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As the DoD proved in 2014 when it assisted in stopping the Ebola outbreak in West Africa, DoD is the only United States (U.S.) organization capable of interceding rapidly to keep future pandemics from spreading globally. Despite lacking doctrine, training, or tailored equipment to respond and protect against Ebola, DoD elements performed well in the "first US military operation to support a disease-driven foreign humanitarian assistance mission," including completing the mission with no DoD members infected with Ebola. However, since then and in the face of the current 2020 Coronavirus Disease 2019 (COVID-19), DoD has not addressed the documented lessons learned and failed to prepare organizations for the next potential pandemic event.

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PANDEMIC DILEMMA: THE DEPARTMENT OF DEFENSE MUST DEVELOP NEW DOCTRINE AND TRAINING TO PREPARE FOR FUTURE HUMANITARIAN PANDEMIC CRISES

by

Brian M. Cozine

Lieutenant Colonel, U.S. Army

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A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

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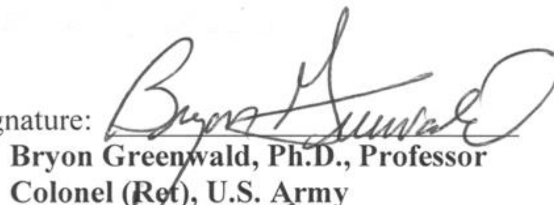
Thesis Advisor: Signature: 
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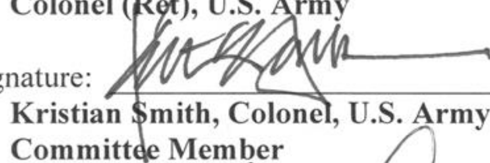
Approved by: Signature: 
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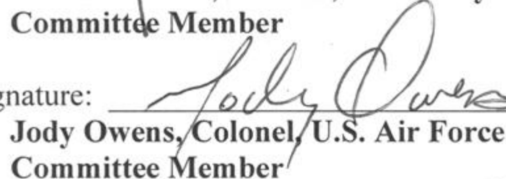
Signature: 
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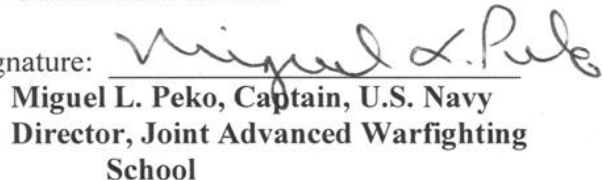
Signature: 
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Abstract

As proved in 2014, when the DoD assisted in stopping the Ebola outbreak in West Africa, DoD is the only U.S. organization capable of interceding rapidly to keep pandemics from spreading globally. Despite lacking doctrine, training, and tailored equipment to respond and protect against Ebola, a 2016 Joint Staff report highlighted DoD elements performed well in the "first U.S. military operation to support a disease-driven foreign humanitarian assistance mission," including completing the mission with no DoD members infected with Ebola. Since then and in the face of the current 2020 Coronavirus Disease 2019 (COVID-19), however, DoD has not addressed the documented lessons learned and failed to prepare organizations for the next potential pandemic event. Analysis of pandemic guidance and resources in terms of the Doctrine, Organization, Training, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) elements identifies gaps in DoD's ability to prepare and respond to pandemics. For example, within doctrine, DoD should not only mention that pandemics exist, but "accept" that pandemics are a potentially more frequent issue in the future environment and include a more in-depth treatment in future strategies and doctrine. A more in-depth narrative in doctrine will enable the military services to develop service-specific doctrine, training, and equipping strategies to support national-level goals in responding to pandemics.

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Chapter 1: Introduction.

> *When we think of the major threats to our national security, the first to come to mind are nuclear proliferation, rogue states and global terrorism. But another kind of threat lurks beyond our shores, one from nature, not humans - an avian flu pandemic.* [1] —President Barack Obama

Humanitarian assistance is not a core military task, yet between 2009-2017 Department of Defense (DoD) organizations responded to over 30 such disasters worldwide, including the 2014-2015 Ebola pandemic in Africa.[2] Pandemics are "an epidemic occurring worldwide, or over a vast area, crossing international boundaries and usually affecting a large number of people."[3] More than fire, flood, tsunami, and earthquake, all of which destroy infrastructure more than they kill people, pandemics occur worldwide and are insidious, invasive, and —of course— infectious. Pandemics attack humans without respite and can often, like other disasters, easily overwhelm all echelons of a government's ability to contain them, as seen with the Coronavirus Disease 2019 (COVID-19) impacting the People's Republic of China and other governments globally.[4] COVID-19 illustrates how quickly a contagion can spread and inflict significant illness and death as well as economic and social disruption in a matter of only a few days. As experienced recently, pandemic diseases are not bound by geographic boundaries and, like COVID-19, can quickly spread globally, making preparation to address them a national security

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[1] AZ Quotes, https://www.azquotes.com/quotes/topics/pandemics.html, (accessed 28 January 2020).
[2] Secretary Ashton Carter, *Department of Defense Accomplishments (2009-2016): Taking the Long View, Investing for the Future,* https://dod.defense.gov/Portals/1/Documents/pubs/FINAL-DOD-Exit-Memo.pdf, 5 January 2017, 11, (accessed 30 September 2019).
[3] World Health Organization, "The Classical Definition of a Pandemic is not Elusive," *Bulletin of the World Health Organization, Volume 89, Number 7,* July 2011, https://www.who.int/bulletin/volumes/89/7/11-088815/en/, (accessed 19 December, 2019).
[4] New York Times, *Coronavirus Live Updates: As Death Toll Rises, More Americans Are Heading Home,* 4 February 2020, https://www.nytimes.com/2020/02/04/world/asia/coronavirus-china.html?action=click&pgtype=Article &state=default&module=styln-coronavirus®ion=TOP_BANNER&context=Menu, (accessed 4 February 2020).

imperative.[5] Moreover, the onslaught of effects from climate change, urbanization, and globalization will only exacerbate the extent of the effects of pandemics. These effects will lead to short-term and long-term concerns as vector-borne diseases will continue to change with geographic and human activities, such as the migration from less urban areas to mega-cities and the increased speed and frequency of global travel.[6]

Between 2011 and 2018, the world experienced over 1400 epidemics across 172 countries.[7] In the U.S., a highly developed nation with a stable health system, the 2017 influenza season infected approximately 45 million people and resulted in 61,000 deaths.[8] While the figure represents a small portion of the 50 million people who died from across the globe during the 1918-1919 Spanish Flu Pandemic, the statistic raises alarms. The global population will soon top 8 billion and will become more interconnected through globalization and dense urbanization. The effects of climate change will exacerbate these trends as drought and sea-level rise drives people to new locations. The factors will contribute to the spreading of pandemics in the future environment. As pandemics continue to occur, they will pose challenges for the United States and the Department of Defense, as they did in 1918 and 2014, and are doing so today.

As the DoD proved in 2014 when it aided in stopping the Ebola outbreak in West Africa, DoD is the only U.S. organization capable of interceding rapidly to contain future pandemics

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[5] Christian W. McMillen, *Pandemics: A Very Short Introduction*. Very Short Introductions, (New York, NY: Oxford University Press, 2016), 2-3.

[6] A. Crimmins, J. Balbus, C.B. Gamble, J.E. Beard, D. Bell, R.J. Dodgen, N. Eisen, M. Fann, S.S. Hawkins, L. Herring, D. Jantarasamis, S. Mills, M.C. Sarofim, J. Tranj, L. Zizka, "The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment," *U.S. Global Change Research Program*, Washington D.C., 2016, www.health2016.globalchange.gov, 14-15, (accessed 20 September, 2019).

[7] Center of Disease Control and Prevention, "Disease Burden of Infleunza," https://www.cdc.gov/flu/about/burden/index.html, (accessed 20 January, 2020); Global Preparedness Monitoring Board, "A World At Risk: Annual Report on Global Preparedness for Health Emergencies," 2, https://apps.who.int/gpmb/assets/annual_report/GPMB_annualreport_2019.pdf, (accessed 20 January 2020).

[8] Center of Disease Control and Prevention, "Disease Burden of Infleunza," https://www.cdc.gov/flu/about/burden/index.html, (accessed 22 January 2020).

from spreading globally. Despite lacking doctrine, training, and specialized equipment to respond to protect its personnel against Ebola, DoD elements succeeded in the "first U.S. military operation to support a disease-driven foreign humanitarian assistance mission," including completing the mission with no DoD members infected with Ebola.[9] Since then and now with the current COVID-19, DoD has not acted to correct documented lessons learned and has failed to prepare organizations with coherent policy, doctrine, training, equipment, or leader education for the next potential pandemic event.

As highlighted in Joint Publication 3-29, *Foreign Humanitarian Assistance*, the challenge is DoD is a military organization, and it organizes, trains, and equips U.S. military forces to conduct military operations. Employing DoD capabilities to support humanitarian assistance activities presents a unique and daunting challenge for DoD.[10] Pandemics are a threat to U.S. national interests and will continue to be a dangerous element of the future operational and strategic environments. Failure to develop doctrine, training, and policies to be prepared to address future pandemics will most likely result in significant loss of life, threaten the economic stability of the U.S., and potentially weaken the security and prominence of the U.S. Decreased U.S. economic stability and a decreased role in global security ultimately threatens the U.S.-led world order. Already DoD facilities and personnel are involved in the temporary quarantine of travelers and service members, and deploying medical capabilities to support COVID-19 operations across the U.S. The DoD must continue to train and prepare to support counter-pandemic efforts to ensure basic levels of preparation in the event it is called upon to support. But without adequate doctrine, training, and policies, the cost of response could be considerably

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[9] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/OUA_report_jan2016.pdf, 6 January 2016, v, (accessed 12 September 2019).
[10] Department of Defense, *Foreign Humanitarian Assistance*, Joint Publication 3-29, 14 May 2019, I-1.

higher. DoD readiness depends on the successful development of appropriate doctrine and training and the acquisition of necessary equipment to execute an effective DoD response in contested and uncontested environments.[11]

Unfortunately, history demonstrates that the military has been and continues to be ill-prepared for a quick and effective response to outbreaks that directly affect its readiness to deploy forces, including support of pandemics. A report from the Joint Staff suggests that the DoD's focus on Operations Iraqi Freedom and Enduring Freedom, and the current Operation Inherent Resolve, have detracted time and attention from lower priority missions like preparing for humanitarian assistance activities.[12] As pandemics are unpredictable threats that may occur in contested or uncontested environments, DoD's ability to operate in those environments is critical to both the protection of military forces and the successful containment of the contagion. Essential to the success of DoD to accomplish its wartime and peacetime missions is the development and implementation of relevant and applicable doctrine and training exercises to build the capacity for DoD to respond. Addressing doctrine, training, and materiel is essential, but failure to examine potential improvements in areas of DoD leadership and education, materiel solutions, and policy development of the remaining DOTMLPF-P spectrum will continue to leave DoD unprepared to respond to future pandemics.

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[11] Department of Defense Directive, "Force Health Protection," Number 6200.*0*4, April 23, 2007, 3. This document was provided by USNORTHCOM on 27 December 2019. This directive provides guidance for DoD and the military services to maintain the health protection of the force. Sub-paragraph 4.3.2.5. states "Routinely train all military personnel, and essential DoD civilian and contractor personnel who directly support deployed forces, in safety, first aid, sanitation, health risks, and health protection measures, including those related to chemical, biological, radiological, nuclear, explosive, and environmental and/or industrial threats, in accordance with DoD Directive 2000.12 and DoD Instruction 2000.18."

[12] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* 7. The report highlighted that "for more than a decade, US soldiers had grown accustomed to deploying to mature operating locations in the United States Central Command (USCENTCOM) area of responsibility (AOR)."

While not a core warfighting mission, the increased risk of a pandemic outbreak due to climate change, globalization, and urbanization necessitates that DoD does more to prepare a subset of its force to deal with the likelihood of future pandemics. While strategic documents articulate the need to prepare for fighting pandemics, DoD lacks an overarching narrative that guides operational level doctrine. For example, the 2006 *National Strategy for Pandemic Influenza Implementation Plan* identifies several DoD specific tasks for supporting domestic and global influenza counter-pandemic efforts useful for organizations to prepare for such responses. In particular, the strategy recommends that DoD support international engagement protect military forces, provide sufficient personnel and equipment to preserve operational readiness, and strengthen the capacity of the Department of State (DOS) and Department of Health and Human Services (HHS) for surveillance and early detection viruses.[13] The DoD contains the capacity to support these operations, yet lacks sufficient doctrine, training, and materiel to ensure an effective response.

Analysis of the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) elements in Chapter Two highlights multiple gaps. Examination of doctrine, as it is the foundation for all military planning and execution efforts, reveals gaps within national, strategic, and Joint doctrine narrative that describes the current and future security environment due to an explicit lack of the term, *pandemics*. The missing narrative within doctrine highlights the lack of concern for identifying pandemics as a significant threat to national security. A more in-depth description would assist DoD in

[13] White House, *National Strategy for Pandemic Influenza: Implementation Plan,* Homeland Security Council, https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-implementation.pdf, May 2006, 52, (accessed 30 November 2019).

developing doctrine and identifying the requirements for training and equipping organizations to respond rapidly and execute missions in infectious areas.

Each type of pandemic requires a different form of training to provide an adequate response. Chapter Three identifies and discusses gaps in training at the National and Combatant Command level, and gaps in the tactical level training organizations. For example, in 2014 the USNORTHCOM Surgeon General identified a significant DoD medical shortfall in the understanding of symptoms and treatment for the Ebola virus in the United States, the readiness of medical health care providers to treat infected DoD personnel, and the ability to provide training for deploying forces on the donning and doffing of the personal protective equipment (PPE) during Operation United Assistance.[14] The recommendation for DoD was to "clarify policy and doctrine to guide the selection and use of appropriate personal protective equipment (PPE), and train on its use."[15] To address these tasks, DoD will need to pursue DOTMLPF-P solutions to solve potential gaps.

Review of the remaining DOTMLPF-P processes in Chapter Four provides examples of where the DoD has made some progress in improving organizational readiness to respond. For example, organizations such as the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) and the Defense Threat Reduction Agency (DTRA) actively seeks ways to improve DoD's ability to respond through interagency and multinational training, research and development, materiel solutions, and leader and education development.

Finally, Chapter Five will synthesize the findings uncovered by this research and provide recommendations for the way ahead. The recommendations will highlight several factors, which

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[14] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* 19-22.
[15] Ibid., 19.

include translating policies and procedures into sound doctrine, describing the operating environment, and establishing training initiatives for organizations to prepare appropriately.

Chapter 2: The Missing Narrative in Doctrine.

> *Some doomsayers think the collapse will be triggered by runaway government spending, excessive taxation, oppressive regulation, food shortages, fuel shortages or natural disasters such as deadly pandemics or lethal changes in the world's climate.*[16] —Robert Higgs, Economist

The Department of Defense (DoD) uses doctrine to provide the fundamental principles for the military services to coordinate their actions towards common goals.[17] DoD uses Joint doctrine to enhance "the operational effectiveness of the Armed Forces by providing official advice and standardized terminology on topics relevant to the employment of military forces. Although Joint doctrine is neither policy nor strategy, it serves to make United States policy and strategy effective in the application of U.S. military power."[18] Useful doctrine portrays the future environment in which forces expect to operate through, and lead to sound training and equipping strategies. Examples include the *2017 National Security Strategy*, *National Defense Strategy*, *2018 National Biodefense Strategy,* and the *2006 National Strategy for Pandemic Influenza: Implementation Plan*. The narratives typically link operations and warfighting functions to national interests, but pandemics do not fall neatly into a national interest, leading to gaps within the doctrine. Three gaps in current doctrine are 1) the limited use and description of pandemic narratives to describe DoD requirements to prepare and respond to pandemics; 2) the lack of historical examples of pandemics directly impacting DoD's readiness; 3) and the lack of narrative that includes pandemics within the future operating environment.

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[16] Robert Higgs, "HIGGS: After doomsday, what?," *Washington Post*, February 15, 2010, https://www.washingtontimes.com/news/2010/feb/15/after-doomsday-what/, (accessed February 3, 2020). Robert Higgs is senior fellow in political economy for the Independent Institute and editor of the Independent Review.

[17] Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, November 2019, 114, https://usacac.army.mil/sites/default/files/misc/ doctrine/CDG/cdg_ resources /manuals/jps/jp1_02.pdf, (accessed 23 December 2019).

[18] Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, November 2019, 2.

The inadequate doctrinal definition of and guidance on pandemics within strategic policies and Joint doctrine implicitly reduces the significance of the threat they pose. Joint doctrine commonly uses synonyms, such as "infectious disease" or "environmental challenges," when referring to pandemics. The use of these synonyms refers to the broader definition of a biological threat, both of which compound misunderstandings of the context of a pandemic. Pandemics generally are naturally occurring viruses or infectious diseases—meaning not man-made—that spread quickly to people, such as Ebola and influenza. DoD's rare use of the term pandemics in the text may leave readers to infer the definition of biological threats as "microorganism, virus, or toxin (from a biological source) that can impact human health and spread infectious disease," and can be spread through a variety of means, such as weapons of mass destruction or industrial spills.[19] Moreover, DoD organizations focus less on biological threats involving viruses and focus more on countering threats that require a technological means to deliver a biological threat, such as an aircraft, missile, or artillery shell.

Joint doctrine relies on strategic policy to establish the guidelines for developing its operational doctrine. One such document is the 2017 *National Security Strategy,* which provides the foundation for other national, strategic, and Joint doctrine for identifying potential threats to national security and outlines the path the United States will take to address and contain future threats. For example, the strategy describes pandemics as "biological threats to the U.S. homeland—whether as the result of deliberate attack, accident, or a natural outbreak—[that] are growing and require actions to address them at their source."[20] Though the strategy does not explicitly address which organization will address the threat, it does imply a whole-of-

[19] Department of Defense, *Operations in Chemical, Biological, Radiological, and Nuclear Environments,* Joint Publication 3-11, 29 October 2018, I-2.
[20] White House, *National Security Strategy of the United States of America*, The White House, December 2017, 9.

government approach to detect and contain biological threats. A second strategy, the *2018 National Biodefense Strategy,* echoes the 2017 *NSS* stating that "biological threats—whether naturally occurring, accidental, or deliberate in origin—are among the most serious threats facing the United States and the international community."[21] Both higher-level strategies identify threats as significant. Yet, despite being efficiently assembled in both documents, DoD has failed to address potential pandemic threats within the DoD *National Defense Strategy* or the *National Military Strategy* adequately.[22]

DoD appointed the Army's Chemical, Biological, Radiological, and Nuclear (CBRN) organization as the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) for addressing pandemics and other biological defense-force health protection initiatives.[23] As the lead agent, it is responsible for the surveillance, detection, defense, equipment procurement, interagency partnering, and development of doctrine. Within CBRN doctrine, it highlights CBRN's preferred mission focus on the surveillance, detection, defense, and equipping strategies for handling weapons of mass destruction (WMD), which overshadows and displaces the focus on pandemics. Even with this critical role, the CBRN doctrine has limited use and guidance for pandemics, further contributing to gaps in DoD

[21] White House, *National Biodefense Strategy,* The White House, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Biodefense-Strategy.pdf, 2018, i, (accessed 12 November 2019). The *National Biodefense Strategy* provides the framework for "how the United States Government will manage its activities more effectively to assess, prevent, detect, prepare for, respond to, and recover from biological threats, coordinating its biodefense efforts with those of international partners, industry, academia, non-governmental entities, and the private sector to protect the American People."

[22] Department of Defense, *2018 National Defense Strategy; 2018 National Military Strategy*. Both documents briefly highlight the threats of biological threats, however, they associate the threats with the use of weapons of mass destruction (WMD).

[23] Department of Defense Directive, "Force Health Protection," Number 6200.*04*, April 23, 2007, 5; Department of Defense Directive, "Roles and Responsibilities Associated with the Chemical and Biological Defense Program (CBDP)" Number 5160.05E, September 8, 2017, https://www.esd.whs.mil/DD/, (accessed 29 December 2019). The DODD 6200.04 was provided by USNORTHCOM on 27 December 2019. The two directives provide the DoD, Military Services, and CBRNE specific responsibilities related to Force Health Protection, which includes biological incidents.

training and equipping strategies. For example, Joint Publication (JP) 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments* uses the term pandemics to describe the strategic context: "Other crises could arise from epidemic or pandemic disease outbreaks that exceed the capabilities of a host nation (HN). These situations may threaten regional and global stability and may involve the territory and populations of the U.S., its allies, multinational partners, other friendly countries, and a range of other U.S. interests."[24] Additionally, JP 3-11 highlights that pandemics and infectious diseases pose significant threats to the joint force; however, it places more emphasis on the loss of control or theft of CBRN materials, Toxic Industrial Materials (TIM), Nontraditional Agents (NTA), and other Weapons of Mass Destruction (WMD).[25] The limited emphasis on pandemics and biological threats in doctrine shows the danger they pose to global, national interests, and partners. Yet, the limited description and the lack of differentiation between pandemics and biological threats suggest the strategic documents consider all diseases, natural or man-made weapons of mass destruction.

A second example, the CBRN document Joint Publication 3-28, *Defense Support of Civil Authorities,* references the term pandemic six times. Collectively, the six references fail to provide any significant actions that should be taken by DoD to address pandemics, but rather briefly discusses them as potential risks. For example, it highlights Presidential Policy Directive (PPD-8), *National Preparedness,* which states, "these threats and risks include events such as natural disasters, disease, pandemics, chemical spills, and other man-made hazards, terrorist attacks, and cyberspace attacks."[26] As with the National Defense and Military Strategies, CBRN

[24] Department of Defense, *Operations in Chemical, Biological, Radiological, and Nuclear Environments,* Joint Publication 3-11, 29 October 2018, I-4.
[25] Ibid. I-1.
[26] Department of Defense, *Defense Support of Civil Authorities,* Joint Publication 3-28, 29 October 2018, I-8. The other five examples are mentioned to highlight the role of DoD support to DSCA operations, such as the *National Disaster Medical System (NDMS).*

doctrine uses the term pandemics to highlight the threats they pose briefly. It does not take them seriously. Accordingly, DoD and JPEO-CBRND have not placed a strong emphasis on addressing their approach within doctrine to prepare and respond to pandemic threats.

The failure to describe how pandemics create and drive threats to both the protection of national interests and other aspects of the operational environment is something DoD must address. One method is the linking of strategic policy to develop actionable operational level approaches/tasks within the Universal Joint Task List (UJTL). A challenge resides in connecting doctrine to the UJTL, as doctrine referencing pandemics is limited and focuses primarily on responding to biological threats spread through the use of weapons of mass destruction (WMD). For example, the thirty-five tasks concerning biological threats and the three concerning epidemics all reference Joint publications, such as the Joint Publication 3-11, *Operations in Chemical, Biological, Radiological, and Nuclear Environments*; Joint Publication 3-40, *Countering Weapons of Mass Destruction;* and Joint Publication 3-41, *Chemical, Biological, Radiological, and Nuclear Response.* These documents use the term pandemics to briefly describe how they affect the environment and link to other tasks, such as surveillance, but fail to provide an extended discussion on how to respond to pandemics or operate in pandemic-stricken environments.

Another critical aspect of developing operational doctrine is using history as a guide to study past pandemics to demonstrate how they have directly affected the military's ability to prepare and perform for wartime and humanitarian missions. Like war, the history of pandemics affecting military operations extends to the beginning of recorded history. In the Peloponnesian War (431-405 BCE), multiple episodes of the plague caused the Athenian military to suffer over 5,000 military deaths, as well as causing the loss of an additional two-thirds of the Athenian

population.[27] In times of conflict, there resides a high possibility of a pandemic occurring due to the displacement of large populations as they flee into overcrowded camps containing poor sanitation and failing health-care systems.[28] Review of more modern examples, such as the 1918 Spanish Flu, the 2014 Ebola outbreak in Western Africa, and the 2020 COVID-19 offer the DoD opportunities to evaluate gaps within its current doctrine, training, and equipment strategies to improve its preparedness.

For instance, the 1918 outbreak demonstrated that inadequate doctrine could lead to the lack of training for medical health care workers to identify potential biological threats to the force during mobilization. The lack of training further contributed to the spread of influenza, both domestically and internationally.[29] The spread of the flu throughout the military occurred when mobilized units started to form at bases throughout the United States and subsequently deployed overseas in close-quartered ships. The 2014 Ebola outbreak demonstrated that despite the DoD's quick deployment to a known Ebola virus-infected area, the success of the operation was slowed due to limited training and insufficient supplies of personal protective equipment appropriate for the Ebola virus disease (EVD).[30] While DoD did analyze Operation United Assistance, the failure to capture lessons in doctrine hobbles DoD's ability to prepare, train, and equip to ensure its readiness to respond effectively to future pandemics, like COVID-19. The

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[27] Thucydides, *The Landmark Thucydides*, ed. by Robert Strassler, (New York, 1998), 123, 202; History.com Editors, "Pandemics that Changed History," https://www.history.com/topics/middle-ages/pandemics-timeline, (accessed 12 November 2019). The plague that affected the Athenians throughout the Peloponnesian War directly impacted the military forces across the region.
[28] Michelle Gayer, Dominique Legros, Pierre Formenty, Maire Connolly, "Conflict and Emerging Infectious Diseases," www.cdc.gov/eid, Volume 13, Number 11, November 2007, 1625, (accessed 15 Feburary 2020).
[29] U.S. National Institutes of Health, *Lessons Learned from the 1918–1919 Influenza Pandemic in Minneapolis and St. Paul, Minnesota,* Public Health Rep. 2007 Nov-Dec; 122(6): 803–810, https://www.ncbi.nlm.nih.gov/pmc/articles/ PMC1997248/, (accessed 13 November 2019).
[30] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/OUA_report_jan2016.pdf, 6 January 2016, 19. The USNORTHCOM Surgeon General stated "We weren't training for it. . . .So, now you get Ebola coming—a disease where there is no medical countermeasure. . . . We didn't really have any proficiency with the use of PPE, which could not only prevent infection but might save your life."

lessons learned will assist leadership in anticipating how pandemics will shape the future environment and determine appropriate requirements for preparation.

The DoD faces the challenge of preparing for the future environment and responding to potential pandemics without a clear understanding and without sufficiently describing how potential pandemics will shape the future environment. The 2017 *National Security Strategy* highlights that "biological threats to the U.S. Homeland–whether as the result of deliberate attack, accidents or a natural outbreak–are growing and require actions to address them at the source."[31] The 2018 *National Biodefense Strategy* suggests that a modern-day pandemic may result in the deaths of 200,000 to 2 million U.S. citizens.[32] Such large numbers of potential deaths should concern the DoD, because as seen with the 1918 Influenza, diseases can affect the military's readiness and preparedness, in addition to directly threatening the lives of the nation's citizens. Contributing to these predictions are three drivers that will directly affect the future environment: climate change, urbanization, and globalization.

Scientists, scholars, and institutional leaders agree that climate change, urbanization, and globalization will amplify the effects of pandemics. The three groups arrive at the same conclusion through different means, agreeing there will be a severe risk to populations. Scholars and scientists focus on pandemic and other biological threats, providing literature and narratives that bolster the description of pandemic threats in the future environment by using climate change, urbanization, and globalization. For example, the international organization, Scowcroft Institute of International Affairs, describes pandemics as "a central international health security challenge. Emerging diseases, fluctuations in climate, global interconnectedness—both

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[31] White House, *National Security Strategy of the United States of America*, The White House, December 2017, 9.
[32] White House, *National Strategy for Pandemic Influenza: Implementation Plan,* Homeland Security Council, May 2006, 15.

physically and economically—and greater interaction between animals and people, especially in the developing world, are just a few of the reasons that the U.S. Government and the DoD should be more concerned about pandemics than ever."[33]

Understanding those drivers, the Institute then offers a description of the future environment as complex and everchanging:

> The world is experiencing accelerated levels of change. Massive expansion of global travel; economic interdependence; global supply chains; climate change; urbanization; deforestation; technological advancement; and the expansion of mechanized, scientific commercial food production are just a handful of the changes that have occurred globally in the last fifty to seventy years.[34]

The complexity and increased rate of change mean there are few opportunities to prepare adequate and effective responses to any threats domestically or globally. Scientists, scholars, and institutional leaders also note that climate change, urbanization, and globalization will contribute to "substantial public health implications, reshaping the epidemiology of both chronic and infectious diseases, with consequences worldwide."[35] Furthermore, the same implications will continue to affect the environment and present challenges for DoD to consider when planning future operations. DoD should consider these unique perspectives to highlight the impacts of military operations and how they will further exacerbate environmental changes, increasing the likelihood and severity of the next outbreak and risk of infectious diseases.[36] From an operational

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[33] Scowcroft Institute, "Global Leadership at a Crossroads: Are we Prepared for the Next Pandemic?*," The Bush School of Government and Public Service*, White Paper, May 2018, https://oaktrust.library.tamu.edu/handle/1969.1/169477, 9. (accessed 15 September 2019).

[34] Scowcroft Institute, "The Growing Threat of Pandemics: Enhancing Domestic and International Biosecurity," *The Bush School of Government and Public Service*, White Paper, March 2017, https://oaktrust.library.tamu.edu/handle/1969.1/160329, 9. (accessed 15 September 2019).

[35] Emilie Alirol, Laurent Getaz, Beat Stoll, François Chappuis, Louis Loutan, "Urbanisation and Infectious Diseases in a Globalised World," *Division of International and Humanitarian Medicine*, Geneva Switzerland, http://comenius.susqu.edu/biol/318/urbanisationandinfectiousdiseasesinaglobalisedworld.pdf, 131. (accessed 11 November 2019).

[36] Rachel Estrada, Andrew Griffith, Colbye Prim, Jeongsu Sinn, "Pandemics in a Changing Climate – Evolving Risk and the Global Response," *The John Hopkins Institute*, Swiss Reinsurance Company Ltd., 2016, https://www.swissre.com/dam/jcr:552d59b2-76c6-4626-a91a-75b0ed58927e/ Pandemics_in_a_changing_climate_Full_report_FINAL.pdf, 5, (accessed 15 September, 2019); D.R. Reidmiller, C.W. Avery,

point of view, climate change, urbanization, and globalization will continue to pose a threat in the future environment.

Joint doctrine, by comparison to the Scowcroft Institute's understanding, has an uneven record of associating and accounting for the three drivers. Failing to relate the three drivers to pandemics, DoD does not consider pandemics as significant as weapons of mass destruction, reducing pandemic preparation, and making response resource allocation accordingly. Furthermore, DoD does not link the three drivers to some of its doctrine to describe the effects they will have towards DoD's ability to respond. A successful example resides within the *National Biodefense Strategy* that attempts to incorporate the three drivers, climate change, urbanization, and globalization, into a doctrine to describe the future. The strategy notes that:

> infectious disease threats do not respect borders. Urbanization, habitat encroachment, and increased and faster travel, coupled with weak health systems, increase the ability of infectious diseases to spread rapidly across the globe. Antimicrobial resistance, novel infectious diseases, and the resurgence and spread of once geographically limited infectious diseases can overwhelm response capacities and make outbreaks harder to control. An infectious disease outbreak—even in the most remote places of the world—could spread rapidly across oceans and continents, directly impacting the U.S. population and its health, security, and prosperity.[37]

The consequence of successfully accounting for the three drivers is a better understanding of what contributes to the spreading of pandemics across the globe, and the impacts they will have on societies.

DoD operational doctrine attempts to use the three drivers within its doctrine, yet when used, it does not apply them in describing their relationship regarding pandemics. For example,

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D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart, “Fourth National Climate Assessment: Volume II Impacts, Risks, and Adaptation in the United States”, *U.S. Global Change Research Program*, 2018 (updated 2020), https://nca2018.globalchange.gov/downloads/, 456, (accessed 20 September 2019).

[37] White House, *National Biodefense Strategy,* The White House, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Biodefense-Strategy.pdf, 2018, 2.

within the *Joint Operating Concept 2035(JOE)*, there is no mention of climate change, urbanization, and globalization as they relate to the growth of populations, threats to global economic security, and activities of adversaries to use technology as a threat.[38] While the *JOE 2035* does not correlate the three drivers to describe the threats of pandemics pose, it does offer a separate concept addressing pandemic threats as "likely to be a steady rise in the incidence and severity of infectious disease outbreaks. While even relatively strong and stable states may struggle to respond to pandemics, weak states will confront significant challenges containing outbreaks due to inadequate surveillance and early warning, weakened public health systems, and the absence of trained doctors and nurses."[39] Considering many DoD organizations will use the *JOE 2035* to develop their own doctrine and training to address the future environment, they will fail to view the connections between the three drivers and the threats of pandemics, as the international community does.

Doctrine is the fundamental foundation for all Department of Defense activities. Military organizations rely on doctrine to translate guidance from national strategies into information that will guide DOTMLPF-P activities. However, when DoD fails to link strategic guidance to doctrine or fails to describe potential threats, such as pandemics, DoD organizations cannot adequately prepare to respond to potential threats. Sufficient historical and international documentation exists that DoD could use to increase the narrative within its doctrine, describing the dangers that pandemics will have in the future operating environment and how to prepare for

[38] Joint Chiefs of Staff, *The Joint Force in a Contested and Disordered World*, Joint Operating Environment 2035, 14 July 2016, https://apps.dtic.mil/dtic/tr/fulltext/u2/1014117.pdf, 11-12 and 30, (accessed 4 November 2019). Threats highlighted within the JOE 2025 are considered asymmetrical in nature. For example, threats may consist of robotic swarms.
[39] Joint Chiefs of Staff, *The Joint Force in a Contested and Disordered World*, Joint Operating Environment 2035, 9.

them. Failing to adhere to strategic and doctrinal guidance, DoD will continue to plan and anticipate pandemics inadequately, which will likely lead to catastrophic results.

Chapter 3: Training Enables Preparedness.

It stalked into camp when the day was damp
And chilly and cold.
It crept by the guards
And murdered my pards.
With a hand that was clammy and bony and bold;
And its breath was icy and mouldy and dank,
And it killed so speedy,
And gloatingly greedy.
That it took away men from each company rank.[1]

—from *The Flu* by Private Josh Lee, 1919

Training is essential for DoD preparation and execution of its peacetime and wartime missions. Failing to train and prepare adequately for an operation often leads to catastrophic mission failure. The Joint Force conducts training as part of military maneuvers, simulated wartime operations, and exercises to improve planning, preparation, and execution before the actual operation.[2] At the national and international levels, DoD plays a significant role in supporting organizations, such as the Department of Homeland Security (DHS) and the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO), should a pandemic occur within the borders of the United States. Yet preparing to support these organizations poses significant training shortfalls for DoD, as was experienced by the U.S. military during the 1918 Influenza and 2014-2015 Ebola outbreaks. Combatant Commands, such as United States Northern Command (USNORTHCOM), prepare and synchronize DoD capabilities to support Defense Support of Civil Authorities (DSCA) operations by exercising

[1] Peter C. Wever and Leo Van Bergen, "Death from 1918 Pandemic Influenza During the First World War: A Perspective from Personal and Anecdotal Evidence," *Influenza Other Respiratory Viruses*, September 2014, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4181817/, 538, (accessed 27 January 2020).
[2] Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, 15 February 2013, 102.

joint training events, such as the 2006 Ardent Sentry.[3] Additionally, from a service perspective, the 2014 Ebola mission highlights the importance of training to prepare and protect service members operating in a potentially infected environment. The 2017 Government Accounting Office (GAO) report, *Defense Civil Support: DOD, HHS, and DHS Should Use Existing Coordination Mechanisms to Improve Their Pandemic Preparedness*, recommended DoD prepare for future pandemics not only to protect its readiness, but to be ready to support activities within a complex environment, both domestically and internationally.[4] However, within DoD, there has been little indication at the operational level that actions have occurred to prepare organizations to respond.

In September 2018, the world recognized the 100th anniversary of the 1918 Flu Influenza outbreak that infected and "killed as many as 100 million people—5 percent of the world's population, and far more than the number who died in World War I."[5] The 1918 influenza outbreak demonstrated that a pandemic could be a "physical threat to U.S. citizens in terms of morbidity and mortality, and the decreased effectiveness of U.S. armed forces in protecting those citizens from external threats."[6] The severity of the outbreak still resonates today as DoD and other interagency organizations continue to prepare vaccines and strategies to respond globally and to support national security interests abroad. The 2007 GAO report, *Influenza Pandemic:*

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[3] Government Accounting Office, "Homeland Defense: U.S. Northern Command Has a Strong Exercise Program, but Involvement of Interagency Partners and States Can Be Improved," *Report to Congressional Requesters*, 20, 39-40, https://www.gao.gov/products/GAO-09-849, September 2009. The report highlights the exercise, Ardent Sentry, introduced an Avian Flu Pandemic scenario, which in conjunction with several other training scenarios, required USNORTHCOM to coordinate DoD capabilities to support state-level capabilities and activities.
[4] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa*, 16-17.
[5] Ed Yong, "The Next Plague is Coming. Is America Ready for it?," *The Atlantic*, July/August 2018, https://www.theatlantic.com/magazine/archive/2018/07/when-the-next-plague-hits/561734/?utm_source=newsletter&utm_medium=email&utm_campaign=atlantic-daily-newsletter&utm_content=20200121& silverid-ref=MzEwMTU3MzYwMTY1S0, (accessed 22 January 2020).
[6] Jane Evans, "Pandemics and National Security," *Global Security Studies*, Spring 2010, Volume l, Issue 1, https://pdfs.semanticscholar.org/36f9/799a7392aa77bc92dcc343332107761a465f.pdf, 107, (accessed 3 November 2019).

DOD Combatant Commands' Preparedness Efforts Could Benefit from More Clearly Defined Roles, Resources, and Risk Mitigation, highlights that even though the DoD, Department of State and other agencies have taken measures to reduce the likelihood of a full influenza outbreak within the United States, should an outbreak occur, a significant portion of DoD may become infected, as seen during the 1918 Influenza.[7] The 2020 coronavirus shows signs similar to the 1918 pandemic, stressing the current U.S. and DoD capabilities to respond.

The 1918 Influenza pandemic provides examples for DoD to consider when developing and incorporating pandemics into future joint and interagency training exercises. For instance, during the 1918 outbreak, the methods that U.S. military and civilian health care officials used to maintain its combat readiness only demonstrated their lack of understanding of how the flu spread. Their failed understanding resulted in the contamination of 20% to 40% of the active Army and Navy forces at mobilizing camps, as well as the American Expeditionary Force (AEF) and allies in Europe.[8] At the time of the outbreak, there were no policies or procedures in place between the War Department and health organizations to treat and stop service members from deploying.[9] In 2014, however, when DoD deployed the military into an Ebola-infected environment, there was a similar lack of training preparedness within the medical and military organizations. For example, when DoD mobilized to respond to the Ebola outbreak, it was tasked by established medical support teams (MST) to train health-care workers. During the

[7] Government Accounting Office, "Influenza Pandemic: DOD Combatant Commands' Preparedness Efforts Could Benefit from More Clearly Defined Roles, Resources, and Risk Mitigation," *Report to the Committee on Oversight and Government Reform, House of Representatives,* 1-2, https://www.gao.gov/assets/270/262369.pdf, June 2007, (accessed September 10, 2019).
[8] Carol Byerly, "The U.S. Military and the Influenza Pandemic of 1918-1919," *Public Health Report*, 2010, 125 (Suppl 3), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2862337/, (accessed 12 September, 2019).
[9] Peter C. Wever and Leo van Bergen, "Death from 1918 Pandemic Influenza During the First World War: A Perspective from Personal and Anecdotal Evidence," *Influenza Other Respiratory Viruses*, September 2014, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4181817/, 541, (accessed 27 January 2020).

establishment of the MSTs, however, the Joint Staff's *Operation United Assistance* report identified several shortfalls were identified in the "vagueness of requirements, lack of preparation time, the lack of an existing training program, and the need to review team composition and equipment requirements" for DoD to support future missions.[10]

A second shortfall identified between the War and Navy Departments and civilian public health officials hindered their ability to respond due to the lack of clear authorities and management of public health officials at the federal and state levels. The lack of authorities added to communication failures between the two agencies and delayed adequate response and decision-making concerning the deployment of forces.[11] Once the pandemic began to spread, the War Department and civilian agencies mobilized to jointly contain the spread of influenza as it attacked the people living in the bases and surrounding towns across the United States. The overarching concern for both departments was to develop plans for containing infected people and preventing further spreading of influenza within the United States and to Europe. As seen with today's COVID-19, the War Department and civilian agencies discussed quarantine, reduced travel of service members, and reducing social gatherings.[12] DoD currently is taking similar measures to limit the movement of personnel and the effects of the 2020 Coronavirus.[13]

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[10] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa*, 19.
[11] Miles Ott, Shelly Shaw, Richard Danila, and Ruth Lynfield, Lessons Learned from the 1918–1919 Influenza Pandemic in Minneapolis and St. Paul, Minnesota, *Public Health Report*, Nov. 2007, 13, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1997248/, (accessed 14 January 2020).
[12] George Yagi, "The Influenza Pandemic – Lessons from the Deadly 1918 Outbreak Still Ring True Today," https://militaryhistorynow.com/2020/03/01/the-influenza-pandemic-lessons-from-the-deadly-1918-outbreak-still-ring-true-today/, 1 March 2020, (accessed 9 April 2020); Kirsty Short, Kedzierska, Katherine, and Sandlt, Carolien, "Back to the Future: Lesson Learned From the 1918 Influenza Pandemic," *Frontiers in Cellular and Infection Microbiology*, 8-9, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6187080/pdf/fcimb-08-00343.pdf, 8 October 2018, (accessed 9 April 2020); Trevor Hughes, "Rarely used in modern times, quarantine laws give public officials wide-ranging powers," *USA Today*, 13 March 2020, http://www.msn.com/en-us/news/us/rarely-used-in-modern-times-quarantine-laws-give-public-officials-wide-ranging-powers/ar-BB116MqT?li=BBnbfcL&ocid=DELLDHP17, (accessed 13 March 2020).
[13] Deputy Secretary of Defense, "Stop Movement for all Domestic Travel for DoD Components in Response to Coronavirus Disease 2019," 13 March 2020, https://media.defense.gov/2020/Mar/13/2002264686/-1/-1/1/STOP-

Almost 100 years later, on September 16, 2014, President Obama announced that the United States would send 3,000 U.S. troops to West Africa in support of health care and aid workers struggling to slow the Ebola outbreak.[14] Before DoD's deployment to West Africa in November 2014, the DoD assessed that the Ebola virus had infected approximately 14,000 civilians and caused nearly 5,000 deaths in the countries of Liberia, Sierra Leone, and Guinea.[15] The DoD's mission in Liberia was to support the United States Agency of International Development (USAID) with the building of a 25-bed Monrovia medical unit (MMU) to treat health-care workers, seventeen Ebola Treatment Units (ETU) for patient treatment, 6-medical laboratories for testing Ebola in patients, and assist in receiving and issuing of personal protective equipment.[16] Even though the USAID assessed the risk of exposure to DoD personnel as low, and military personnel were not treating Ebola patients directly, leadership maintained concerns about sending untrained military personnel to address the Ebola outbreak, especially considering two experienced doctors contracted the disease and were later treated in the United States.[17] The concerns generated "fear" within the U.S. government and DoD as the military prepared to deploy, but through stable leadership, trust, and implemented safety procedures, the operation succeeded.

MOVEMENT-FOR-ALL-DOMESTIC-TRAVEL-FOR-DOD-COMPONENTS-IN-RESPONSE-TO-CORONAVIRUS-2019.PDF, (accessed 14 March 2020).

[14] Gregory Korte, "Obama Announces Military Response to Ebola," *USA Today*, 16 September 2014, https://www.usatoday.com/ story/news/politics/2014/09/16/obama-ebola-africa-how-effective-will-it-be/15736455/, (accessed 14 October 2019).

[15] Department of Defense, (AFHSC), *West Africa Ebola Surveillance Summary #48*, https://info.publicintelligence.net/DOD-AFHSC-Ebola-11-7-14.pdf, 7 November 2014. (accessed 15 October 2019).

[16] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola /OUA_report_jan2016.pdf, 5.

[17] Melany Batley, "Troops on Ebola Mission in Africa Risk Quarantine," *NewsMax*, https://www.newsmax.com /Newsfront/Ebola-West-Africa-troops-quarantine/2014/10/16/id/601139/, 14 November 2019, (accessed 10 November 2019).

The 2016 Joint and Coalition Operational Analysis, report on, *Operation UNITED ASSISTANCE: The DOD response to Ebola in West Africa*, recommended that DoD should examine the policies from Operation United Assistance and determine their applicability to future operations and institutionalize them appropriately, as well as, determine capability gaps in responding to infectious disease outbreaks.[18] One gap concerned the selection and training of DoD organizations to prepare and respond to pandemics. For example, the Office of the Secretary of Defense's (OSD) assessment of the Joint Task Force (JTF), comprised primarily of the 101st Airborne Division (AASLT), found that the JTF was not fully prepared to deploy in response to the Ebola outbreak.[19] At the time of the notification, the 101st Airborne Division was deep into planning for an annual warfighting exercise and shifted its focus quickly to assume command of the JTF under United States Africa Command (USAFRICOM). During the mission analysis by both USAFRICOM and the JTF, planners determined that the mission in Liberia required specific enablers, such as Command and Control (C^2), logistics, medical, engineers, aviation, public health services, and mortuary affairs. However, this posed a challenge for DoD, as it commonly led Disaster Assistance Response Team (DART) missions, and lacked policies and training to conduct humanitarian assistance missions in infectious disease environments.[20] After the completion of OUA, these enablers returned to their normal duties and missions. Meanwhile, DoD failed to fully invest in the lessons learned to develop and implement additional training requirements for those organizations selected to respond to future pandemics.

[18] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/OUA_report_jan2016.pdf, 6 January 2016, 21.
[19] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa*, 52 and 101.
[20] Ibid., 5.

Upon notification of deployment to West Africa, DoD identified two major concerns: 1) the training of the 3,000 personnel to identify and protect themselves from Ebola; and 2) equipping the force with appropriate Personal Protective Equipment (PPE). Before the 2014 outbreak, the DoD lacked doctrine and training associated with the disease, nor was it equipped with the appropriate PPE.[21] The Institute for Defense Analysis, which published the 2016 *Operating in an Infectious Disease Environment (IDE) Capabilities Based Assessment (CBA),* emphasized: "a general lack of pathogen-specific and biosafety level-specific policy, doctrine, and training for personal protection" available for the 2014 Ebola response.[22] For example, before the DoD's pre-deployment preparation, there were only two DoD doctors with Ebola Virus Disease (EVD) clinical experience, one of which became a dedicated trainer for the deploying Mobile Surgical Teams responsible for training host nation health care workers.[23] Within DoD, there were no experienced and knowledgeable people to address the preparation needed to respond. Moreover, due to the lack of institutional knowledge, DoD relied upon the Center for Disease Control and Prevention (CDC) and the United States Army Medical Research Institute of Infectious Diseases (USAMRIID) to provide military personnel with roughly four hours of individual training. The training centered on the donning and doffing of PPE, identification of Ebola symptoms, and procedures for preventive hygiene techniques to reduce

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[21] Department of the Army, "Joint Project Manager Protection (JPM-P): Individual Protective Equipment (IPE) and Personal Protective Equipment (PPE) Capabilities and Suitability Recommendations in Support of the Ebola Virus Response," *White Paper*, Joint Program Executive Office, 1-2. This document was provided by the U.S. Army Mortuary Affairs Quartermaster School on 31 October 2019. The White paper highlights that the current DOD Joint Service Lightweight Integrated Suit Technology (JSLIST) was not an appropriate capability to protect personnel from the transmissions of body fluids, which Ebola is spread.

[22] William Smedley, Mark Bohannon, Jeffrey Grotte, Larysa Murray, Scott Weinrich, Stephanie Wiseman, *Operating in an Infectious Disease Environment (IDE) Capabilities Based Assessment (CBA),* Institute of Defense Analysis, September 2016, iv. This document was provided by USNORTHCOM, but was produced for the Joint Staff, Joint Requirements Office (JRO) for Chemical, Biological, Radiological, and Nuclear (CBRN) Defense (J-8/JRO).

[23] *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), 19.

the risk of contact, essential training for the deploying Joint Task Force units.[24] Following the completion of OUA, however, DoD failed to codify and implement the training into a formal training requirement for the services to prepare for future pandemic response.

More specifically, as outlined within the Universal Joint Task List (UJTL) or Mission Essential Task Listing (METL), the individual Services conduct annual blocks of training, instruction, and testing on Chemical and Biological defense tasks. The training they conduct, however, does not focus specifically on the protection of biological viruses such as Ebola. Currently, within the UJTL, there exist only three tasks, two strategic and one operational, that focus on addressing epidemics in support of Foreign Humanitarian Assistance, but they do not address how DoD should train to respond to epidemics and pandemics.[25] In addition, the UJTL lists thirty-five CBRN tasks referenced in CBRN Joint Publications concerning biological threats; however, none of the tasks specifically focus on pandemics. Rather, the tasks focus on protection from biological threats spread through the use of weapons of mass destruction. For example, the UTJL task SN 9.3.3.2 requires operators to "Understand the Weapons of Mass Destruction Environment, Threats, and Vulnerabilities" and has a sub-task "to provide chemical, biological, radiological, and nuclear (CBRN) threat and countermeasures training to deploying personnel."[26] Again, pandemics compete with and are confused with other biological missions. As this case suggests, DoD used the UJTL and METL training rather than specific biological

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[24] Tim Mak, "US Soldiers Get Just Four Hours of Ebola Training," *Daily Beast*, (17 October 2014), https://www.thedailybeast.com/us-soldiers-get-just-four-hours-of-ebola-training, (accessed 9 September, 2019).
[25] Universal Joint Task List, https://jdeis.js.mil/jdeis/index, (accessed 30 November 2019). Research for tasks related to pandmics resulted in zero findings. However the three tasks, "SN 3.1.1 Station Forces Forward, ST 8.2.3. Coordinate Foreign Humanitarian Assistance, and OP 8.10 Conduct Foreign Humanitarian Assistance" mentions endemics and sources several CBRN Joint Publications that briefly discuss pandemics.
[26] Joint Electronic Library Plus, "Universal Joint Task List," https://jdeis.js.mil/jdeis/index, (accessed 30 November 2019). Research included review of UJTL tasks across Medical, Mortuary Affairs, CBRN, and Health Services.

training to meet the needs of the issue. Even though the OUA was successful, the training conducted did not address biological threats in the form of pandemics.

Another issue compounding the difficulty of the DoD preparation for OUA was the lack of doctrine, policies, training, and equipment for medical and mortuary affairs personnel to handle the potentially infected remains of DoD personnel. Before the 2014 deployment, the DoD followed a USAMRIID recommendation that DoD manages biologically-infected remains according to the guidelines established in 2009 as directed in the guidance, *Categorizing Weapons of Mass Destruction Biological Agents into Postmortem Risk Groups.*[27] Upon notification during the Request for Forces process, the Fort Lee Virginia Mortuary School and the CDC quickly formed a collective approach to training the deploying Mortuary Affairs team on new handling procedures outlined in a 2014 White Paper from the Armed Forces Medical Examiner (AFME) and a 2013 Assistant Secretary of Defense Memorandum, which provided guidance for the handling of potentially contaminated remains.[28] An information paper published by the Department of the Army Management Office–Operations and Contingency Plans (DAMO-ODO), *Information paper on Disposition of Deceased Department of Defense (DoD) Personnel in Ebola Outbreak Countries*, also recommended resources be provided to train

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[27] Department of the Army, "Additional Input to Specific Recommendations Provided by USAMRIID Review of the U.S. Army Joint Mortuary Affairs Center "Categorizing Weapons of Mass Destruction Biological Agents into Postmortem Risk Groups" (July 2009)," 4 June 2013; Department of Defense, *Categorizing Weapons of Mass Destruction Biological Agents int Postmortem Risk Groups,* Combined Arms Support Command, Fort Lee, VA, July 2009, v. The two documents were provided by the Fort Lee, VA Mortuary Affairs Quartermaster School on 31 October 2019. The documents suggested Ebola scored high for a biological agent, however, the risk was low for handling the remains after an incubation period.

[28] COL Ladd Tremaine, "Armed Forces Medical Examiner (AFME) guidance on Deaths of U.S. Personnel from Ebola/Hemorrhagic Virus Fever in Western Africa," *White Paper*, 21 October 2014; Assistant Secretary of Defense, "Response to Request to the Defense Health Board to Address the Question Pertaining to Biological Agents in Mortuary Affairs Operations," *Memorandum for Assistant Secretary of the Army (Manpower and Reserve Affairs)*, 31 January 2013. These documents were provided by the Fort Lee, VA Mortuary Affairs Quartermaster School on 31 October 2019. They highlight the guidance provided to DoD on the handling of potentially infected remains of service members in West Africa.

personnel to handle contaminated remains.[29] To address the outlined concerns, the Mortuary Affairs team focused their training to handle biologically-infected remains, training on a new capability called the Mobile Integrated Remains Collection Systems (MIRCS), and the procedures for the cleaning and packaging of potentially infected remains. Before the outbreak, DoD's experience in handling potentially contaminated remains was considered untrained and underequipped. Proper handling of contaminated remains persists as a gap today.

DoD training is instrumental for its success in any operation performed. The Government Accounting Office (GAO) suggested DoD continue to review lessons learned and implement applicable policies and training exercises, as they will assist organizations to identify and address the capability gaps in future pandemic situations.[30] Through evaluation and reviewing lessons from performed operations, training enables organizations to assess identified gaps and risks within their assigned tasks and build procedures to mitigate those gaps successfully. The 1918 Influenza, 2014 Ebola, and 2020 COVID-19 outbreaks demonstrate that pandemics are real threats to both readiness and DoD operations. Accordingly, those threats should require at least a portion of the force to train to respond and protect against the spread and transmission of pandemics. Synchronizing interagency and DoD tasks to train to protect forces as they mobilize for supporting domestic or international pandemics is challenging and requires training at multiple echelons. As DoD at times conducts operations in areas where pandemics have a high

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[29] Department of the Army Management Office – Operations and Contingency Plans, "Information paper on Disposition of Deceased Department of Defense (DoD) Personnel in Ebola Outbreak Countries," *Information Paper*, 7 November 2014. This document was provided by the Fort Lee, VA Mortuary Affairs Quartermaster School on 31 October 2019. The information paper provides guidance on the handling of potentially infected remains of service members in West Africa. It provided information provided guidance for the repatriation of contaminated remains.

[30] Government Accounting Office, *Defense Civil Support: DOD, HHS, and DHS Should Use Existing Coordination Mechanisms to Improve Their Pandemic Preparedness,* Report to the Committee on Armed Services, House of Representatives, February 2017, 25-28; *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/OUA_report_jan2016.pdf, 6 January 2016, 13, (accessed 14 November 2019).

probability of occurring, such as West Africa, training forces to protect themselves is the responsibility of every level of authority, national through tactical. Such training and precautions are especially necessary considering that globalization, climate change, and urbanization, the drivers of the operational environment, exacerbate the risk that forces will come into contact with pandemic diseases, and that the likely locations for operations are at great risk of originating pandemic diseases.

Chapter 4: Continued Progress Toward a Successful Response.

> *The Department's efforts to support the U.S. Government's response to Ebola virus disease (EVD) in West Africa exposed gaps and shortfalls in DOD policy and capabilities to manage risk to DOD personnel operating in an infectious disease environment. These shortfalls required rapid development and acquisition of specialized capabilities to enable safe transportation and treatment while maximizing force protection for U.S. personnel, as well as the issuance of policy guidance to support such operations.*[1]
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> —Former Deputy Secretary of Defense, Robert Work, 2015

Since the 2014 Ebola outbreak in West Africa, the Department of Defense (DoD) has made some progress across the remaining Organization, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) elements to close capability gaps for responding. Though doctrine and training lack adequate focus, the Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense (JPEO-CBRND), the DoD executive agent, continues to synchronize effort to close identified gaps. For example, challenges exist in preparing strategic, operational, and tactical leaders to understand the effect of pandemics on their planning efforts. The gap within the Leadership and Education demonstrates a gap within the DoD education network to educate leaders and planners within professional military education (PME) for senior leadership.

Within DoD, several organizations continue to focus their efforts on preparing DoD response capabilities to biological threats and establishing policies, training events, and

[1] William Smedley, Mark Bohannon, Jeffrey Grotte, Larysa Murray, Scott Weinrich, Stephanie Wiseman, "Operating in an Infectious Disease Environment (IDE) Capabilities Based Assessment (CBA)," *Institute for Defense Analysis*, September 2016, 1. This document was provided by the USNORTHCOM and Defense Health Agency on 17 January 2020. This statement was made within the following document, "DEPSECDEF Memo, SUBJECT: Termination of Operation United Assistance and Maintaining Certain DoD Ebola Virus Disease-related Guidance and Authorities, August 10, 2015."

equipping strategies to protect the force. Their collaborative efforts fall under the DoD Directive 5160.05E, "Roles and Responsibilities Associated with the Chemical and Biological Defense Program (CBDP)," which directs them to address biological "research, development, and acquisition (RDA) of chemical, biological, and radiological (CBR) defense (CBRD) capabilities (medical and physical defense) primarily for Counter Weapons of Mass Destruction."[2] The CBDP's mission statement is to "Enable the Warfighter to deter, prevent, mitigate, respond, and recover from CBRN threats and their effects as part of a layered, integrated defense."[3] The CBDP's primary focus is to develop and procure enabling capabilities for all the services to have situational awareness, hazardous mitigation, and the means to protect against CBRN threats. These capabilities include programs such as surveillance, vaccines, individual protection, and decontamination.

The Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) is the DoD's lead for development, acquisition, fielding, and life-cycle support of chemical, biological, radiological and nuclear (CBRN) defense equipment and medical countermeasures.[4] Overall, the office is responsible for the program management for all areas covered under the CBRN, such as Joint Project Managers (JPM) Protection, Medical, Sensors, and the Joint Project Lead (JPL) that focus on CBRN special operations forces, information management/information technology, portfolio resources, and enabling

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[2] Department of Defense Directive, "Roles and Responsibilities Associated with the Chemical and Biological Defense Program (CBDP)," Number 5160.05E, Change 2 July 18, 2019, https://www.esd.whs.mil/DD/, (accessed 3 January 2020). This document Designates and defines the role of the Secretary of the Army as the DoD Executive Agent (EA) for the CBDP pursuant to Section 1522 of Title 50, United States Code (U.S.C.) and in accordance with DoDD 5101.1.
[3] Colonel Ronald Fizer, "Chemical and Biological Defense Program (CBDP) Overview," *Department of Defense*, 2 February 2017, https://osbp.apg.army.mil/PDF/APBI/2017/Day%204.02%20-%20CBDP%20Overview.pdf, Slide 4, (accessed 20 January 2020).
[4] JPEO-CBRND, "JPEO-CBRND Smartbook 1.0," October 2019, 7, https://jpeocbrnd.army.mil/docs/default-source/default-document-library/jpeo-cbrnd_smartbook_1-0_low-res.pdf, (accessed 31 January 2020).

biotechnologies related to countering weapons of mass destruction (CWMD) and associated biological threats.[5] A challenge for JPEO-CBRND to synchronize these efforts within DoD is that its focus is on countering and protecting the U.S. from potential adversaries with the capability to use biological threats linked with a weapon of mass destruction instead of or as well as natural biological threats resulting in pandemics. The indications that JPEO-CBRND might use to identify biological weapons are not the same as those for naturally occurring diseases leading to pandemics.

A second organization, the Defense Threat Reduction Agency (DTRA), incorporated the directive to synchronize its efforts with other agencies for training, research, and development initiatives concerning infectious diseases. Even though the DoD directive does not explicitly define DoD's role in preparing organizations to address pandemics, DTRA continues to address gaps concerning pandemics. In December 2019, DTRA in collaboration with the United States Medical Research Institute of Infectious Disease (USAMRIID) and Walter Reed Army Institute of Research (WRAIR) defense laboratories, the World Health Organization (WHO), the U.S. Food and Drug Administration (FDA), and several private sector companies (e.g., Merck & Co.), announced a new vaccine and training in response to the 2014 Ebola Virus Disease.[6] Their collaborative effort crossed two decades of research and development. It demonstrated the DoD's reliance on international and private sector support to address potential infectious diseases that may turn into pandemics. However, continued focus on WMD-related threats outweighs and slows progress on developing solutions to biological pandemic threats.

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[5] JPEO-CBRND, "Who We Are," https://www.jpeocbd.osd.mil/who-we-are, (accessed 31 January 2020).
[6] Darnell Gardner, "DTRA Contributes to Historic Ebola Vaccine Effort," *Defense Threat Reduction Agency*, https://health.mil/News/Articles/2020/01/17/DTRA-contributes-to-historic-Ebola-vaccine-effort, 17 January 2020, (accessed 20 January 2020).

One important aspect of pandemic management and response is limited to within certain communities. Such as the international community, like the World Health Organization (WHO) and the Center for Disease and Prevention (CDC), Public Health and Medical Services, and civilian academia, tend to discuss issues amongst themselves.[7] The DoD community of interest, JPEO-CBRND, DTRA, USAMRIID, and WRAIR tend to form another community of interest, viewing responses differently. This limited community of interest is not broad enough to ensure DoD prepares to support the next pandemic response. The lack of convergence between communities of interest has ripple effects in DoD education.

Specifically, there is a lack of DoD institutional knowledge within Professional Military Education (PME) for Capstone Senior Service College/ Joint Professional Military Education (JPME) on the role of the military in this area. In part, this is due to guidance within the 2015 Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01E, O*fficer Professional Military Education Policy,* in which there is no mention of requirements for any institution to discuss any form of biological or pandemics threats.[8] The lack of academic instruction presents a gap within all the Senior Service Colleges and Intermediate Level curricula to understand better how leadership should consider addressing the threats of pandemics.

The absence of formal blocks of instruction does not suggest discussions do not occur among leaders and students concerning pandemics. For example, when discussing documents such as the *National Security Strategy*, *National Defense Strategy*, or the *Joint Operating*

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[7] For Example, see University of Nebraska, "University of Nebraska defense research institute earns new five-year, $92 million contract," 6 June 2018, https://nebraska.edu/news-and-events/news/2018/university-of-nebraska-defense-research-institute-earns-new-five-year-$92-million-contract, (accessed 4 February 2020). This article was published by the University of Nebraska to discuss the partnership between the DoD and the university to conduct research and development of vaccines and other means to stop infectious diseases.

[8] Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 1800.01E, O*fficer Professional Military Education Policy,* 29 May 2015. This document was provided by the Joint Forces Staff College, Norfolk, VA on 30 January 2020.

Environment 2035; sharing personal experience in Defense Support of Civil Authorities (DSCA) or Humanitarian Assistance and Disaster Relief (HADR) operations; or participating in academic strategic and operational exercises, the threats of pandemics may become part of the educational experience. The Chairman of Joint Chiefs of Staff's *Academic Year 2018 and 2019 Joint Professional Military Education Special Area of Emphasis List* is one specific example of how doctrine and lack of convergence between communities of interests results in the absence of pandemics in the PME curriculum. The *Special Area of Emphasis (SAE)* list briefly discusses physical threats to the operational environment caused by natural phenomena, such as climate change and natural resources, but does not mention pandemic threats as a risk to national security.[9] The lack of specific guidance withing the *SAE* leads to a gap within senior leader education regarding pandemic response. It also limits the ability of commanders and staff officers to understand the complexity of pandemics and the techniques for synchronizing key capabilities, such as medical and logistics support, with interagency and international capabilities during such a crisis.[10]

The JPEO-CBRND provides oversight on many programs designed to enhance DoD's ability to identify, respond, and assist national level health organizations in identifying infectious diseases, more in the form of surveillance capabilities. One example is the Next Generation Diagnostics System (NGDS) Increment 1, which "rapidly analyzes clinical and environmental

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[9] Chairman Joint Chief of Staff, *Academic Year 2018 and 2019 Joint Professional Military Education Special Area of Emphasis List,* Memorandum for Military Education Coordination Council, 25 January 2018, 4. This memorandum was provided by the Joint Advanced Warfare School, Norfolk, VA on 26 February 2020. The Memorandum lists the Special Areas of Emphasis to be discussed within the curriculum of military academia every two years.
[10] Jeremy Konyndyk, “Struggling with Scale: Ebola’s Lessons for the Next Pandemic,” *Center for Global Development*, May 2019, 2, https://www.cgdev.org/sites/default/files/struggling-scale-ebolas-lessons-next-pandemic-brief.pdf, (accessed 30 January 2020).

samples for biological pathogens" such as Ebola.[11] Through the testing of blood cultures, the NGDS reduces the time it takes for hospitals to identify patients who may be infected and initiate the necessary treatment sooner. Had the system been available during the 2014 Ebola outbreak, it would have reduced the time needed to identify infected patients in Guinea and Liberia. Instead, blood drawn from patients was sent to Paris for testing.[12] Due to the lack of rapid testing ability, people returned home to wait for their results, adding to the buildup of untreated patients, and contributing to the spread of the Ebola virus. In 2014, DoD deployed the 1st Area Medical Laboratory (1st AML) to Liberia to support the testing of blood samples, using a testing capability called the "DoD Ebola Zaire (Target 1) RT PCR (TaqMan) (EZ1 rRT-PCR) assay."[13] The 1st AML capability reduced the time for analysis from days to mere hours from the blood and oral swab samples taken from patients. The capabilities within the NGDS have sped up the testing even more than the Ebola Zaire capability and reduced the wait time to identify and begin treatment. As a step in the right direction, the Army expects to field NGDS and be fully operational capable by FY 20 and in the Navy in FY 21.[14] The new materiel solution is a positive development; however, DoD must continue to do more to prepare.

A challenge exists in obtaining, and training, to use appropriate personnel protective equipment (PPE). Following the 2014-2015 Ebola mission, The *Operation UNITED ASSISTANCE: the DOD Response to Ebola in West Africa* report is recommended that DoD

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[11] JPEO-CBRND, "JPEO-CBRND Smartbook 1.0," October 2019, 22, https://jpeocbrnd.army.mil/docs/default-source/default-document-library/jpeo-cbrnd_smartbook_1-0_low-res.pdf, (accessed 31 January 2020).
[12] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* 45.
[13] Anthony P. Cardile, MC USA, Christopher T. Littell, MC USA, Michael G. Backlund, MS USA, Richard A. Heipertz, MS USA, Jerod A. Brammer, MS USA, Sean M. Palmer, MS USA, Todd J. Vento, MC USA, Felix A. Ortiz, MS USA, William R. Rosa, USA, Michael J. Major, USA, Patrick M. Garman, MS USA, "Deployment of the 1st Area Medical Laboratory in a Split-Based Configuration During the Largest Ebola Outbreak in History," e1677, *Military Medicine*, Volume 181, Issue 11-12, November-December 2016, Pages e1675–e1684, https://doi.org/10.7205/MILMED-D-15-00484, (accessed 3 March 2020).
[14] JPEO-CBRND, "JPEO-CBRND Smartbook 1.0," October 2019, 22. Role 3 hospitals are commonly known as Army Field Hospitals, which provides expeditionary health service support.

"review the prioritization of supply management and distribution of infectious disease-related medical countermeasures and PPE; coordinate with USG partners and industry to ensure supply availability in time of crisis."[15] Currently, the commercial-off-the-shelf (COTS) Tyvek Overall Suits and Powered Air-Purifying Respirators (PAPRs) equipment used in 2014 are not in the DoD inventory, making it challenging to acquire for training or deploy as contingency stock.[16] Moreover, within DoD, there is no doctrine or training to support the use of these items, so if mobilized to support future missions, DoD will require organizations, such as CDC, to provide the training, as was done in 2014. Depending on the nature of the pandemic, the individual military services may have to rely on their issued protective mask and Joint Service Lightweight Integrated Suit Technology (JSLIST), designed to protect against specific biological and chemical threats, but which are too thick and bulky for pandemic response.[17] Should DoD deploy again to West Africa, the JSLIST may not be optimal for use in tropical environments, causing further health risks for service members. Specifically, identified units should maintain a stock of this PPE, and DoD should create rapidly executable supply plans to purchase additional sets or face a delay in responding to a pandemic in a timely and effective manner. Delays in response are costly to maintaining readiness and preserving civilian populations.

Like with doctrine and training, across the DOTMLPF-P spectrum, there are gaps DoD must address to ensure its readiness to respond and protect the force during the next pandemic.

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[15] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), 63, https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/ OUA_ report_jan 2016.pdf, 6 January 2016.
[16] Headquarters Department of the Army, "APPENDIX 1 (PERSONAL PROTECTIVE EQUIPMENT REQUIREMENTS) TO ANNEX E (PROTECTION) TO HQDA EXORD 241-14 ISO OPERATION UNITED ASSISTANCE (v2) EXORD 241-14 ISO OPERATION UNITED ASSISTANCE," 2. This document was provided by the Fort Lee, VA Mortuary Affairs Quartermaster School on 31 October 2019.
[17] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), 19, https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/ OUA_report_jan 2016.pdf, 6 January 2016.

As DoD's lead executive agent, JPEO-CBRND, continues to identify solutions to identify and overcome many gaps, even if some solutions will take years to achieve. JPEO-CBRND, however, cannot overcome all the gaps by itself, requiring collaboration with other institutions, such as WHO, CDC, FDA, and other DoD organizations, to find solutions across the DOTMLPF-P spectrum. The collaboration will provide a shared understanding of the threats pandemics pose to national security and the protection of the force. For example, as DoD continues to evaluate the effects and impacts of COVID-19, updating the current *Academic Year 2020 and 2021 Joint Professional Military Education Special Area of Emphasis List* ensures the Professional Military Education (PME) curriculum continues to educate military leaders to prepare for pandemics.[18] As leaders continue to understand the effects a pandemic has on force readiness, they will be more apt to develop and incorporate training to better respond. Additionally, the collaboration will also enhance DoD's efforts in research and development of new materiel solutions, such as surveillance and testing equipment and new personal protective equipment (PPE). As DoD organizations continue to respond to the current COVID-19 pandemic, they must continue to find solutions across the whole DOTMLPF-P spectrum to prepare for a future outbreak.

[18] Chairman Joint Chief of Staff, *Academic Year 2018 and 2019 Joint Professional Military Education Special Area of Emphasis List,* Memorandum for Chiefs of the Military Services, President National Defense University, 6 May 2019, https://www.jcs.mil/Portals/36/Documents/Doctrine/education/jpme_sae_2020_2021.pdf, (accessed 20 April 2020).

Chapter 5: Discussions, Recommendations, and Conclusion.

> *We have a pandemic influenza plan, but it doesn't apply well to other infectious diseases. And as part of that we need to have a Western Hemisphere plan for migration and border security issues in the event there is a very significant outbreak of a contagious disease.*[1] —RDML McAllister, JCOA Interview, 22 March 2015

Lessons from the 1918 influenza, 2014 Ebola, and now the 2020 Coronavirus outbreaks continue to provide opportunities for DoD and other government agencies to develop lessons learned and translate them into policies and procedures to prepare the United States Government to respond to future pandemics. The policies and procedures are crucial to training, responding, and synchronizing resources for a potential outbreak, especially as the response will likely include assets across the interagency.[2] The ability of the United States to respond domestically and globally rests on several factors, which include translating the policies and procedures into sound doctrine, describing the operating environment, and establishing training initiatives for organizations to prepare appropriately. Yet, despite a lack of doctrine, training, or materiel tailored for pandemic responses, the DoD has proven it possesses the capacity and ability to respond successfully, as it did in the 2014-2015 West Africa Ebola outbreak. Relying on past success, strong leadership, and good luck is not sufficient. DoD must continue to build upon its readiness by successfully developing appropriate doctrine and training and acquire the necessary equipment to execute an effective DoD response in contested and uncontested environments.[3]

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[1] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* 83.
[2] United States Northern Command, "Summary of the Pandemic Influenza and Infectious Disease (PI&ID) Response branch plan to USNORTHCOM CONPLAN 3500-XX, DSCA Response," 15 May 2017, 3. This document was provided by the USNORTHCOM J5 on 26 December 2019. The summary provides an overview of the USNORTHCOM's actions for responding to domestic and international outbreaks, and briefly describes the actions to rehearse and synchronize plans and efforts with the International Health Community.
[3] Department of Defense Directive, "Force Health Protection," Number 6200.*0*4, April 23, 2007, 3. This document was provided by USNORTHCOM on 27 December 2019.

Unfortunately, based on identified gaps across the Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities, and Policy (DOTMLPF-P) spectrum, the DoD as a whole continues to be ill-prepared to participate in pandemic prevention or arrest based on gaps. The preponderance of the gaps encompasses doctrine and training. Failure to address the gaps will lead to further challenges for the services and organizations to develop individual doctrine, training, and materiel solutions, and applicable policies, in a timely manner to prepare for pandemics. A possible solution is for DoD, along with the combatant commands, executive agencies, and appropriate organizations, to continue to review policies and contingency plans annually, ensuring they include training and equipment to address potential pandemics. This review would assist the combatant commands to evaluate the threats of pandemics within their assigned areas of responsibility, identify critical gaps to support pandemics threats, and provide DoD a venue for addressing DOTMLPF-P shortfalls.

DoD provides guidelines and principles for the military services to coordinate their actions to support national interests. By linking doctrine to national strategy, such as the *National Security Strategy,* it provides DoD narratives for describing the current and future operating environments, discusses lessons learned, and establishes priorities for developing training and equipping strategies for mitigating strategic, operational, and tactical shortfalls within its warfighting mission. However, concerning pandemics, there are gaps within the strategic policy and DoD doctrine that do not adequately inform DoD organizations of their threats to national security.

An overarching gap within both strategic policy and DoD doctrine is the imprecise use of the term "pandemic." The broad and imprecise use of pandemic as a noun, masks the need to delve deeper into actual examination and preparation for pandemic contingencies. A

corresponding lack of narrative poses a challenge for organizations at all levels, as they struggle to prioritize pandemics as a high priority to resource and prepare a response. National Level strategies, such as the *2018 National Biodefense Strategy* and 2006 *National Strategy for Pandemic Influenza,* attempt to provide overarching guidance on the actions United States Government agencies and organizations will take in the event of a pandemic occurs within the United States, but DoD has not translated this into a relevant narrative within doctrine.[4] International academia and institutions focused on pandemics, such as the World Health Organization (WHO), Center for Diseases and Prevention (CDC), and Scowcroft Institute, may offer a more transparent and precise narrative of pandemic threats to incorporate into future strategies. Collaboration between the United States Government (USG) and these agencies already exists to develop plans for responding, so sharing the same narrative may emphasize its importance.

The lack of narrative seen in DoD level doctrine deemphasizes the understanding and limits the preparation for pandemics through a focus on other areas or conflation with different topics. In lieu of pandemics, DoD predominately uses "infectious diseases" to identify biological threats, which may derive from weapons of mass destruction and not necessarily naturally occurring events like Ebola. DoD does make some attempts to describe pandemics and the challenges they will pose in the *Joint Operating Environment 2035*; however, the potential consequences of missing doctrinal guidance for pandemics warrant the DoD to go further.[5] DoD should not only mention that pandemics exist, but "accept" that pandemics are a potentially more

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[4] Homeland Security Council, "National Strategy for Pandemic Influenza, Implementation Plan," https://www.cdc.gov/flu/pandemic-resources/pdf/pandemic-influenza-implementation.pdf, May 2006, (accessed 10 November 2019).
[5] Joint Chiefs of Staff, *The Joint Force in a Contested and Disordered World*, Joint Operating Environment 2035, 14 July 2016, 9, https://apps.dtic.mil/dtic/tr/fulltext/u2/1014117.pdf.

frequent issue in the future environment and include a more in-depth treatment in future strategies and doctrine. A more in-depth narrative in doctrine will enable the military services to develop service-specific doctrine, training, and equipping strategies to support national-level goals in responding to pandemics.

Training is fundamental to reducing and mitigating the inherent risks in military operations. As DoD continues to operate in areas with historically high chances of infectious disease, such as West Africa and, supports humanitarian missions involving pandemics in North America or abroad, it must establish training that synchronizes its efforts with national and international organizations. As the COVID-19 demonstrated an outbreak within the United States could quickly exceed the capacity of local and national health care facilities, requiring the deployment of DoD medical and logistic capabilities to support operations. Joint training at all levels will assist in developing strategies, policies, training, and resources to address possible pandemics and prepare DoD forces to respond.

The 1918 Influenza virus demonstrated the challenge of communication between the national and military levels of command and establishing adequate policies and response capabilities. Ninety-six years later, the gap still existed during the 2014 Ebola response, Operation United Assistance. The lack of communication and misunderstanding of authorities between government and DoD agencies delayed the training and deployment of military forces to contain the Eola breakout.[6] While the delays were eventually resolved, the U.S. Government (USG) and DoD approach were to "worry about it when it happens," rather than to synchronize and develop plans for action.[7] To overcome the attitude, the USG and DoD should continue to

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[6] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* J7, Joint and Coalition Operational Analysis (JCOA), 13-16, https://www.jcs.mil/Portals/36/Documents/Doctrine/ebola/OUA_ report_jan2016.pdf.
[7] Joint Staff, *Operation UNITED ASSISTANCE: The DOD Response to Ebola in West Africa,* 15.

develop joint exercises that simulate and test pandemic response. These Joint training exercises will capture requirements and identify mitigation strategies for risks associated with preparing and the mobilization of DoD capabilities, as outlined in the 2012 *North American Plan for Animal and Pandemic Influenza*.[8] More importantly, as DoD conducts and assesses training, it will be imperative that it capture the lessons learned, risks, and resources needed in new policies, doctrine, training, and funding plans for future execution.

Joint training will also assist DoD organizations at the operational and tactical levels to prepare to support missions related to pandemics. As the 101st Airborne (AASLT) experienced in 2014, the rapid transition from day-to-day training for combat to a humanitarian mission focused on Ebola was extremely challenging. The 3,000 service members were unfamiliar with the Ebola virus, the methods to prevent infection, and the use of new personnel protective equipment (PPE). Should USNORTHCOM develop and conduct a future exercise, the exercise should include interagency partners, such as United States Agency for International Development (USAID) and CDC, and select operational and tactical units from all services. The selection of a division headquarters to replicate a JTF, along with other supporting elements, such as medical, logistics, engineers, aviation, and mortuary affairs, would enable units to assist DoD in identifying and capturing challenges in response preparations and contingencies. The training should simulate conditions similar to that which 101st Airborne Division experienced in their preparation for the 2014 Ebola mission. The training event will enable DoD to identify and "certify" organizations as a pandemic response capability/force specifically trained to respond

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[8] Public Health Emergency, "North American Plan For Animal and Pandemic Influenza," 2 April, 2012, 20, https://www.phe.gov/Preparedness/international/Documents/napapi.pdf, (accessed 29 December 2019). "I've been doing biologics for 18 years. We put off determining policy questions, like the transport of contaminated remains or infected patients. People said, "We'll worry about it when it happens." It finally happened." This quote by the Office of the Secretary of Defense (OSD) Stability and Humanitarian Affairs Representative was focused on the policies surrounding the movement of contaminated remains, but holistically it addressed DoDs approach to preparing for supporting pandemics and similar infectious disease outbreaks.

and support missions pertaining to pandemics. Finally, conducting the Joint training events will provide an opportunity for DoD to identify and validate current and potentially new tasks within the Universal Joint Task List (UJTL) as well as service-specific Mission Essential Task Lists (METL) related to pandemics.

Pandemics "whether naturally occurring, accidental, or deliberate in origin—are among the most serious threats facing the United States and the international community."[9] Pandemics do not respect borders and will continue to threaten national security and the well-being of humans. As seen with the 2020 COVID-19, which spread quickly through the dense population of the Wuhan Province in China, infecting and killing tens of thousands, viruses, if unchecked, can spread globally in a matter of days.[10] Between 2011 and 2018, the world experienced over 1400 epidemics across 172 countries.[11] In the United States, a highly developed nation with strong health status, the 2017 influenza season infected approximately 45 million people and resulted in 61,000 deaths.[12] While the figure represents a small portion of the 50 million people who died in 1918 globally, it ought to raise alarms. The global population will soon top 8 billion and will become more interconnected through globalization and dense urbanization. The effects of climate change will exacerbate these trends as drought, and sea-levels rise drives people to new locations. The factors will contribute to the spreading of pandemics in the future

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[9] White House, *National Biodefense Strategy,* The White House, 2018, i, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Biodefense-Strategy.pdf, (accessed 14 November 2019).
[10] New York Times, *Coronavirus Live Updates: As Death Toll Rises, More Americans Are Heading Home,* 4 February 2020, https://www.nytimes.com/2020/02/04/world /asia/coronavirus-china.html?action= click& pgtype=Article&state=default&module=styln-coronavirus®ion=TOP_BANNER& context=Menu.
[11] Center of Disease Control and Prevention, “Disease Burden of Infleunza,” https://www.cdc.gov/flu/about/ burden/ index. html; Global Preparedness Monitoring Board, “A World At Risk: Annual Report on Global Preparedness for Health Emergencies,” 2, https://apps.who.int/gpmb/assets/annual_report/GPMB_annualreport_2019.pdf, (accessed 20 January 2020).
[12] Center of Disease Control and Prevention, “Disease Burden of Infleunza,” https://www.cdc.gov/flu/about/ burden/ index. html, (accessed 20 January 2020).

environment. As pandemics continue to occur, they will pose challenges for the United States and the Department of Defense (DoD), as it did in 1918 and 2014, and is doing so today.

Despite a lack of doctrine, training, or materiel tailored for pandemic responses, DoD successfully responded to the 2014-2015 West Africa Ebola outbreak. Since then and since Ebola has resurfaced in West Africa and impacted by COVID-19, DoD has not addressed the documented lessons learned and failed to prepare organizations for the next potential pandemic event. DoD readiness depends on the successful development of appropriate doctrine and training and acquisition of the necessary equipment to execute an effective DoD response in both contested and uncontested environments.[13] Unfortunately, the DoD, as a whole, continues to be ill-prepared to participate in pandemic prevention or arrest.

History has demonstrated that the military has failed in its preparation to address outbreaks that directly affect its readiness to deploy forces in response to pandemics. As pandemics are unpredictable threats that may occur in contested or uncontested environments, DoD's ability to operate in those environments is critical to both the protection of military forces and the successful containment of the contagion. Essential to the success of DoD is its ability to accomplish its wartime and peacetime missions through the development and implementation of relevant and applicable doctrine and training exercises to build the capacity for DoD to respond.[14] DoD, however, cannot just address doctrine, training, and materiel, but must continue

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[13] Department of Defense Directive, "Force Health Protection," Number 6200.*04*, April 23, 2007, 3. This document was provided by USNORTHCOM on 27 December 2019. This directive provides guidance for DoD and military services to maintain the force health protection of the force. Sub-paragraph 4.3.2.5. states "Routinely train all military personnel, and essential DoD civilian and contractor personnel who directly support deployed forces, in safety, first aid, sanitation, health risks, and health protection measures, including those related to chemical, biological, radiological, nuclear, explosive, and environmental and/or industrial threats, in accordance with DoD Directive 2000.12 and DoD Instruction 2000.18."

[14] Bryan Bender, "The Pentagon's Big Problem: How to Prepare for War During a Pandemic," *Politico,* 27 March, 2020, https://www.politico.com/news/2020/03/27/pentagon-military-coronavirus-pandemic-152575, (accessed 30 March 2020).

to look across the remaining DOTMLPF-P elements and intentionally seek improvements to DoD education and leader development.

DoD must allocate time to prepare itself to address future pandemics, as pandemics will continue to be part of the future environment and threaten U.S national interests. As seen with the current 2020 COVID-19 (Coronavirus Disease 2019), pandemics can quickly spread, infecting thousands of people, instilling fear, overwhelming medical capabilities, and disrupting political and economic systems.[15] Should leadership defer DoD pandemic preparation, the instability caused by the fracturing of social norms and failure of systems due to pandemics will eventually necessitate DoD response. As with previous pandemics, COVID-19 will test the ability of the American health-care system to assist in the treatment and protection of the population. Already DoD facilities and personnel are involved in the temporary quarantine of travelers. If called upon to support, DoD must continue to train and prepare to support the Coronavirus and other counter-pandemic efforts. But without adequate doctrine, training, and policies, the cost of response could be considerably higher.

[15] White House, *National Biodefense Strategy,* The White House, 2018, i, https://www.whitehouse.gov/wp-content/uploads/2018/09/National-Biodefense-Strategy.pdf.

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Vita

LTC Cozine is a native of Springfield, Vermont. He enlisted in the Army in 1990 and served six years as a Unit Level Communications Maintainer before commissioning and branch detailed into the Air Defense Artillery, and then later into the Quartermaster Corps upon graduation from the University of Tampa Reserve Officer Training Corps (ROTC) program in 1999.

LTC Cozine's previous assignments include Platoon Leader and Executive Officer, Air Defense Battery, 2d Armored Cavalry Regiment (ACR); S4, 1st Squadron and, Assistant S3, Regimental Support Squadron, 2d ACR, Ft. Polk, Louisiana; S3 and Alpha Company Commander, 47th Forward Support Battalion, 2d Brigade, 1st Armored Division, Baumholder, Germany and Operation Iraqi Freedom 01 and 05-07; Concepts Development Officer, for Future Concepts Development, Combined Arms Support Command (CASCOM), Ft. Lee, Virginia; Support Operations Planner, 1st Theater Sustainment Command, Fort Bragg, North Carolina and Camp Arifjan, Kuwait; Division Logistics Planner for the 101st Airborne Division in support of Operation Enduring Freedom; and the Support Operations Officer, 101st Sustainment Brigade in support of Operation United Assistance in Liberia, Africa and Fort Campbell, Kentucky, and Professor of Military Science for the University of Georgia Army Reserve Officer Training Corps (ROTC), Athens, Georgia. He recently served as the Battalion Commander for the Army Forward Support Battalion-Hawaii (AFSB-HI), 402d Army Field Support Brigade (AFSB), Schofield Barracks, Hawaii.

LTC Cozine received a Bachelor of Science Degree in Computer Information Systems from the University of Tampa. His military schooling includes the Air Defense Artillery Basic Officer Course, Quartermaster Transition Course, Theater Logistics Planners Course (TLOG), the Air and Command Staff Course (ACSC), and the School of Advanced Air and Space Studies (SAASS) at Maxwell Air Force Base. LTC Cozine holds two Master Degrees, one in Operational Arts and Sciences and the other a Masters in Philosophy of Military Strategy from the United States Air University.

VIII. Signatures.

Student: **Date:**

Thesis Advisor: **Date:**

IX. Advisor notes and comments.