The Department of Defense Contributions to Pandemic Response

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A Report of the CSIS Commission on Strengthening America’s Health Security
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About the CSIS Commission on Strengthening America’s Health Security

The Covid-19 pandemic has exposed deep and diverse weaknesses in U.S. global health security policy and infrastructure and has triggered massive health, economic, and social crises. The CSIS Commission on Strengthening America’s Health Security will drive discourse and develop concrete, pragmatic action agendas for U.S. health security policy in the Covid-19 era. The commission brings together a distinguished and diverse group of senior leaders and is advised by a group of preeminent subject experts. Initiated in April 2018, the commission will continue its efforts through the fall of 2022.

The commission is directed by J. Stephen Morrison, senior vice president and director of the Global Health Policy Center. More information on the commission can be found on its dedicated microsite at https://healthsecurity.csis.org.
The authors gratefully thank the numerous individuals who generously shared their expertise in three roundtable discussions leading to this report. Their names and organizational affiliations are listed in Appendix A. This is not a consensus document and the opinions expressed are the sole responsibility of the authors.

This report benefited enormously from the prodigious efforts of Michaela Simoneau, research associate at the CSIS Global Health Policy Center, in organizing and managing the working group meetings, and subsequently in skillfully overseeing the infinite essential details involved in completing a paper of this complexity. The authors remain in her debt. Many thanks also to Humzah Khan, program coordinator at the CSIS Global Health Policy Center, for his essential logistical support.

The report is a product of the CSIS Commission on Strengthening America’s Health Security, generously supported by the Bill & Melinda Gates Foundation.
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The Covid-19 pandemic is not over. Nor have the contours and objectives of U.S. contributions to the global response and efforts to build long-lasting preparedness been fully defined, for the current pandemic or what lies ahead in the future. The Department of Defense (DOD) should be systematically incorporated into any evolving U.S. government vision on international health security. This step has yet to be taken. A process of strategic planning that encompasses a spectrum of valuable DOD contributions to contain the global Covid-19 pandemic should begin right away.

DOD has broad capabilities that have consistently proven their high value in addressing the current Covid-19 pandemic and other historical disease outbreaks. The knowledge and experience gained in crisis response at home and overseas contribute to military readiness and improved coordination of all actors involved in preventing, detecting, and responding to infectious disease events. At home, active-duty military, reserve, and guard forces are playing a key role in shoring up a fragile U.S. domestic health system, its beleaguered workforce, and just-in-time supply chains reliant on overseas manufacturing. DOD’s special capacities and special authorities undergird those efforts. Internationally, U.S. military support to pandemic response is buoyed by long-standing relationships nurtured over decades through ongoing infectious disease research, capacity-building efforts, and partnering exercises. DOD already is playing a significant role in the procurement and delivery of 1 billion doses of the Pfizer-BioNTech vaccine through September 2022, pledged by President Biden to the COVAX vaccine solidarity mechanism to benefit 92 low- and lower-middle-income countries.¹

Within the United States, the sense of emergency around Covid-19 is fading. The winter spike of cases resulting from the Omicron variant is receding, vaccines and antivirals have diminished the risk of death, at least among the vaccinated, and state and local governments are easing restrictive mandates throughout the country. This is understandable, but only up to a point. The threat persists
of waning immunity and new waves of infection driven by variants. Both at home and abroad, the U.S. government is charged with preparing systematically for the scientific and social consequences of future variants.

The global picture is mixed in ways that reveal the continued geopolitical significance of a highly uncertain pandemic. Widespread Covid-19 outbreaks in previously relatively unaffected places, such as Singapore, New Zealand, and Samoa, tell us that this pandemic is still a potent, live threat and emphasize the continued need, particularly in low- and middle-income countries, both for Covid-19 response efforts and to strengthen health systems to better deal with future disease outbreaks. Hong Kong struggles with a disturbingly dangerous and lethal outbreak, while China struggles to address the deep, acute vulnerability its population faces, with miniscule levels of immune protection, massive immunization with poor vaccines, and no ready supply of antivirals. One of China’s gravest internal security challenges is now how to move beyond its “Zero-Covid” policy.

The Russian invasion of Ukraine dominates attention, creates great unknowns, and also accentuates the pervasiveness of health security imperatives. The flight of millions of Ukrainians to other European countries poses sudden challenges in housing, feeding, and absorbing this vast population migration. It also raises questions about controlling Covid-19 transmission and other infectious diseases, and the consequences of the destruction of Ukraine’s health system and other civilian infrastructure. Just as U.S. diplomatic, economic, and defense leadership is fundamental to Ukraine’s ability to counter the Russian invasion, international preparedness for disease control depends upon U.S. leadership.

Where does DOD fit in the U.S. international health security armamentarium? Specifically, DOD has considerable assets in three areas that should be integrated, as appropriate, to support the U.S. civilian-led response to global pandemics:

- Logistics, lift, and planning, including expertise and special authorities such as the Defense Production Act and flexible funding authorities in managing large federal contracts;
- Biosurveillance and infectious disease research and development (R&D); and
- Relationships built through decades of international collaboration in biosecurity and biosafety, ongoing global health engagements, and work in overseas laboratories.

Drawing from months of deliberations organized by the DOD Working Group of the CSIS Commission on Strengthening America’s Health Security, this paper takes a broad view and walks the reader through a number of topics significant to understanding what is possible and how they are interrelated. The authors address DOD’s role in the domestic pandemic response, centered on Operation Warp Speed, research contributions to the development of the messenger ribonucleic acid (mRNA) vaccine platform, and the centrality of authorities such as those contained in the Defense Production Act. It looks at DOD’s experience in West Africa in 2014 and 2015 with Ebola, DOD’s biodefense assets, its surveillance and R&D capacities, and its history of international engagement partnerships. By necessity, the paper addresses the structure of DOD’s medical health system and the implications of personnel reductions. The concluding segment lays out four concrete and pragmatic recommendations to strengthen DOD’s contributions overseas in advancing U.S. global health security interests:

1. Identify a lead federal agency for U.S. international Covid-19 response and future health security crises. DOD should have permanent, sustained involvement in integrating and planning from the beginning.
2. More closely coordinate and synchronize DOD capabilities dealing with biological threats within DOD and with external partners.

3. Align funding authorities with desired outcomes.

4. Maintain military medical and scientific expertise.

Much synergy exists between DOD’s many efforts and those of other federal agencies, civilian health industries, biological research, public health, and clinical medicine—particularly about diseases encountered mainly outside the continental United States. It is important for the reader to understand that each of these seemingly disparate disciplines is necessary to ensure the health of the U.S. armed forces and defend the United States against biological threats of all types. These critical DOD reservoirs of knowledge, talent, and operations may not always be apparent and are often underappreciated between crises. They are organizationally diffuse and at times become targets for reorganization or downsizing in the service of more immediate objectives.

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Now is the moment to acknowledge these [DOD’s] capabilities as vital national assets to be reinforced, funded, protected, and deployed, as needed, in advancing a U.S. global health security strategy.
The United States has been shaken by a biological agent that originated overseas and arrived through the normal flow of international travel and commerce. Even with vaccines, testing, and therapeutics widely available, the Delta and Omicron variants fundamentally changed the course of the pandemic and how we think about the impact of the virus upon American security. Though a midwinter Omicron variant surge is waning, thousands of Americans continue to die from the disease each day. As of April 27, 2022, more than 989,000 Americans had perished since the beginning of the pandemic, more than the population of Fort Worth, Texas.\(^3\)

These events have deepened the awareness that unless the effects of SARS-CoV-2 are contained everywhere, new strains will continue to proliferate, threatening global security and economic activity. The threat is urgent and must be addressed quickly with effective, coordinated action if the worst is to be avoided. Deep inequities in global vaccine distribution, access to diagnostics, and therapeutic availability are especially troublesome, particularly in low-income countries already burdened by weak health systems and endemic diseases such as HIV/AIDS, tuberculosis, and malaria. As Covid-19 spreads through these countries, the resulting social instability and humanitarian emergencies will create international crises to which the United States will be called upon to respond.

In September 2021, President Biden convened the Global Covid-19 Summit to challenge the world to end the current pandemic and introduce ambitious targets, along with significant U.S. commitments, in three critical areas: vaccinate the world, save lives now, and build back better.\(^4\) The president stated that all countries “need the capacity to prevent, detect and respond to biological threats, including future pandemics.”\(^5\)
DOD has much to offer at home and abroad in crisis leadership, logistics, lift, and planning; biosurveillance, research, and development; and biosafety and biosecurity. To be most effective, DOD should be included in initial planning for pandemic response at all levels, as it is very likely that defense assets and capabilities will continue to be called upon as these ambitious efforts unfold.

Renewed U.S. financial and materiel support for international organizations—including the World Health Organization (WHO) and COVAX, co-led by Gavi, the WHO, the Coalition for Epidemic Preparedness Innovations (CEPI), and the United Nations Children’s Fund (UNICEF)—is laudable. U.S. international contributions built on the previously announced U.S. COVID-19 Global Response and Recovery Framework are facilitated largely through the United States Agency for International Development (USAID), U.S. Department of State, the U.S. Centers for Disease Control and Prevention (CDC), the U.S. International Development Finance Corporation; and by leveraging ongoing health system strengthening efforts such as the President’s Emergency Plan for AIDS Relief. DOD played a major role in the procurement and delivery of 1.1 billion doses of the Pfizer-BioNTech vaccine President Biden pledged to the COVAX vaccine solidarity mechanism to benefit 92 low- and lower-middle-income countries. What remains unaddressed is the need for a strategy and plans to coordinate U.S. involvement in the international response at the scale necessary to blunt the threat, including in collaboration with the efforts of other countries. Based on recent experience, U.S. military participation will be necessary when civilian capabilities are not available or when capacities run short.
Domestic Response

U.S. military support for the domestic Covid-19 response has been remarkable. As the United States scrambled to respond, thousands of DOD personnel continue to support civil authorities with logistics, laboratory testing, direct patient care, biosurveillance, and genome sequencing.

Civilian Healthcare Support

The pandemic confirmed that in many places the U.S. healthcare system is not sufficiently resilient and has little to no surge capacity. Since early in the pandemic, thousands of military medical personnel have continuously augmented overwhelmed civilian medical systems throughout the United States by providing direct patient care in rural health centers and urban intensive care units. In December 2021, President Biden announced that an additional 1,000 military medical personnel would join the 240 personnel deployed throughout the country in response to the rapidly spreading Omicron variant. This support has hindered the ability of the U.S. Military Health System (MHS) to provide routine services to the 9.6 million people for whom it provides care around the globe. It has also complicated other MHS missions such as deploying medical support for U.S. military missions worldwide and providing healthcare services to many of the 74,000 Afghans recently entering the United States.

National Guard units have been active in all states throughout the pandemic. As of January 2022, over 15,600 National Guard members were responding for Covid-19 support missions across the United States, including more than 6,000 providing direct support to medical facilities.
The Department of Defense Contributions to Pandemic Response

Operation Warp Speed: Covid-19 Vaccines

Operation Warp Speed (OWS) was launched in May 2020 with the mandate to develop, manufacture, and distribute a Covid-19 vaccine for Americans by January 2021. This public-private partnership was led by Dr. Moncef Slaoui and General Gustave Perna, then commander of the U.S. Army Materiel Command. The mission was clear, but the necessary elements were spread throughout private industry, academia, numerous federal agencies, and foreign countries. In many cases, capabilities and capacities had to be created from scratch.

Interagency efforts are, by their very nature, messy. OWS’s success in rapidly developing, manufacturing, and distributing multiple vaccines approved by the U.S. Food and Drug Administration (FDA) was due in large part to General Perna’s ability to form a unified culture among partners from widely divergent backgrounds. This included scrupulous attention to detail in planning and execution and a single-minded purpose to save lives, discarding anything that did not contribute to mission success. Military logisticians, planners, information technology specialists, and acquisition experts identified and coordinated innumerous critical details. Problems with access to equipment and materials required for production became a major issue as worldwide demand soared. The supply chain mapping skills of military logisticians played a major role in identifying and expediting delivery of raw materials and necessary supplies, such as syringes and vials, particularly from overseas.
The ambitious timelines required incisive leadership and firm funding commitments. Advocating for calculated risk-taking to shorten the time between development and manufacture, OWS invested in numerous vaccine platforms, underwriting in advance the production of promising candidates as clinical trials were being conducted to evaluate the efficacy and safety of each vaccine. These efforts ensured that millions of doses of promising vaccine candidates were ready upon FDA approval.\textsuperscript{10}

This required a remarkable degree of institutional flexibility, allowing all agencies to work together pragmatically in a new institutional structure. This collaborative approach and lack of rigidity provides a powerful set of lessons on which to model future international U.S. government efforts.

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Three major DOD contributions were fundamental to the success of OWS: the mRNA vaccine platform, contracting authorities unique to DOD, and the Defense Production Act.

**THE mRNA VACCINE PLATFORM: DARPA**

Vaccines against SARS-CoV-2 would not be available today without farsighted, groundbreaking military R\&D intended to protect military personnel from disease. Beginning in 2011, a decade prior to the current pandemic, the Defense Advanced Research Projects Agency (DARPA) sponsored research to quickly identify unknown viruses and rapidly create and administer therapeutics and vaccines to protect troops against unknown biological threats.\textsuperscript{11} This process normally requires years. DARPA’s goal was 60 days.

DARPA scientists worked with the idea that individuals would be protected if “we could deliver genes that encode the antigen and allow the human body to produce the antigen from its own cells triggering a protective immune response.”\textsuperscript{12} This led to the development of the mRNA vaccine platform upon which both the Pfizer and Moderna vaccines are based. Both vaccines received FDA emergency use authorization in December 2020. The Pfizer and Moderna vaccines were fully FDA approved on August 21, 2021, and January 31, 2022, respectively.

**UNIQUE DOD CONTRACTING AUTHORITIES**

OWS leveraged a combination of unique authorities that allow DOD to purchase “prototype” capabilities—in this case the development and manufacture of six vaccine candidates, including the Pfizer and Moderna mRNA vaccines—to quicken vaccine delivery. Under Titles 10 and 41 of the U.S. Code, DOD’s authority to purchase prototypes that defend against or aid recovery from a biological incident allowed the Department to use an existing other transaction agreement consortium established by the Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear (CBRN) Defense (JPEO-CBRND).\textsuperscript{13}

The Medical CBRN Defense Consortium was created in 2016 to develop military medical treatments against chemical and biological threats and has now also been used to produce Covid-19 vaccines,
treatments, and other critical supplies with Pfizer, Moderna, Johnson & Johnson, and Regeneron, to name a few. Additional DOD authorities and agreements, such as technology investment agreements (TIA) and the Defense Commercial Solutions Opening (CSO) Program, have also been used to purchase treatments, personal protective equipment, and other solutions the nation might need to respond to Covid-19.

**DEFENSE PRODUCTION ACT**

The Defense Production Act (DPA) (PL 774-932) was enacted in 1950 during the Korean War to ensure the ability of U.S. industry to produce materials and products necessary for national defense. The DPA has been repeatedly amended and reauthorized over 50 times, most recently in 2018, and is currently set to expire on September 30, 2025.

The definition of “national defense” has expanded over time to include “emergency preparedness activities . . . and critical infrastructure protection and restoration,” authorizing the DPA to be applied in response to the Covid-19 pandemic.

In its current form, the DPA consists of three sections, each with specific authorities:

- **Title I** authorizes the president to require the prioritization and acceptance of contracts for necessary materials and services.
- **Title III** authorizes the president to expand production and supply of critical materials and goods, providing industry protection against financial risks through loans, loan guarantees, direct purchase, and purchase commitments. The secretary of defense is designated as the DPA fund manager.
- **Title VII** allows, among other things, voluntary agreements with private industry, the ability to prevent foreign acquisitions and mergers, and other actions promoting reliance on domestic supply chains and decreasing reliance on foreign sources that threaten U.S. national defense. It also provides limited protection against antitrust laws for companies voluntarily participating in preparedness programs.

In 2012, President Obama delegated DPA authorities to six department secretaries, including the secretary of the Department of Health and Human Services (HHS) for matters related to health resources.

The Government Accountability Office reported that through September 2021 the DPA was used over 100 times to address Covid-19 medical supply needs by ensuring the availability of personal protective equipment and materials to manufacture and administer vaccines, develop diagnostic capabilities, and produce therapeutics. This includes more than $11 billion authorized for DPA purchases through the CARES Act and other supplemental appropriations. The American Rescue Plan Act added $10 billion for “enhanced use” of the DPA. The initial emphasis was on medical supplies in extremely short supply—such as ventilators, N95 masks, gloves, gowns, and other personal protective equipment—the majority of which are manufactured overseas. Soon thereafter the DPA was applied to prioritize the materials and manufacture of vaccines, diagnostics, and therapeutics.

The pandemic’s rapid expansion throughout the United States quickly overwhelmed the contracting capacity and expertise of HHS and other federal agencies. This was resolved through interagency processes authorizing HHS and DOD to transfer and execute funds, eventually leading to the establishment of the Defense Assisted Acquisition Cell (DA2) in October 2020, leveraging “acquisition and subject matter experts from across the Department of Defense to meet urgent U.S. government
acquisition requirements.” In May 2021, DOD and HHS signed a second memorandum of understanding formalizing this arrangement through 2023. DA2 focuses on three goals: procuring vaccine doses for domestic and international needs, expanding the industrial base and ensuring supply chain resiliency for testing and diagnostic production, and establishing enduring pandemic response infrastructure. For example, the U.S. Army Contracting Command was used to purchase 500,000 doses of the Pfizer vaccine, worth $3.5 billion, which President Biden pledged to donate to the world at the Global Covid-19 Summit on September 24, 2021.
Framing pandemics as evolving disasters requiring a long-term approach with distinct phases—preparation, rapid acute response, long-term measures, and recovery—is helpful in defining what role U.S. military forces might play globally. International agreements limit foreign military and civil defense support for disaster response to the invitation of sovereign nations, and then only when all other efforts are insufficient. DOD routinely supports U.S. civilian-led overseas disaster relief through well-established protocols following these guidelines in support of the USAID Bureau of Humanitarian Assistance (BHA). An example is the U.S. military response to the 2014 West African Ebola outbreak, which resulted in several timely lessons:

- Existing relationships are important. Rapport developed as the United States helped rebuild the Liberian armed forces following the 1999–2003 Liberian civil war, allowing rapid establishment of smooth military-to-military relationships. The Liberian army gained status among Liberians during the Ebola outbreak.
- Rules of engagement must be clear yet allow flexibility on the ground.
- Military decisionmaking processes are less flexible and often more risk averse than those of nongovernmental organizations.
- Long-standing U.S. military health regional engagement programs, such as the Defense HIV/AIDS Prevention Program (DHAPP), can be leveraged to support pandemic response.
- Cross-institutional understanding is improved with each event. For example, Doctors Without Borders made the highly unusual request for U.S. military intervention when the epidemic teetered on the brink.
- Increasing opportunities for military, interagency, and other partners to regularly interact will improve working relationships on the ground.
West African Ebola Outbreak

Nearly half of infected people died in the 2014 West African Ebola outbreak. National health systems were overwhelmed, and international travel shut down. Health workers from around the world working in the region were on the brink of losing control of the situation, raising realistic concerns about worldwide death, suffering, and economic collapse if the disease could not be controlled where it began. Although many conditions within the affected countries contributed to the magnitude of this epidemic, the immediate problem of containing the disease required outside assistance, including U.S. military forces. As one analysis noted, “This was the first U.S. military operation to support a disease-driven foreign humanitarian assistance mission.”

Consistent with international agreements and U.S. international disaster assistance policy, the U.S. ambassadors to Liberia, Sierra Leone, and Guinea declared foreign disasters. Upon the request of then Liberian president Ellen Johnson Sirleaf, U.S. ambassador Deborah Malac asked for USAID disaster assistance response teams to be dispatched to the region. When existing domestic and international civilian response efforts were deemed inadequate to meet the challenges, specific U.S. military support was requested and immediately deployed. This included engineers who constructed Ebola treatment units and medical facilities to care for infected caregivers as well as testing capacity, medical laboratories, and operational facilities. Military vertical lift aircraft transported materials and personnel to areas with poor infrastructure. U.S. military personnel trained volunteer healthcare workers to properly use personal protective equipment, and DOD scientists deployed with mobile laboratories to assist in diagnostic testing. U.S. military medical professionals rarely, if ever, provided direct patient care to infected patients.

Although these concrete steps were helpful, perhaps most important was the reassurance brought by the presence of U.S. forces—the creation of an air bridge had profound psychic impacts in breaking the panic that had accelerated in August and September 2014, restoring hope to the region. In the words of Ambassador Malac, “The biggest impact was the announcement [of U.S. military involvement] itself and having those boots on the ground . . . the psychological impact was transformative to the Liberians. You have to understand the environment at that point in time . . . people were beyond afraid; they were despairing. The change was palpable within 24 hours of the president’s announcement.”
U.S. soldiers teach medical workers how to effectively wear protective gear during a training session on fighting Ebola on November 7, 2014 in Monrovia, Liberia.

Photo: ZOOM DOSSO/AFP via Getty Images
Countering All Types of Biological Threats

Policy

The need for a more inclusive view of biological threats took hold with the 2003–04 international spread of Severe Acute Respiratory Syndrome (SARS), virulent forms of influenza virus (e.g., H_5N_1 in 2005 and H_3N_1 in 2009), and Middle East Respiratory Syndrome (MERS) in 2012. The Clinton, Bush, Obama, and Trump administrations all viewed infectious disease outbreaks as a national security concern, resulting in a succession of national strategies culminating in the 2019 Global Health Security Strategy specifically directing DOD to:

- “Facilitate implementation and coordination of relevant DOD programs and activities that align with GHSA [the Global Health Security Agenda] and other global health security goals, particularly biosurveillance, biosafety, and biosecurity, military-to-military or military-to-civilian capacity-building efforts, and relevant research and development including that coordinated through the United States Government Public Health Emergency Medical Countermeasures Enterprise (PHEMCE) priorities.”

- “In conjunction with other relevant agencies, coordinate and communicate with defense ministries on GHSA and GHS needs and priorities, and work with partner nation defense ministries and others to increase defense-sector representation in the GHSA Multilateral Initiative. Advance global norms on the role of militaries and military-civilian collaboration in Global Health Security.”

- “For an emergency response provide assistance and support in coordination with USAID’s OFDA [BHA] or HHS’s Assistant Secretary for Preparedness and Response. In general, this involves providing unique response capabilities, such as logistics, transport, security, and medical evacuation and treatment, when critical capacity gaps cannot otherwise be easily filled by other departments and agencies.”
DOD meets this mandate at home and abroad by leveraging a wide array of capabilities developed and maintained primarily to support military requirements. Efficiencies that make sense in for-profit health systems do not work in this setting—a certain amount of redundancy is necessary to ensure expertise is available in many unique areas necessary to perform several different tasks simultaneously with little warning.

(See Appendix B for a more inclusive list of applicable strategies and directives.)

**DOD Biological Defense and Force Health Protection: Many Capabilities, Many Masters**

The extensive DOD biosurveillance, biological R&D, public health, clinical, biosecurity, and biosafety enterprises are all essential elements of U.S. warning, assessment, and response capabilities that ensure the health and safety of U.S. military forces and protect the United States against naturally occurring, accidental, or intentional biological agents. Historically, DOD organizations dealing with biological agents derive from one of two tracks: (1) countering and defending against biological weapons and (2) protection from naturally occurring diseases.

Figure 1: DOD Organizations Involved in Biosecurity

Note: For abbreviations, see Appendix C.


Although many areas of overlap exist between these groups, separate chains of command, authorities, and funding streams have historically led to “stovepiping”—isolated and narrow chains of
communications. This situation has improved in recent years, and there is reason to expect that this progress will continue. The DOD Biodefense Posture Review currently underway presents an excellent opportunity to align efforts against biological agents from any source and inform the upcoming versions of the National Defense Strategy and National Military Strategy on the DOD role relative to biological threats, providing clear guidance for policy, structure, and budget considerations.\textsuperscript{32}

**Defending against Biological Weapons of Mass Destruction**

With the dissolution of the Soviet Union in 1991 came concern over the status of large numbers of weapons of mass destruction (WMD) stockpiles, including biological agents. Equally as troubling was the future of thousands of suddenly unemployed scientists and technicians.

The Defense Threat Reduction Agency (DTRA) Cooperative Threat Reduction (CTR) Program was formed to address these issues through peaceful means. DTRA is aligned under the assistant secretary of defense for nuclear, chemical, and biological defense programs, who reports to the undersecretary of defense for acquisition and sustainment. Many DTRA programs receive guidance and funding controlled by the undersecretary of defense for policy.

As part of CTR, the Biological Threat Reduction Program (BTRP) was created to counter the threat of biological WMDs by engaging with foreign countries to

- prevent the proliferation of biological weapons, weapons components, and weapons-related materials, technology, and expertise, which may include activities that facilitate detection and reporting of highly pathogenic diseases or other diseases that are associated with or that could be used as an early warning mechanism for disease outbreaks that could affect the Armed Forces of the United States or allies of the United States, regardless of whether such diseases are caused biological weapons.\textsuperscript{33}

In recent years, BTRP’s focus has broadened to include biological threats from any source—naturally occurring, accidental, or intentional—still with an emphasis on countering proliferation of especially dangerous pathogens such as those on the select agents and toxins list.\textsuperscript{34} BTRP engages with partners in biosurveillance, biosafety, and biosecurity capacity building through a robust interagency approach while still being tailored to meet specific DOD needs. Much of this work is accomplished in conjunction with other DOD activities, including the U.S. military overseas biological research laboratories discussed below.

**The Military Health System: An Integrated Health System?**

The U.S. Military Health System (MHS) is a “federated system . . . of partners at all levels of [DOD].”\textsuperscript{35} It operates all of the components of major academic medical centers, community primary and specialty healthcare organizations, international public health systems, and research university-level R&D centers throughout the world—with the added responsibility of maintaining operations in all of these places while deploying in support of combat or humanitarian response missions anywhere in the world on a moment’s notice. The MHS is “one of America’s largest and most complex health care institutions,” responsible for simultaneously providing expeditionary and routine services for the health and well-being of 9.6 million people, including all active-duty U.S. military forces, retired military personnel, and their families.\textsuperscript{36} Integration is an ongoing challenge.
The MHS is governed by policies of the assistant secretary of defense for health affairs, who reports to the undersecretary of defense for personnel and readiness. Activities are influenced and operated by the Defense Health Agency; the Joint Staff surgeon; and the Army, Navy, and Air Force medical departments. Additionally, the MHS maintains numerous collaborations with U.S. and international governmental agencies and civilian organizations, all contributing to a worldwide network of biosurveillance, R&D institutions, public health, clinical and rehabilitation services, and education and training at all levels from basic medic training through subspecialty graduate medical education.

The 2021 Unified Medical Budget request funding the MHS was $50.8 billion, 7.2 percent of the overall DOD budget, including over $18 billion to purchase beneficiary care in civilian medical institutions through the Tricare program. The MHS employs about 137,000 people around the world and operates 49 inpatient faculties, 465 ambulatory care and occupation health clinics, 192 dental clinics, and 250 veterinary facilities in the United States and overseas.

Education and training of military medical professionals and technicians are both conducted in DOD facilities and supported in civilian institutions. Approximately 16,500 Army medics, Navy hospital corpsmen, and Air Force medical technicians graduate each year from the San Antonio Medical Education and Training Campus in 48 technical academic programs. The Uniformed Services University of the Health Sciences educates military and HHS Public Health Service physicians in the School of Medicine and graduate programs in medical education, nursing, dentistry, and allied health sciences, supporting numerous research efforts in all of these areas. Professional education for military health officers is also supported in civilian institutions through the Health Professions Scholarship Program and other programs.

**Force Health Protection**

The MHS is responsible for force health protection: measures to promote, protect, improve, conserve, and restore service members’ mental and physical well-being in U.S. forces deploying throughout the world. This necessitates the ability to identify health threats, develop and deploy measures to prevent illness in the first place, treat those who become ill, and rehabilitate stricken personnel to return to duty. These capabilities must be available wherever U.S. military forces operate currently or in the future. Military biosurveillance experts work closely with civilian colleagues to detect and identify potential threats. If vaccines or other prevention options do not exist, military R&D activities develop them, working closely with private industry. Military public health organizations deliver preventive measures to the force, and skilled U.S. military clinicians are available with deployed forces and in medical facilities around the globe when preventative measures are unsuccessful.

**Infectious Disease: DOD Biosurveillance and R&D**

U.S. forces deployed throughout the world face many hazards, including biological threats not regularly encountered at home for which there is little commercial incentive for the biomedical industry to develop diagnostics, vaccines, and therapeutics.
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The extensive DOD biological R&D enterprise fills this void by creating products against organisms and other threats discovered through its worldwide biosurveillance and medical R&D activities focused on issues of military interest. Many of these efforts, particularly in trauma, mental health, and infectious disease, represent significant advances benefiting the population at large.

For example, much of the military infectious disease effort focuses on conditions not prevalent in the developed world, such as malaria, cholera, typhoid, and many others. General Douglas MacArthur famously complained that the World War II Pacific campaign would “be a very long war if for every division I have facing the enemy, I have one sick in hospital and another recovering from (malaria).” Although effectively eradicated in the United States by 1951, falciparum malaria continues to be a
formidable obstacle to military operations to the present day. In response to this threat, military research laboratories have developed or supported almost all of the antimalarial drugs in use today and lead the search for an effective malaria vaccine. This work is conducted through a network of laboratories, military public health centers, engagement with foreign partners, and extensive collaboration with civilian health organizations, particularly the CDC, USAID, the National Institutes of Health, and the WHO.

The Armed Forces Health Surveillance Division of the DHA Public Health Division coordinates a global program of military-relevant infectious disease surveillance, including the Global Emerging Infections Surveillance (GEIS) program, expanding DOD’s mission “to include support of global surveillance, training, research, and response to emerging infectious disease threats. DOD will strengthen its global disease reduction efforts through centralized coordination, improved preventive health programs and epidemiologic capabilities; and enhanced involvement with military treatment facilities and overseas laboratories.” GEIS’s strategy includes funding and technical support of DOD infectious disease laboratories throughout the world, working closely with host-country ministries of health, the CDC, and the WHO to prevent, detect, and respond to infectious disease threats. Additional research funding for infectious disease treatments and diagnostics is administered by the Military Infectious Disease Research Program (MIDRP) through grants supporting the development of solutions to address infectious disease threats to military operational readiness, including combat wound infections and bacterial and rickettsial diseases.

Figure 2: GEIS Infectious Disease Laboratory Network

DOD medical research laboratories such as the Walter Reed Army Institute of Research (WRAIR), the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), the Navy Medical Research Center (NMRC), and the Air Force Research Laboratory focus on health risks of military interest. WRAIR and NMRC oversee DOD infectious disease laboratories located throughout the world, working closely with host nation colleagues against diseases rarely seen in the United States but of great importance to both deploying military personnel and the host nation. Much of this work is funded through GEIS, MIDRP, and BTRP. This combination of biosurveillance, basic research, and product development through early clinical trials has contributed to every available malaria prophylaxis drug, the first clinical trial with modest success in preventing HIV infection, and vaccines against Ebola, shigella, and other debilitating diseases. Additionally, military research laboratories participate in the ongoing search for vaccines and therapeutics against all coronaviruses, including SARS-CoV-2, which can be stored in common household refrigerators or at ambient temperatures.

With the end of the U.S. offensive biological weapons program in 1969, the USAMRIID mission is to “conduct research on current and emerging biodefense threats resulting in medical solutions to protect the warfighter.” It securely houses the Unified Culture Collection of bacterial and viral agents that support DOD-sponsored biodefense research, participates in the CDC Laboratory Response Network for response to bioterrorism and emerging infectious diseases, and is one of the few laboratories in the nation with biosafety level 4 (BSL4) capability for research on naturally occurring pathogens that cause fatal disease for which there are few, if any, treatments, such as hemorrhagic fever viruses (e.g., Marburg, Ebola, and Lassa), Variola viruses (e.g., smallpox), and Nipah viruses.

**Search for a Universal Vaccine**

Recently, U.S. Army researchers announced promising results of work on two vaccines that are broadly effective against all Covid variants as well as SARS, which is also caused by a coronavirus. If ongoing human trials are successful, this will be yet another contribution of military health research to the general good.

**Military Global Health Engagement**

Military medical and scientific professionals working together against a common threat establish personal and professional relationships while advancing scientific progress to the benefit of both countries. Strengthening health systems in low- and middle-income countries requires consistent attention over years and decades. Since this is where many biological threats emerge and proliferate, it is in the United States’ interest to participate in activities that protect U.S. military forces, decrease the likelihood of international disease spread, and improve host nations’ ability to protect themselves.

Even though U.S. military global health engagement activities have occurred for decades, it was not until 2017 that these activities were formally codified in DOD policy to promote and enhance PN [partner nation] stability and security; develop PN military and civilian PN capacity; . . . [and] seek to develop and improve the human and animal health capabilities and capacities of DOD and PN personnel to . . . establish or maintain a level of health and a state of preparedness conducive to healthy human and animal populations, in turn bolstering the civilian population’s confidence in PN governance.
Many of these efforts, such as peacekeeping programs in many African countries, resulted in host-nation medical capabilities that were effectively used as Covid treatment centers without further direct U.S. support.

These efforts are carried out in many ways across numerous DOD organizations, including intermittent military-to-military activities in routine exercises, regular multinational military medical scientific meetings, international disaster response and training, and ongoing biosurveillance and research activities in laboratories throughout the world (see Figure 2). Taken together, international military health engagement can strengthen relationships with allies and partners and serve as the initial building blocks for establishing relationships with others.

The Global Health Security Agenda

The Global Health Security Agenda (GHSA) was established in 2014 by a group of 44 countries and organizations as a framework to better protect the world against infectious disease outbreaks by improving each country’s ability to comply with the 2005 International Health Regulations. This effort was expanded in 2017 and extended by the release of the GHSA 2024 framework that now includes over 70 countries and organizations dedicated to the vision of “a world safe and secure from global health threats posed by infectious diseases.” The detailed framework of self-evaluation, action packages, and compatibility with other global processes and health security actors serves as an excellent guide for areas of collaboration for all U.S. organizations working to improve. Although DOD is not directed or funded to perform specific GHSA activities, this structure is certainly compatible with the intent and guidance of applicable policies and directives supporting many global health engagement activities in which U.S. military professionals regularly participate.

Risks

Currently, U.S. military medicine is undergoing a significant reorganization with the establishment of the Defense Health Agency to oversee most military medical activities common to all service branches. This includes military hospitals and clinics throughout the United States, the Tricare program that funds beneficiary care in civilian medical facilities, and shared services such as electronic medical records and logistics.

Proposed reductions in the number of active-duty military medical professionals outlined in the 2017 National Defense Authorization Act are currently under consideration.

Both processes provide an opportunity to reorganize military health activities to best support future military needs. However, great care must be exercised to avoid negative impacts to relatively unknown programs that have been so effective in protecting military forces and the public against biological threats, particularly those not normally encountered at home.

PERSONNEL REDUCTIONS

Proposed reductions in active-duty military medical forces raise serious concerns. The success of DOD biological programs depends upon the continuity of highly skilled, dedicated people in and out of uniform.
The success of DOD biological programs depends upon the continuity of highly skilled, dedicated people in and out of uniform.

It is especially difficult to quantify the effort required to maintain a consistently ready, healthy force. Public health professionals are in the unenviable position of repeatedly having to “prove a negative”—how many military operations succeeded because troops were not sick due to successful biosurveillance and other public health measures to prevent a disease never seen at home? Thousands of outstanding
researchers, clinicians, planners, logisticians, and support personnel are the product of years of education, training, and guidance from outstanding role models and are dedicated to a job that defines success by avoiding disastrous consequences. It is unrealistic to expect that the corporate knowledge, understanding, and expertise amassed over many years could be replaced by intermittent, short-term contacts. If this highly effective system is dismantled, it would require decades to rebuild.

BTRP depends in part upon the overseas laboratories to facilitate host nation health system capacity building against infectious disease threats. Would elimination, downsizing, or transfer of these labs to another organization, perhaps the CDC, impact the ability to detect and deter biological threats, particularly if those threats are not from naturally occurring organisms? Such decisions should be made with long-term outcomes and capabilities in mind, and not simply immediate potential cost savings. Although CDC and DOD often operate in proximity to each other overseas, they do not duplicate efforts. Such a transfer of overseas laboratories while continuing to meet DOD’s requirements would require a concomitant infusion of support funds and personnel.

**FUNDING**

Funding must be aligned with function. To properly support capacity-building efforts in foreign nations’ civilian or military health systems, global health engagement funding authorities with multiyear authorizations are necessary for uninterrupted, sequential programs coordinated with U.S. strategic objectives and host nation needs. Some programs, such as BTRP, DHAPP, and overseas infectious disease laboratories, already benefit from relatively reliable funding streams, albeit with annual fluctuations. These well-established entities are able to document the value of their work and demonstrate specific future requirements.

Many other military health engagement efforts depend upon annual funding, often not available until late in a fiscal year, and suffer from lack of continuity due to frequent personnel turnover in sponsoring organizations and a lack of trust from partner nations when proposed events are canceled or postponed. Formation of a formal, focused global health engagement structure, including a multiyear funding appropriation supporting global health engagement activities, would better align proposed efforts with U.S. security objectives, health-related activities of other U.S. agencies, and host-nation needs. Vetting mechanisms similar to those employed by GEIS and MIDRP for biosurveillance and infectious disease research, respectively, would help assure sustainment of appropriate efforts.
Conclusions and Recommendations

DOD has a rich history of leadership in preventing, detecting, and treating infectious diseases. Maintaining effective combat capability has been the focus of force health protection activities since the establishment of the United States, beginning with the inoculation of the Continental Army against smallpox, through Walter Reed’s work to combat yellow fever in the early 1900s, and in malaria control during and after World War II. Covid-19 is only the most recent threat. There will be more.

During the Covid-19 pandemic, the success of Operation Warp Speed was due to a significant degree to effective military leadership forming a unified culture among partners from widely divergent backgrounds, with scrupulous attention to detail in planning and execution and a single-minded purpose to save lives. Accepting only what contributed to mission success and discarding all else led to the successful production of FDA-approved vaccines in months rather than years. The mRNA platform on which the Pfizer and Moderna vaccines are based was developed through farsighted military research sponsored by DARPA aimed at rapidly protecting U.S. forces against biological threats overseas. Military logisticians, contracting expertise, and timely implementation of the DPA were indispensable. The DPA has been used over 100 times to support national preparedness against Covid-19. Since this important legislation expires in three years, now is the time to update and renew the DPA, incorporating the numerous valuable lessons learned from the Covid-19 pandemic.

The Biden administration has committed to supporting international organizations, most notably the WHO, and programs intended to improve the world’s ability to deal with future pandemics. The upcoming second Global Covid-19 Summit, scheduled for May 12, 2022, will once again have three focus areas: vaccinate the world, save lives now, and build back better. DOD capabilities in contracting, logistics, planning, and lift have proven invaluable in infectious disease outbreaks overseas both in...
the past and present. Relationships from ongoing DOD health engagement programs, such as overseas infectious disease laboratories and DHAPP, have been leveraged to facilitate disease response. Such support will almost certainly be needed going forward.

The need to protect against both potential biological mass casualty weapons and naturally occurring infectious diseases has resulted in the creation of a worldwide U.S. military biosurveillance, R&D, and public health system. These capabilities are diffuse, spread across numerous lines of authority within DOD, with funding streams aligned to somewhat different mandates—countering proliferation, providing health information to public health and clinical experts, and supporting R&D of biological products to support force health protection, to name a few. However, this complex enterprise is remarkably successful in protecting the force and making significant contributions to basic science, public health strategies, and clinical practice, many of which are adapted as standards of care throughout the world.

The extensive DOD biosecurity, biosurveillance, R&D, and public health infrastructure has repeatedly proven its worth in protecting the health of service personnel serving overseas, through numerous scientific contributions, particularly to diseases found mostly in low- and middle-income countries, and with many practical solutions in diagnostics, vaccines, and therapeutics. The development of the mRNA vaccine platform through a DOD lab is a prime example. Although certainly important to DOD from the standpoint of force health protection, these are invaluable national assets with no civilian equivalent at home or overseas. Recent steps toward closer collaboration both among DOD organizations and with many other partners are encouraging and should continue.

Military global health engagement strategies are now institutionalized in DOD policy. Relationships developed through these and other “soft power” efforts pay dividends in scientific progress, partnership capability, and interoperability. Relationships are vitally important during times of crisis, as seen in the 2014 Ebola response. A critical look at military global health engagement activity planning, funding, and prioritization is long overdue. Coordination with other actors’ efforts in line with recognized international programs such as the GHSA is especially important.

Reorganization of military health and biosecurity programs is necessary. Yet the balance between capability and efficiency must be carefully considered, ensuring that unique and often unrecognized vital biodefense and force health protection capabilities are maintained to successfully respond to the next pandemic.

**Recommendations**

1. **Identify a lead federal agency for U.S. international Covid-19 response and future health security crises. DOD should have permanent, sustained involvement in integrating and planning from the beginning.**

U.S. national strategies delineate specific areas for DOD participation in many areas, but strategic direction must come from the White House with the identification of a lead federal agency for international operational coordination, preferably the U.S. Department of State. A federal clearinghouse and coordinating authority is needed to execute guidance from the president and the National Security Council. This authority must understand DOD’s considerable capabilities to give clear direction on when and how to implement these valuable resources to avoid late response and bigger expenditures.
2. **More closely coordinate and synchronize DOD capabilities dealing with biological threats within DOD and with external partners.**

Numerous DOD activities both within the United States and overseas have a long history of excellence in biosurveillance; R&D in diagnostics, therapeutics, and vaccines; counterproliferation; and clinical care. The professional expertise and long-term international partnerships developed by existing DOD organizations such as military overseas infectious disease laboratories can be leveraged to complement host nation health system strengthening, guided by GHSA principles.

Fortunately, DOD has reduced many internal barriers related to organizational structure, funding authorities, and other roadblocks, yet there is still room for improvement. The current Biodefense Posture Review provides an excellent opportunity to build on the progress of working groups within DOD and across the interagency, expanding areas of common interest to create a holistic view of biological threats from any source.

3. **Align funding authorities with desired outcomes.**

DOD should not supplant U.S. international development efforts. However, appropriate funding authorities at DOD are necessary to allow for immediate crisis response and longer-term host nation health system strengthening, in concert with other federal agencies.

- Specifically, 10 USC Ch. 16 Section 333 details the authority to provide training and equipment to national security forces of foreign countries for the purpose of building capacity against threats that could impact the United States. That authority should now be expanded to include global health risks in a manner that does not compete with existing purposes of the statute.
- Emergency authorizations for pandemic relief should include DOD as a recipient to cover costs above and beyond routine funding levels.
- Additionally, a global health engagement funding line with multiyear authorizations should be established to support ongoing DOD military-to-military and military-to-civilian health system strengthening activities. Those activities should be complementary with those of other U.S. agencies in support of GHSA goals while supporting U.S. strategic interests as reflected in regional security cooperation and non-proliferation efforts. This mechanism could also be used to receive emergency funding in a manner similar to that employed in other federal agencies.
- Funding priority should be given to CTR biological programs that will become increasingly important in addressing the global Covid-19 pandemic as well as other biological threats.

4. **Maintain military, medical, and scientific expertise.**

Potential military personnel reductions in health and the biological sciences must be very carefully balanced against the irrevocable negative impact on this highly successful enterprise. Success in preventing, detecting, and treating infectious disease threats is possible only because highly dedicated, skilled people are focused on this effort. The combination of career professionals and those who serve for a few years before moving to the civilian sector has worked well to develop and sustain the unique military public health, clinical, research, and counterproliferation capabilities that support a healthy, fit military force while also making significant contributions in areas not of commercial interest to the overall U.S. health system or pharmaceutical industry. Advances in malaria, Ebola, and other hemorrhagic fevers; research establishing the mRNA vaccine platform; early success toward
an HIV vaccine; protection against vector-borne diseases; and advances in biosafety and biosecurity against especially dangerous pathogens have all resulted from the work of relatively unknown DOD laboratories and scientists.

The cycle of crisis and complacency must be broken. It is very likely that repeated surges of future Covid variants, continued breakthrough infections, and future pandemics of other infectious diseases will again overwhelm health and social infrastructure throughout the world, requiring continued support of DOD personnel and capabilities, including healthcare professionals, when other capabilities run short.

Now is the moment to acknowledge these capabilities as vital national assets to be reinforced, funded, protected, and deployed as needed for advancing a U.S. global health security strategy.

The cycle of crisis and complacency must be broken.
About the Authors

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Appendix A

Members of the DOD Working Group of the CSIS Commission on Strengthening America’s Health Security

While all of the people noted below contributed to our thinking and have made us smarter, this is not a consensus document, and the conclusions in the final report should be understood to be the sole responsibility of the authors.

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The National Security Strategy (NSS) conveys the president’s vision “for how America will engage with the world.” It is the basis for all other national strategy documents. The Biden administration released its Interim National Security Strategic Guidance in March 2021, identifying pandemics and other biological risks as one of the biggest threats to the United States. The guidance commits to immediately renew international collaboration and increase domestic efforts to contain Covid-19.

The National Defense Strategy (NDS) applies the NSS to the DOD. The current NDS was produced in 2018 by then secretary of defense James Mattis, prior to the Covid-19 pandemic. Secretary Lloyd Austin is expected to release the next NDS early in 2022.

In the National Military Strategy (NMS) the chairman of the Joint Chiefs of Staff provides his advice for how U.S. military forces carry out the guidance provided in the NSS and NDS. The current NMS was released in 2018, and the next iteration is expected in early 2022 following release of the NDS.

The National Biodefense Strategy and Presidential Memorandum 14, “Support for National Biodefense,” both released in 2018, direct a coordinated effort across multiple federal agencies to protect against biological threats, whether of deliberate, accidental, or natural origin.

The 2018 National Strategy for Countering Weapons of Mass Destruction Terrorism addresses biological agents and

[the need] to improve biosafety, biosecurity (including cybersecurity), and oversight practices for laboratories and other facilities in the United States and abroad, as well as to strengthen best
practices for end-to-end management of samples and specimens to prevent nefarious diversion . . . [and] promote effective oversight . . . where biosafety and biosecurity lapses could have tragic consequences, such as those involving potentially pandemic pathogens.\textsuperscript{64}

The Soviet Nuclear Threat Reduction Act of 1991, also known as the Nunn-Lugar Act of 1991, led to the establishment of the Cooperative Threat Reduction (CTR) Program to protect against the proliferation of weapons of mass destruction, including biological weapons, following the collapse of the Soviet Union.\textsuperscript{65} CTR, including the Biological Threat Reduction Program (BTRP), is now a part of the Defense Threat Reduction Agency (DTRA).

The International Health Regulations (IHR) is an international agreement to which 196 countries, including the United States, are legally bound. IHR’s purpose is to “prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.”\textsuperscript{66} IHR requires the WHO be notified of all cases of wild-type poliomyelitis, SARS, new influenza subtypes, and smallpox, and of all events that may constitute a public health emergency of international concern (PHEIC).\textsuperscript{67}

The Global Health Security Agenda (GHSA) is an international partnership of 67 countries dedicated to strengthening public health systems to prevent, detect, and respond to infectious disease threats.\textsuperscript{68} Formed in 2014 to increase the ability to comply with IHR, all member countries committed to a second phase of the GHSA strategic framework through 2024.

The Global Health Security Strategy (2019) “outlines the United States Government’s approach to strengthen global health security, including accelerating the capabilities of target countries to prevent, detect and respond to infectious disease outbreaks.”\textsuperscript{69} DOD responsibilities are outlined on page 23, including coordinating with partner nation defense ministries on GHSA needs and priorities.

The Global Health Security Act of 2021 directs the United States to implement a strategy to strengthen global health security, including by requiring the president to create the Global Health Security Agenda Review Council to implement the GHSA.\textsuperscript{70}

Presidential Decision Directive NSCT-7 on Emerging Infectious Diseases was issued by the Clinton administration in 1996 to improve surveillance, prevention, and response measures through interagency collaboration.\textsuperscript{71} This led to the establishment of the Global Emerging Infections Surveillance and Response System (GEIS), now aligned within the Defense Health Agency’s Armed Forces Health Surveillance Division.

The Kaiser Family Foundation U.S. Global Health Legislation Tracker provides a listing of more than 50 pieces of legislation related to global health under consideration by Congress.\textsuperscript{72}
Appendix C

Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired Immunodeficiency Syndrome</td>
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<td>AFHSD</td>
<td>Armed Forces Health Surveillance Division</td>
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<td>ASD (HA)</td>
<td>Assistant Secretary of Defense for Health Affairs</td>
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<td>ASD (HDGS)</td>
<td>Assistant Secretary of Defense for Homeland Defense and Global Security</td>
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<td>ASD (NCBD)</td>
<td>Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs</td>
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<td>ASD (SO/LIC)</td>
<td>Assistant Secretary of Defense for Special Operations and Low Intensity Conflict</td>
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<td>AFRICOM</td>
<td>United States Africa Command</td>
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<td>BHA</td>
<td>Bureau of Humanitarian Assistance (USAID)</td>
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<td>BTRP</td>
<td>Biological Threat Reduction Program</td>
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<td>BSL4</td>
<td>Biosafety Level 4</td>
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<td>CARES Act</td>
<td>Coronavirus Aid, Relief, and Economic Security Act</td>
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<td>CBEP</td>
<td>Cooperative Biological Engagement Program (Renamed BTRP, see above)</td>
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<td>CDC</td>
<td>United States Centers for Disease Control and Prevention</td>
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<td>CENTCOM</td>
<td>United States Central Command</td>
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<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>CEPI</td>
<td>Coalition for Epidemic Preparedness Innovations</td>
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<td>Covid-19</td>
<td>Coronavirus Disease 2019</td>
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<tr>
<td>CTR</td>
<td>Cooperative Threat Reduction Program</td>
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<tr>
<td>DA2</td>
<td>Defense Assisted Acquisition Cell</td>
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<tr>
<td>DASD (CBD)</td>
<td>Deputy Assistant Secretary of Defense for Chemical and Biological Defense</td>
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<td>DASD (CWMD)</td>
<td>Deputy Assistant Secretary of Defense for Countering Weapons of Mass Destruction</td>
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<tr>
<td>DARPA</td>
<td>Defense Advanced Research Projects Agency</td>
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<tr>
<td>DASD (S&amp;HS)</td>
<td>Deputy Assistant Secretary of Defense for Stability and Humanitarian Affairs</td>
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<td>DART</td>
<td>Disaster Assistance Response Team (USAID)</td>
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<tr>
<td>DIA</td>
<td>Defense Intelligence Agency</td>
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<td>DFC</td>
<td>United States International Development Finance Corporation</td>
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<td>DHA</td>
<td>Defense Health Agency</td>
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<td>DHAPP</td>
<td>Defense HIV/AIDS Prevention Program</td>
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<td>DOD</td>
<td>Department of Defense</td>
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<td>DP</td>
<td>Disaster Preparedness</td>
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<td>DPA</td>
<td>Defense Production Act</td>
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<td>DRR</td>
<td>Disaster Risk Reduction</td>
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<td>Defense Threat Reduction Agency</td>
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<td>EUCOM</td>
<td>United States European Command</td>
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<td>United States Food and Drug Administration</td>
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<td>Federal Emergency Management Agency</td>
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<td>GAO</td>
<td>Government Accountability Office</td>
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<td>GEIS</td>
<td>Global Emerging Infections Surveillance Program</td>
</tr>
<tr>
<td>GHE</td>
<td>Global Health Engagement</td>
</tr>
<tr>
<td>GHSA</td>
<td>Global Health Security Agenda</td>
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<tr>
<td>HHS</td>
<td>United States Department of Health and Human Services</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>IHR</td>
<td>International Health Regulations</td>
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<tr>
<td>INDOPACOM</td>
<td>United States Indo-Pacific Command</td>
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<tr>
<td>NDS</td>
<td>National Defense Strategy</td>
</tr>
<tr>
<td>NGO</td>
<td>Nongovernmental Organization</td>
</tr>
<tr>
<td>NMS</td>
<td>National Military Strategy</td>
</tr>
<tr>
<td>NSCT</td>
<td>National Science and Technology Council</td>
</tr>
<tr>
<td>NSS</td>
<td>National Security Strategy</td>
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<tr>
<td>MERS</td>
<td>Middle East Respiratory Syndrome</td>
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<tr>
<td>MHS</td>
<td>Military Health System</td>
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<tr>
<td>MIDRP</td>
<td>Military Infectious Disease Research Program</td>
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<tr>
<td>mRNA</td>
<td>Messenger Ribonucleic Acid</td>
</tr>
<tr>
<td>MSF</td>
<td>Médecins Sans Frontiers (Doctors Without Borders)</td>
</tr>
<tr>
<td>NCMI</td>
<td>National Center for Medical Intelligence</td>
</tr>
<tr>
<td>NORTHCOM</td>
<td>United States Northern Command</td>
</tr>
<tr>
<td>NRMC</td>
<td>Naval Medical Research Command</td>
</tr>
<tr>
<td>OFDA</td>
<td>Office of Foreign Disaster Assistance (USAID)</td>
</tr>
<tr>
<td>OWS</td>
<td>Operation Warp Speed</td>
</tr>
<tr>
<td>PEPFAR</td>
<td>President’s Emergency Plan for AIDS Relief</td>
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<tr>
<td>PHEMCE</td>
<td>Public Health Emergency Medical Countermeasures Enterprise</td>
</tr>
<tr>
<td>PL</td>
<td>Public Law</td>
</tr>
<tr>
<td>PN</td>
<td>Partner Nation</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
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<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>SARS</td>
<td>Severe Acute Respiratory Syndrome</td>
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<td>SARS-CoV-2</td>
<td>Severe Acute Respiratory Syndrome Coronavirus 2</td>
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<td>SOCOM</td>
<td>United States Special Operations Command</td>
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<td>SOUTHCOM</td>
<td>United States Southern Command</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>Full Form</td>
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<tr>
<td>USAMRIID</td>
<td>United States Army Medical Research Institute of Infectious Diseases</td>
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<tr>
<td>USD (A&amp;S)</td>
<td>Under Secretary of Defense for Acquisition and Sustainment</td>
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<tr>
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<td>World Health Organization</td>
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<td>WMD</td>
<td>Weapons of Mass Destruction</td>
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<tr>
<td>WRAIR</td>
<td>Walter Reed Army Institute of Research</td>
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</table>
Endnotes


12 Ibid.


UNOCHA, Oslo Guidelines.


sat/list.htm.


40 “Uniformed Services University,” Uniformed Services University of the Health Sciences, https://www.usuhs.edu/.


50 “USAMRIID: Biodefense Solutions to Protect our Nation,” U.S. Army Medical Research Institute of Infectious Diseases, https://www.usamriid.army.mil/.


58 Ibid.


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