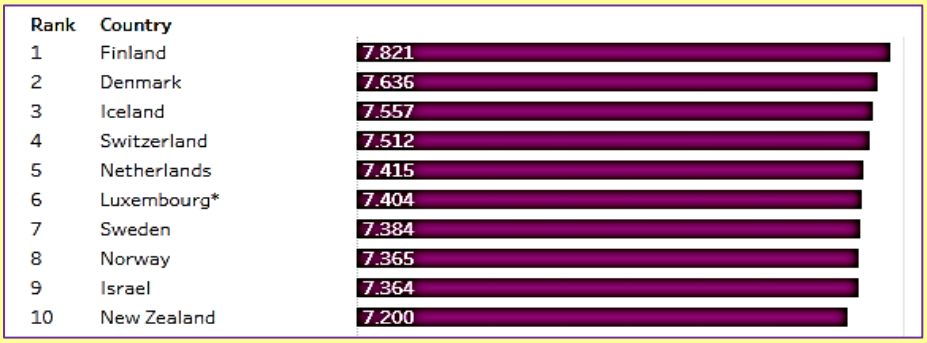
Mar 22 – Amid the pandemic and other struggles that have affected most people on Earth in recent years, there are some bright spots of hope to be found – at least according to the new World Happiness Report 2022 just published by researchers and experts.

The report is put together by the United Nations Sustainable Development Solutions Network, using data from the Gallup World Poll. This year's report, the tenth anniversary of the survey, collected responses from approximately 1,000 respondents in each of the 156 countries that participate.



While the ongoing effects of the coronavirus outbreak have undoubtedly brought pain and suffering to many, there has also been an increase in support that people show for each other, and in expressions of benevolence, the study authors report.

"We found during 2021 remarkable worldwide growth in all three acts of kindness monitored in the Gallup World Poll," says economist John Helliwell from the University



of British Columbia in Canada.

"Helping strangers, volunteering, and donations in 2021 were strongly up in every part of the world, reaching levels almost 25 percent above their pre-pandemic prevalence."

With disease and war continuing to impact wellbeing (the data here was collected before the conflict between Russia and Ukraine), it's a reminder that there is still hope for humanity – that in times of trial we can come together.

"This surge of benevolence, which was especially great for the helping of strangers, provides powerful evidence that people respond to help others in need, creating in the process more happiness for the beneficiaries, good examples for others to follow, and better lives for themselves," Helliwell says.

In terms of individual countries, the people of Finland were ranked as the happiest in 2022 – the fifth year in a row the nation has held the top spot. Denmark came in second, with Iceland, Switzerland and the Netherlands rounding out the top five.

The team behind the report suggests high trust, social cohesion, a good work-life balance, and free education and healthcare are the key reasons why the Scandinavian countries rank highly in the report every year.
While the positioning hasn't shifted much from last year, the biggest gains in happiness were seen in Serbia, Bulgaria, and Romania. The biggest drops in happiness scores were observed in Lebanon and Venezuela, and in Afghanistan, where life continues to be difficult for many since the Taliban regained control in August 2021.
"At the very bottom of the ranking we find societies that suffer from conflict and extreme poverty," says economist Jan-Emmanuel De Neve from the University of Oxford in the UK.
"Notably we find that people in Afghanistan evaluate the quality of their own lives as merely 2.4 out of 10. This presents a stark reminder of the material and immaterial damage that war does to its many victims and the fundamental importance of peace and stability for human wellbeing."

Oral Formulation of Remdesivir Protective against SARS-CoV-2 in Mice

A team of coronavirus researchers has shown that an oral version of the intravenous drug remdesivir is as effective as molnupiravir (another oral antiviral) at reducing disease in mice. Their results suggest that it may be possible to develop a pill form of the COVID-19 treatment that is given intravenously to half of all hospitalized patients with the disease-extending its reach and benefits to patients. **+ MORE**

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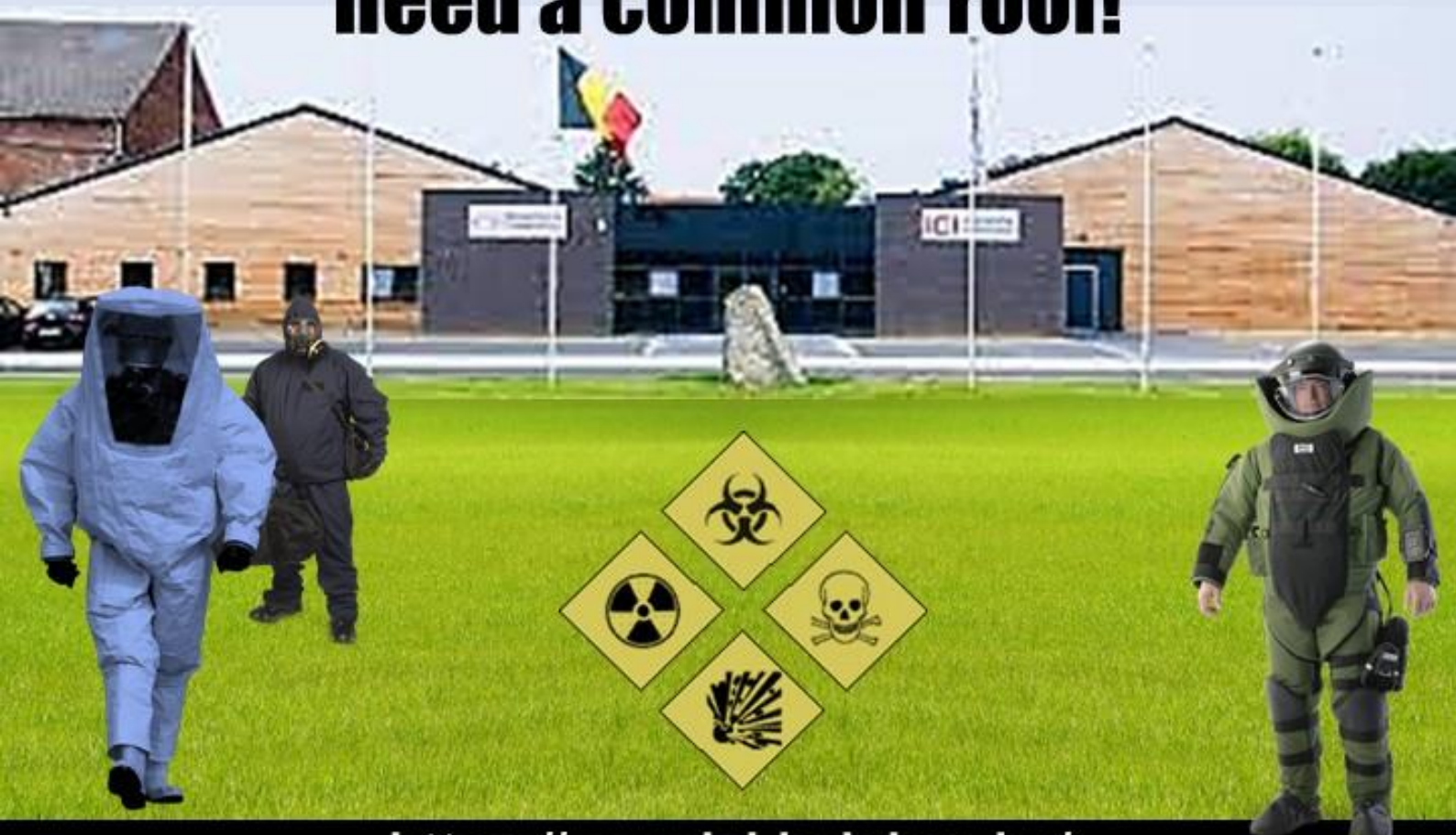

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